

# REMEDICATION STATEMENT

PLS00018X



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**REMEDIATION STATEMENT**

**PREPARED BY LEEDS CITY COUNCIL**

This Remediation Statement is prepared by Leeds City Council, in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (the 1990 Act).

The Contaminated Land to which this Remediation Statement relates is located at the following addresses:

<b>Address of properties determined as Contaminated Land</b>	<b>Easting</b>	<b>Northing</b>
Land at 1 Claremont Crescent, Headingley, Leeds LS6 2BL	428933	436379
Land at 2 Claremont Crescent, Headingley, Leeds LS6 2BL	428917	436400
Land at 3 Claremont Crescent, Headingley, Leeds LS6 2BL	428929	436374
Land at 4 Claremont Crescent, Headingley, Leeds LS6 2BL	428912	436397
Land at 5 Claremont Crescent, Headingley, Leeds LS6 2BL	428921	436367
Land at 6 Claremont Crescent, Headingley, Leeds LS6 2BL	428903	436393
Land at 7 Claremont Crescent, Headingley, Leeds LS6 2BL	428919	436362
Land at 8 Claremont Crescent, Headingley, Leeds LS6 2BL	428897	436391
Land at 9 Claremont Crescent, Headingley, Leeds LS6 2BL	428908	436357
Land at 10 Claremont Crescent, Headingley, Leeds LS6 2BL	428889	436382
Land at 11 Claremont Crescent, Headingley, Leeds LS6 2BL	428903	436357
Land at 12 Claremont Crescent, Headingley, Leeds LS6 2BL	428887	436377
Land at 14 Claremont Crescent, Headingley, Leeds LS6 2BL	428888	436366
Land at 16 Claremont Crescent, Headingley, Leeds LS6 2BL	428892	436361
Land at 483 Meanwood Road, Meanwood, Leeds LS6 2BH	428969	436361
Land at 485 Meanwood Road, Meanwood, Leeds LS6 2BH	428966	436365
Land at 487 Meanwood Road, Meanwood, Leeds LS6 2BH	428961	436374
Land at 489 Meanwood Road, Meanwood, Leeds LS6 2BH	428956	436377
Land at 491 Meanwood Road, Meanwood, Leeds LS6 2BH	428951	436385
Land at 493 Meanwood Road, Meanwood, Leeds LS6 2BH	428947	436390
Land at 495 Meanwood Road, Meanwood, Leeds LS6 2BH	428932	436411

Land at 497 Meanwood Road, Meanwood, Leeds LS6 2BH	428929	436416
Land at 499 Meanwood Road, Meanwood, Leeds LS6 2BH	428923	436423
Land at 501 Meanwood Road, Meanwood, Leeds LS6 2BH	428919	436427

The extent of this Contaminated Land (the Land) is indicated in red on the plan (the Plan) (Schedule 1).

Leeds City Council, as enforcing authority in relation to the Land, is precluded by section 78H(5)(d) of the 1990 Act from serving a Remediation Notice and has therefore prepared this Remediation Statement in accordance with section 78H(7) and (8).

The things which are expected to be done by way of remediation and the period within which each of these things are expected to be done are set out in Schedule 2.

Particulars of the substances and the significant harm by reason of which the Land is Contaminated Land are set out in Schedule 3.

The current use of the Land is residential housing with private gardens.

The name of the organisation that is expected to do each of the things set out in Schedule 2 to this Remediation Statement is Leeds City Council.

Leeds City Council's address for the purposes of this Remediation Statement is:

**The Contaminated Land Team  
Leeds City Council  
City Development  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD**

Telephone: **0113 247 8156**  
Fax: **0113 247 6484**  
Email: **contaminatedland@leeds.gov.uk**

Enquires relating to this Remediation Statement should be made to the team as detailed above.

**Signed:** 

**Position:** **Minerals, Waste and Contaminated Land Manager**

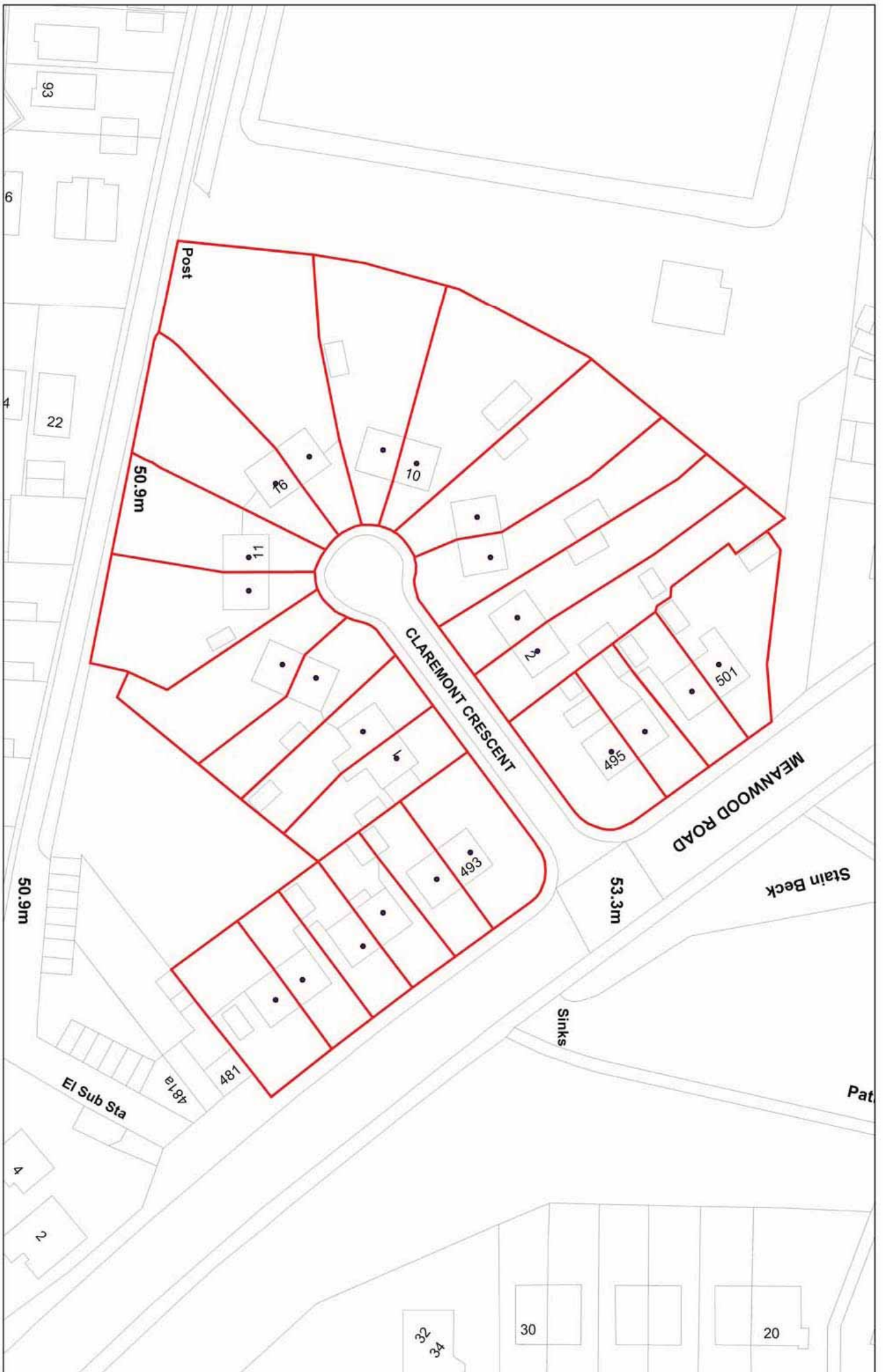
**Date:** **1<sup>st</sup> March 2010**

## Schedule 1

### **Location and Extent of Contaminated Land to which this Remediation Statement Relates**

All the Land edged in red on the Plan attached to this Statement.

Produced by the Development Department, Leeds City Council



## Schedule 2

### **Remediation Requirements and Periods (Section 78H(7)(b))**

The Remediation Actions detailed in this Schedule fall under the definition of Remedial Treatment Actions as defined in Section 78A(7)(b) of the 1990 Act. These Actions are intended to secure the remediation of all of the significant pollutant linkages identified in Schedule 3, and as such are characterised as a “shared action” as defined by Paragraph D.21(b) and a “common action” as defined by Paragraph D.22 (1a) of the Statutory Guidance contained in the DEFRA Circular 01/2006.

The requirements of the Remedial Treatment Actions are to carry out works to prevent the effects of the Significant Possibility of Significant Harm of the Contaminated Land identified in Schedule 1, and address the significant pollutant(s) identified in Schedule 3.

The Remedial Treatment Actions described in this Schedule are referable to the land identified in Schedule 1.

The Remedial Treatment Actions will comprise the removal of 600mm of the contaminated soil from the gardens of the properties identified in Schedule 1, the laying of a geomembrane and marker layer and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions described in this Schedule are expected to be completed by 31 October 2010.

## Schedule 3

### **Particulars of Substances and the Significant Possibility of Significant Harm**

See Records of Determination appended (refs CLRoD-PLS00018X and CLRoD-PLS00018X\*)



## PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990

### RECORD OF DETERMINATION THAT LAND IS CONTAMINATED LAND

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following properties:

- **4, 6, 8, 10, 12, 14 and 16 Claremont Crescent**  
**HEADINGLEY, LEEDS LS6 2BL**

*(Identified on the attached plan (referenced as figure 6 from Parson Brinckerhoff's Interpretative Report) as the shaded land within the red boundary)*

National grid reference 428880 436381

("the Land")

Site reference number PLS00018X

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.

The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

Dated 11 May 2009

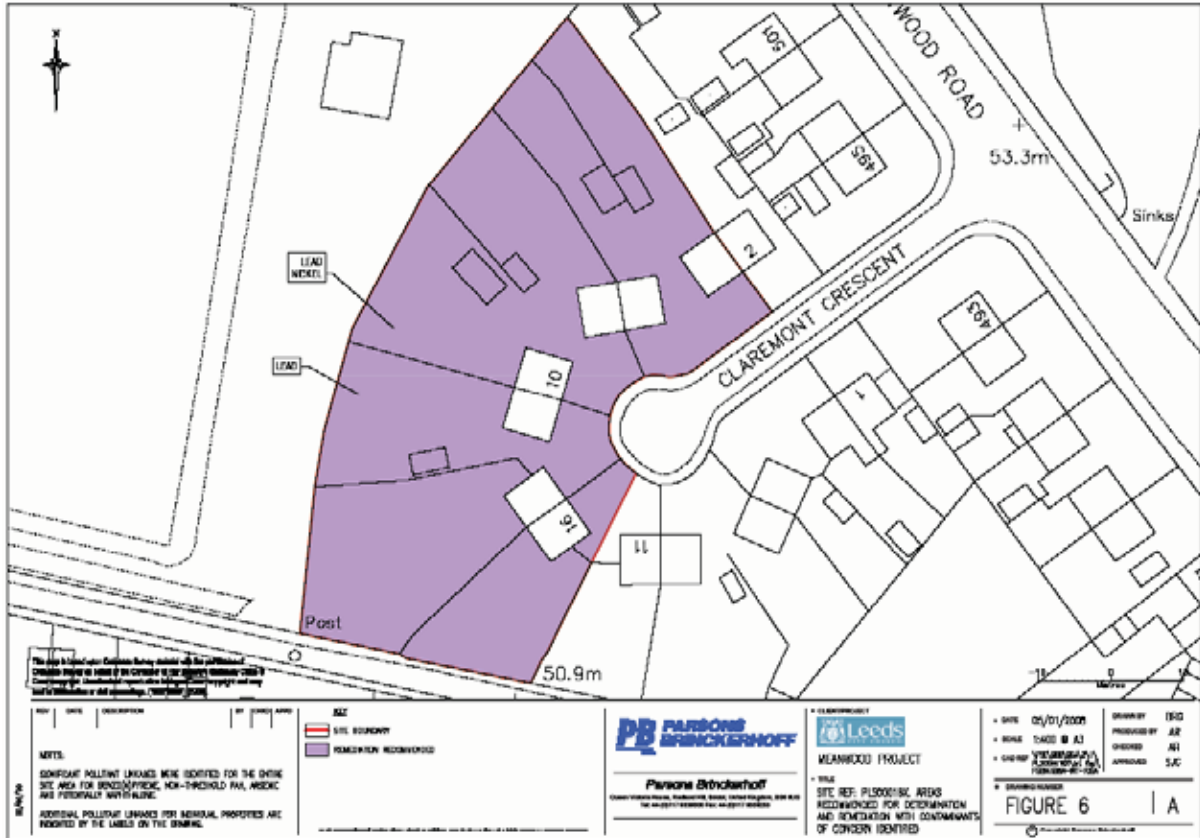
Stephen Speak  
Strategy and Policy Chief Officer  
City Development  
Leeds City Council  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD



**The Land at:**

- **4, 6, 8, 10, 12, 14 and 16 Claremont Crescent  
HEADINGLEY, LEEDS LS6 2BL**

(Identified on the plan below (referenced as figure 6 from Parson Brinkckerhoff's Interpretative Report) as the shaded land within the red boundary)



## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the houses.

The significant pollutant linkages found are outlined in the following table:

Pollutants	Pathways	Receptor
Site wide arsenic, benzo(a)pyrene and combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils + localised lead and nickel in surface soils	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these pollutant-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is residential semi-detached properties with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

Report – “Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime” prepared by Land Quality Management (LQM) for Leeds City Council dated 10 January 2008 (LQM Ref No 0931, Client Ref No 2947421)

This report included a review of the following data specific to the site PLS00018X:

- Leeds City Council initial limited soil sampling work in February 2007
  - o total number of soil augering holes = 3
  - o total number of soil samples analysed = 6
- Leeds City Council additional limited soil sampling work in August 2007
  - o total number of soil augering holes = 3

- total number of soil samples analysed = 6

LQM concluded that the available datasets appeared to indicate the existence of potentially significant pollutant linkages in the context of the Part 2A contaminated land regime. LQM recommended additional detailed monitoring of the site to provide suitable, robust and defensible evidence on which any potential determinations under Part 2A could be based for PLS00018X.

Report – “Interpretative Site Investigation Report, PLS00018X. Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated April 2009 (ref FSE96695A.2084)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008:

- total number of hand dug pits = 29
- total number of soil samples analysed = 75

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of arsenic, benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present, with localised contamination of lead and nickel.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying. The historical plans dated 1908 (scale 1:2,500) and 1909 (scale 1:10,000) show a quarry within the site boundary. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill the quarry and/or provide a development platform for the current residential development.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the site. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parson Brinckerhoff’s review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from all properties aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment

criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

The ground conditions were divided into two types:

- 'soil' exhibiting topsoil-like geological properties (typically 0-300mm below ground level) and
- 'waste' generally comprehensive or granular made ground (typically underlying the 'soil')

Comparison with generic screening values against the 'soil' and 'waste' data indicated the following:

- 'soil' data
  - o site-wide exceedances of arsenic, cadmium, zinc and non-threshold PAHs
  - o individual exceedances of copper, lead and naphthalene
- 'waste' data
  - o site-wide exceedances of arsenic, cadmium, copper, zinc, non-threshold PAHs and naphthalene
  - o individual exceedances of lead, nickel and aliphatic hydrocarbons (>EC8-EC10 and >EC10-EC12).

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved deriving site specific assessment criteria against which to compare the analytical results for those parameters that had exceeded the generic assessment criteria. An overall summary from this further assessment taken from Parsons Brinckerhoff's report is provided below:

- Parsons Brinckerhoff has assessed that the entire site area is likely to meet the definition of contaminated land under Part 2A of the Environmental Protection Act 1990 (i.e. that there is the significant possibility of significant harm occurring to the modelled receptor) owing to site-wide contamination with benzo(a)pyrene, non-threshold PAH and arsenic.
- A site-wide potential risk from naphthalene within waste material has been identified and further assessment of this risk is advised, including monitoring for the presence of naphthalene vapour, to test the existence of the indoor inhalation pathway.
- Additional significant pollutant linkages associated with lead and nickel have been identified at individual properties.

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish these contaminants are unlikely to represent a significant possibility of significant harm and have therefore been excluded as a possible basis for determination as Contaminated Land.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of site-wide arsenic, benzo(a)pyrene and other polyaromatic hydrocarbons and localised nickel and lead identified at the properties at the site to represent a significant possibility of significant harm.**

Ongoing investigations are currently taking place with regard to naphthalene. Dependent on the outcome of these investigations, this record of determination will be updated accordingly.

## 6 - REFERENCES

### Site Specific Information

#### Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00018X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*April 2009, ref FSE96695A.2084*)

#### Land Quality Management

"Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime" prepared by Land Quality Management for Leeds City Council (*10 January 2008, LQM Ref No 0931, Client Ref No 2947421*)

### Statutory Guidance

#### DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

#### Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

#### Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

#### DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

#### DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

#### Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

#### Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)



## **PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990**

### **RECORD OF DETERMINATION** **THAT LAND IS CONTAMINATED LAND**

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following properties:

- **1, 2, 3, 5, 7, 9 and 11 Claremont Crescent, HEADINGLEY, LEEDS LS6 2BL; and**
- **483, 485, 487, 489, 491, 493, 495, 497, 499 and 501 Meanwood Road, MEANWOOD, LEEDS, LS6 2BH**

*(Identified on the attached plan (referenced as figure 4 from Parson Brinckerhoff's Factual and Interpretative Report) as the shaded land)*

National grid reference 428931 436384

("the Land")

Site reference number PLS00018X\*

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

**The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.**

**The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.**

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

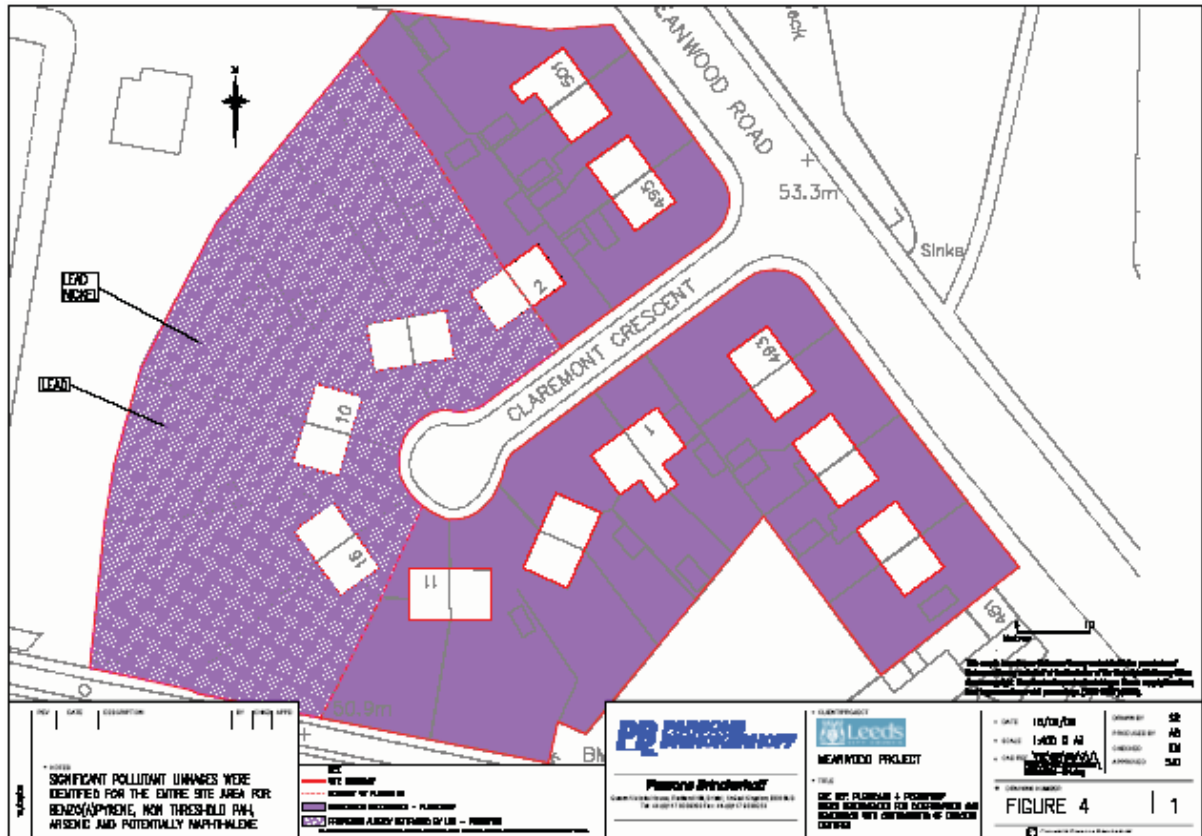
Dated 13 July 2009

Stephen Speak  
Deputy Chief Planning Officer  
City Development  
Leeds City Council  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD

**The Land at:**

- 1, 2, 3, 5, 7, 9 and 11 Claremont Crescent, HEADINGLEY, LEEDS LS6 2BL; and
- 483, 485, 487, 489, 491, 493, 495, 497, 499 and 501 Meanwood Road, MEANWOOD, LEEDS, LS6 2BH

(Identified on the plan below (referenced as figure 4 from Parson Brinkckerhoff's Factual and Interpretative Report) as the shaded land)



Please note that the hatched area on the plan refers to a previous record of determination (ref CLRoD-PLS00018X) made for these properties by Leeds City Council on 11 May 2009. This hatched area is the site referred to as PLS00018; the shaded area on the plan which is the subject of this record of determination is referred to as PLS00018\*.



## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the houses.

The significant pollutant linkages found are outlined in the following table:

Pollutants	Pathways	Receptor
Site wide arsenic, benzo(a)pyrene and combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these pollutant-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is residential semi-detached properties with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

Report – “Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime” prepared by Land Quality Management (LQM) for Leeds City Council dated 10 January 2008 (LQM Ref No 0931, Client Ref No 2947421)

This report included a review of the following data specific to the site PLS00018X:

- Leeds City Council initial limited soil sampling work in February 2007
  - o total number of soil augering holes = 3
  - o total number of soil samples analysed = 6
- Leeds City Council additional limited soil sampling work in August 2007
  - o total number of soil augering holes = 3
  - o total number of soil samples analysed = 6

LQM concluded that the available datasets appeared to indicate the existence of potentially significant pollutant linkages in the context of the Part 2A contaminated land regime. LQM recommended additional detailed monitoring of the site to provide suitable, robust and defensible evidence on which any potential determinations under Part 2A could be based for PLS00018X.

Report – “Interpretative Site Investigation Report, PLS00018X. Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated April 2009 (ref FSE96695A.2084 – Issue 3)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008:

- total number of hand dug pits = 29
- total number of soil samples analysed = 75

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of arsenic, benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present, with localised contamination of lead and nickel.

Report – “Combined Phase 1 Delineation Factual & Interpretative Site Investigation Addendum Report, PLS00018\*. Meanwood, Leeds” prepared by Parsons Brinckerhoff for Leeds City Council (July 2009, ref FSE96695A.2125 – Issue 3 Final)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in March 2009:

- total number of hand dug pits = 60
- total number of soil samples analysed = 121

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of arsenic, benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying. The historical plans dated 1908 (scale 1:2,500) and 1909 (scale 1:10,000) show a quarry within the site boundary of PLS00018. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill the quarry and/or to provide a development platform for the current residential development that comprises PLS00018X and PLS000018X\*.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the site. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parsons Brinckerhoff’s review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list

below. This information also included site investigation data Parsons Brinckerhoff had collected at PLS00018X in August and September 2008.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from all properties aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A. Where statistical analysis was carried out, the datasets from PLS00018 and PLS00018\* were combined, where relevant, as the contamination found was considered to be from a source that was similar across both of these sites.

The ground conditions were divided into two types:

- 'soil' exhibiting topsoil-like geological properties (typically 0-300mm below ground level) and
- 'waste' generally comprehensive or granular made ground (typically underlying the 'soil')

Comparison with generic screening values against the 'soil' and 'waste' data indicated the following:

- 'soil' data
  - o site-wide exceedances of arsenic, non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) and naphthalene
  - o individual exceedances of cadmium, lead, zinc and fluoranthene
- 'waste' data
  - o site-wide exceedances of arsenic, non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) and naphthalene
  - o individual exceedances of mercury, nickel, copper, zinc, lead and fluoranthene

These identified contaminants of concern that were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. The detailed quantitative risk assessment involved deriving site specific assessment criteria against which to compare the analytical results. An overall summary from this further assessment taken from Parsons Brinckerhoff's report is provided below:

- Parsons Brinckerhoff has assessed that the entire site area is likely to meet the definition of contaminated land under Part 2A of the Environmental Protection Act 1990 (i.e. that there is the significant possibility of significant harm occurring to

the modelled receptor) owing to site-wide contamination with benzo(a)pyrene, non-threshold PAH and arsenic.

- A site-wide potential risk from naphthalene within waste material has been identified and further assessment of this risk is advised

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish that these contaminants are unlikely to represent a significant possibility of significant harm and they have therefore been excluded as a possible basis for determination as Contaminated Land.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of site-wide arsenic, benzo(a)pyrene and other polyaromatic hydrocarbons at the properties at the site to represent a significant possibility of significant harm.**

Ongoing investigations are currently taking place with regard to naphthalene. Dependent on the outcome of these investigations, this record of determination will be updated accordingly.

## 6 - REFERENCES

### Site Specific Information

#### Parsons Brinckerhoff

"Combined Phase 1 Delineation Factual & Interpretative Site Investigation Addendum Report, PLS00018\*. Meanwood, Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*July 2009, ref FSE96695A.2125 – Issue 3 Final*)

#### Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00018X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*April 2009, ref FSE96695A.2084 – Issue 3*)

#### Land Quality Management

"Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime" prepared by Land Quality Management for Leeds City Council (*10 January 2008, LQM Ref No 0931, Client Ref No 2947421*)

### Statutory Guidance

#### DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

#### Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

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Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

#### DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

#### DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

#### Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

#### Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)

# REMEDIATION STATEMENT

PLS00007X



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**REMEDICATION STATEMENT**

**PREPARED BY LEEDS CITY COUNCIL**

This Remediation Statement is prepared by Leeds City Council, in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (the 1990 Act).

The Contaminated Land to which this Remediation Statement relates is located at the following addresses:

<b>Address of properties determined as Contaminated Land</b>	<b>Easting</b>	<b>Northing</b>
Land at 50 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429572	435745
Land at 52 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429562	435750
Land at 54 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429559	435752
Land at 56 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429549	435755
Land at 57 Hartley Avenue, Woodhouse, Leeds LS6 2LW	429497	435757
Land at 58 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429545	435758
Land at 60 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429528	435768
Land at 64 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429520	435772
Land at 66 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429516	435774
Land at 68 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429508	435778
Land at 68A Hartley Avenue, Woodhouse, Leeds LS6 2LP	429498	435775
Land at 70 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429502	435788
Land at 70A Hartley Avenue, Woodhouse, Leeds LS6 2LP	429494	435786
Land at 72 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429481	435796
Land at 74 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429473	435799
Land at 76 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429465	435806
Land at 1 Burchett Place, Headingley, Leeds LS6 2LN	429478	435767

The extent of this Contaminated Land (the Land) is indicated in red on the plan (the Plan) (Schedule 1).

Leeds City Council, as enforcing authority in relation to the Land, is precluded by section 78H(5)(d) of the 1990 Act from serving a Remediation Notice and has therefore prepared this Remediation Statement in accordance with section 78H(7) and (8).

The things which are expected to be done by way of remediation and the period within which each of these things are expected to be done are set out in Schedule 2.

Particulars of the substances and the significant harm by reason of which the Land is Contaminated Land are set out in Schedule 3.

The current use of the Land is residential housing with private gardens.

The name of the organisation that is expected to do each of the things set out in Schedule 2 to this Remediation Statement is Leeds City Council.

Leeds City Council's address for the purposes of this Remediation Statement is:

**The Contaminated Land Team  
Leeds City Council  
City Development  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD**

Telephone: **0113 247 8156**  
Fax: **0113 247 6484**  
Email: **contaminatedland@leeds.gov.uk**

Enquires relating to this Remediation Statement should be made to the team as detailed above.

**Signed:** 

**Position:** **Minerals, Waste and Contaminated Land Manager**

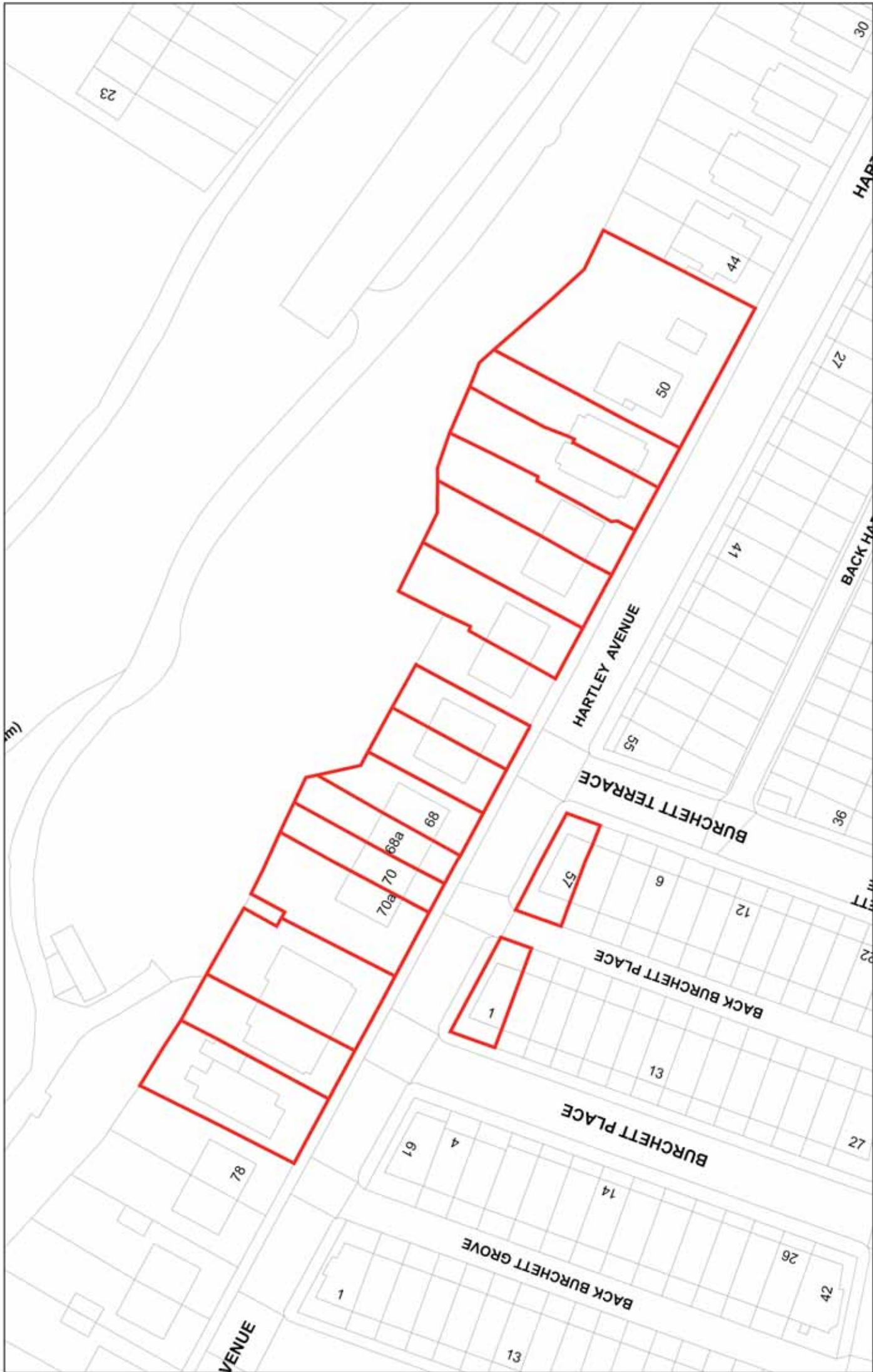
**Date:** **1<sup>st</sup> March 2010**



## Schedule 1

### **Location and Extent of Contaminated Land to which this Remediation Statement Relates**

All the Land edged in red on the Plan attached to this Statement.



## Schedule 2

### **Remediation Requirements and Periods (Section 78H(7)(b))**

The Remediation Actions detailed in this Schedule fall under the definition of Remedial Treatment Actions as defined in Section 78A(7)(b) of the 1990 Act. These Actions are intended to secure the remediation of all of the significant pollutant linkages identified in Schedule 3, and as such are characterised as a “shared action” as defined by Paragraph D.21(b) and a “common action” as defined by Paragraph D.22 (1a) of the Statutory Guidance contained in the DEFRA Circular 01/2006.

The requirements of the Remedial Treatment Actions are to carry out works to prevent the effects of the Significant Possibility of Significant Harm of the Contaminated Land identified in Schedule 1, and address the significant pollutant(s) identified in Schedule 3.

The Remedial Treatment Actions described in this Schedule are referable to the land identified in Schedule 1.

The Remedial Treatment Actions will comprise the removal of 600mm of the contaminated soil from the gardens of the properties identified in Schedule 1, the laying of a geomembrane and marker layer and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions described in this Schedule are expected to be completed by 31 October 2010.

## Schedule 3

### **Particulars of Substances and the Significant Possibility of Significant Harm**

See Records of Determination appended (refs CLRoD-PLS00007X\_v2, CLRoD-PLS00007X\* and CLRoD-PLS00007X/50 Hartley Avenue)



## PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990

### RECORD OF DETERMINATION THAT LAND IS CONTAMINATED LAND

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following properties:

- **52, 54, 56, 58, 60, 64, 66, 68, 68a, 70, 70a, 72 Hartley Avenue (LS6 2LP)**
  - **57 Hartley Avenue (LS6 2LW)**
  - **1 Burchett Place (LS6 2LN)**
- MEANWOOD, LEEDS**

*(Identified on the attached plan (referenced as figure 6 from Parsons Brinckerhoff's Interpretative Report) as the shaded land within the red boundary)*

**National grid reference 429504 435780**

("the Land")

Site reference number PLS00007X

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.

The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

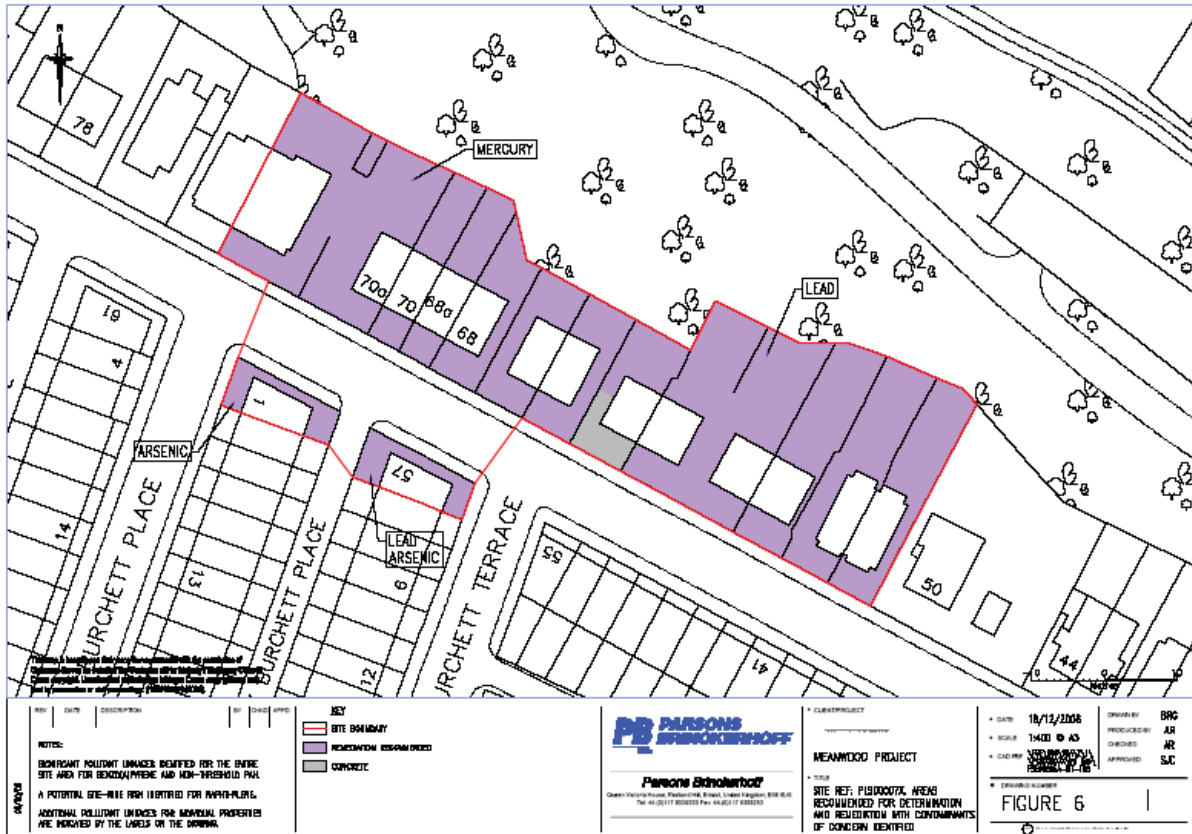
Dated 22 July 2009

Stephen Speak  
Deputy Chief Planning Officer  
City Development, Leeds City Council, The Leonardo Building  
2 Rossington Street, Leeds LS2 8HD

**The Land at:**

- 52, 54, 56, 58, 60, 64, 66, 68, 68a, 70, 70a, 72 Hartley Avenue (LS6 2LP)
  - 57 Hartley Avenue (LS6 2LW)
  - 1 Burchett Place (LS6 2LN)
- MEANWOOD, LEEDS**

(Identified on the plan below (referenced as figure 6 from Parsons Brinckerhoff's Interpretative Report) as the shaded land within the red boundary)



Since Parsons Brinckerhoff's Interpretative report was finalised, on closer inspection it was found that all garden areas are concreted at 62 Hartley Avenue. As such, no significant pollutant linkage exists as the pathways listed in Section 1 of the Schedule below do not apply to this property. 62 Hartley Avenue is therefore no longer considered to be Contaminated Land. This Record of Determination therefore supersedes the Record of Determination dated 11 May 2009 (ref CLRoD-PLS00007X) and the determination for 62 Hartley Avenue is now considered revoked.

## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the houses.

The significant pollutant linkages found are outlined in the following table:

<b>Pollutants</b>	<b>Pathways</b>	<b>Receptor</b>
Site wide benzo(a)pyrene and combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils + localised arsenic, lead and mercury in surface soils	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these source-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is residential properties with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

Report – “Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime” prepared by Land Quality Management (LQM) for Leeds City Council dated 10 January 2008 (LQM Ref No 0931, Client Ref No 2947421)

This report included a review of the following data specific to the site PLS00007X:

- Leeds City Council initial limited soil sampling work in November 2006
  - o total number of soil augering holes = 4
  - o total number of soil samples analysed = 10

- Leeds City Council additional limited soil sampling work in August 2007
  - o total number of soil augering holes = 1
  - o total number of soil samples analysed = 2

LQM concluded that the available datasets appeared to indicate the existence of potentially significant pollutant linkages in the area within which the site in question formed a part, within the context of the Part 2A contaminated land regime. LQM recommended additional detailed monitoring of the site to provide suitable, robust and defensible evidence on which any potential determinations under Part 2A could be based for PLS00007X.

Report – “Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated May 2009 (ref FSE96695A.2078)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008:

- total number of hand dug pits = 44
- total number of soil samples analysed = 106

Based on a statistical review of Parsons Brinckerhoff’s data, it was concluded that site-wide contamination of benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present, with localised contamination of arsenic, lead and mercury.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying. The historical plans dated from the 1850s to 1908 show quarrying within the site boundary. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill the quarry and/or provide a development platform for the current residential development.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the site. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parsons Brinckerhoff’s review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from all properties aiming to provide good coverage across the site.



The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

The ground conditions were divided into two types:

- 'soil' exhibiting topsoil-like geological properties (typically 0-300mm below ground level) and
- 'waste' generally comprehensive or granular made ground (typically underlying the 'soil')

Comparison with generic screening values against the 'soil' and 'waste' data indicated the following:

- 'soil' data
  - o site-wide exceedances of arsenic, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene and dibenzo(a,h)anthracene
  - o individual exceedances of chromium, lead, mercury, naphthalene, indeno(1,2,3-cd)pyrene and benzo(g,h,i)perylene,
- 'waste' data
  - o site-wide exceedances of naphthalene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene and benzo(g,h,i)perylene
  - o individual exceedances of arsenic, mercury, copper, fluoranthene and aliphatic hydrocarbons (>EC10-EC12 and >EC12-16)

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved deriving site specific assessment criteria against which to compare the analytical results for those parameters that had exceeded the generic assessment criteria. An overall summary from this further assessment taken from Parsons Brinckerhoff's report is provided below:

- Parsons Brinckerhoff has assessed that the entire site area is likely to meet the definition of contaminated land under Part 2A of the Environmental Protection Act 1990 (i.e. that there is the significant possibility of significant harm occurring to the modelled receptor) owing to site-wide contamination with benzo(a)pyrene and non-threshold PAH.
- A site-wide potential risk from naphthalene within waste material has been identified and further assessment of this risk is advised, including monitoring for the presence of naphthalene vapour, to test the existence of the indoor inhalation pathway.
- Additional significant pollutant linkages associated with arsenic, mercury and lead have been identified at individual properties.

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish these contaminants are unlikely to represent a significant possibility

of significant harm and have therefore been excluded as a possible basis for determination as Contaminated Land.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polycyclic aromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of site-wide benzo(a)pyrene and other polycyclic aromatic hydrocarbons and localised arsenic, lead and mercury identified at the properties at the site to represent a significant possibility of significant harm.**

Further naphthalene monitoring works have now been completed for the site. It has been concluded that naphthalene levels at the site are not sufficient to cause this PLS00007X site to meet the definition of Contaminated Land. For further information, please refer to the 'Naphthalene Monitoring Addendum Report, PLS00007X and PLS00018X. Meanwood, Leeds' prepared by Parsons Brinckerhoff for Leeds City Council dated July 2009 (ref FSE96695A.2154).

## 6 - REFERENCES

### Site Specific Information

#### Parsons Brinckerhoff

"Naphthalene Monitoring Addendum Report, PLS00007X and PLS00018X. Meanwood, Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*July 2009 (ref FSE96695A.2154)*)

#### Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*May 2009, ref FSE96695A.2078*)

#### Land Quality Management

"Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime" prepared by Land Quality Management for Leeds City Council (*10 January 2008, LQM Ref No 0931, Client Ref No 2947421*)

### Statutory Guidance

#### DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

#### Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

#### Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

#### DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

#### DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

#### Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

#### Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)



## PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990

### RECORD OF DETERMINATION THAT LAND IS CONTAMINATED LAND

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following properties:

- **74 and 76 Hartley Avenue (LS6 2LP)**  
**MEANWOOD, LEEDS**

*(Identified on the attached plan (referenced as figure 4 from Parson Brinkckerhoff's Factual & Interpretative Report) as the shaded land)*

**National grid reference 429469 435800**

("the Land")

Site reference number PLS00007X\*

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

**The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.**

**The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.**

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

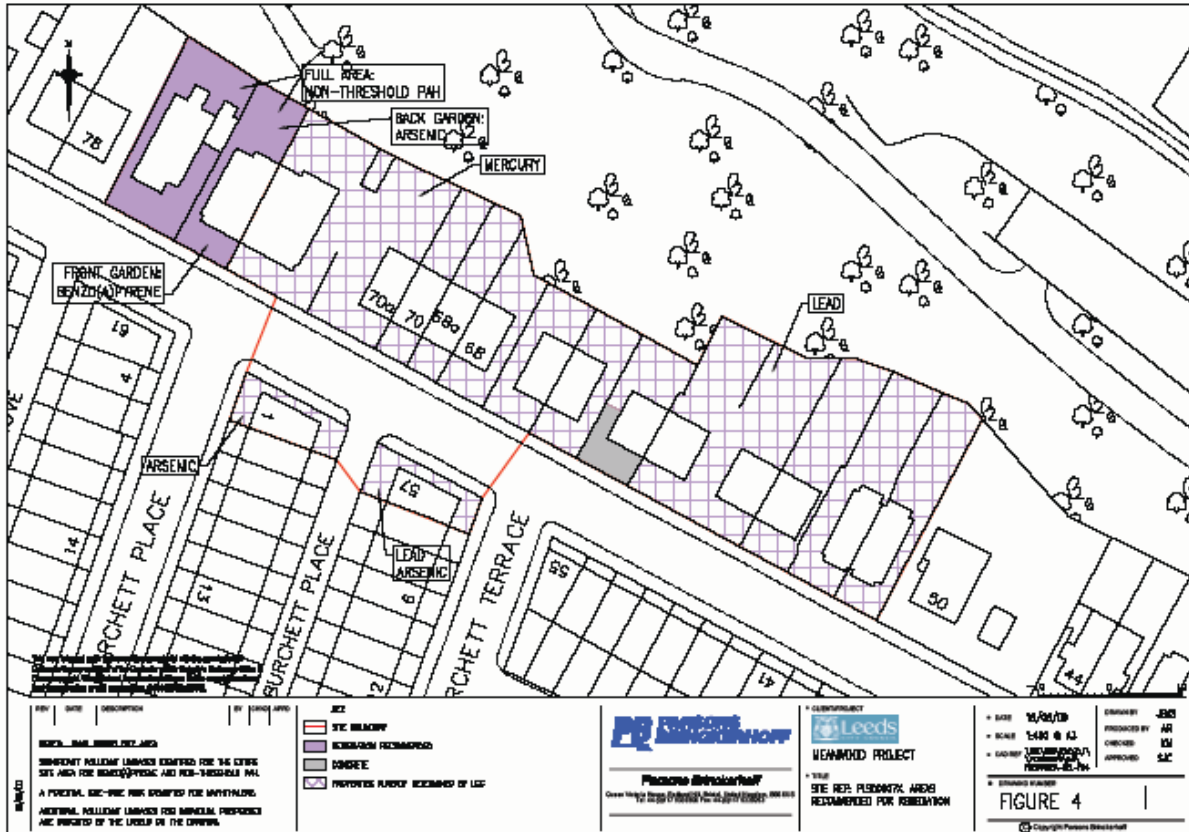
Dated 16 July 2009

Stephen Speak  
Deputy Chief Planning Officer  
City Development, Leeds City Council, The Leonardo Building  
2 Rossington Street, Leeds LS2 8HD

**The Land at:**

**- 74 and 76 Hartley Avenue (LS6 2LP)  
MEANWOOD, LEEDS**

(Identified on the plan below (referenced as figure 4 from Parson Brinkckerhoff's Factual & Interpretative Report) as the shaded land)



Please note that the hatched area on the plan refers to a previous Record of Determination (ref CLRoD-PLS00007X) made for these properties by Leeds City Council on 11 May 2009. This hatched area is the site referred to as PLS00007X; the shaded area on the plan which is the subject of this Record of Determination is referred to as PLS00007X\*.

## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the houses.

The significant pollutant linkages found are outlined in the following table:

<b>Pollutants</b>	<b>Pathways</b>	<b>Receptor</b>
Site wide combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils + localised benzo(a)pyrene	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these source-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is residential properties with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

Report – “Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime” prepared by Land Quality Management (LQM) for Leeds City Council dated 10 January 2008 (LQM Ref No 0931, Client Ref No 2947421)

This report included a review of the following data specific to the site PLS00007X:

- Leeds City Council initial limited soil sampling work in November 2006
  - o total number of soil augering holes = 4
  - o total number of soil samples analysed = 10
- Leeds City Council additional limited soil sampling work in August 2007
  - o total number of soil augering holes = 1

- total number of soil samples analysed = 2

LQM concluded that the available datasets appeared to indicate the existence of potentially significant pollutant linkages in the area within which the site in question formed a part, within the context of the Part 2A contaminated land regime. LQM recommended additional detailed monitoring of the site to provide suitable, robust and defensible evidence on which any potential determinations under Part 2A could be based for PLS00007X.

Report – “Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated May 2009 (ref FSE96695A.2078)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008:

- total number of hand dug pits = 44
- total number of soil samples analysed = 106

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present, with localised contamination of arsenic, lead and mercury.

Report – “Combined Phase 1 Delineation Factual & Interpretative Site Investigation Addendum Report, PLS00007X\*. Meanwood, Leeds” prepared by Parsons Brinckerhoff for Leeds City Council (July 2009, ref FSE96695A.2151 – Issue 2 Final)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in March 2009:

- total number of hand dug pits = 6
- total number of soil samples analysed = 12

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of combined non-threshold polyaromatic hydrocarbons and localised contamination of benzo(a)pyrene was present. Although localised elevated arsenic was also identified within the report, this significant pollutant linkage has not been included in this Record of Determination as the levels found may not be indicative of significant possibility of significant harm given recently published guidance.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying. The historical plans dated from the 1850s to 1908 show quarrying within the site boundary. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill the quarry and/or provide a development platform for the current residential development of PLS00007X and PLS00007X\*.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the site. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parson Brinckerhoff's review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from all properties aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

The ground conditions were divided into two types:

- 'soil' exhibiting topsoil-like geological properties (typically 0-300mm below ground level) and
- 'waste' generally comprehensive or granular made ground (typically underlying the 'soil')

Comparison with generic screening values against the 'soil' and 'waste' data indicated the following:

- 'soil' data
  - o site-wide exceedances of arsenic, fluoranthene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene and dibenzo(a,h)anthracene
  - o individual exceedances of lead
- 'waste' data
  - o site-wide exceedances of fluoranthene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene and benzo(g,h,i)perylene
  - o individual exceedances of arsenic

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved deriving site specific assessment criteria against which to compare the analytical results for those parameters that had exceeded the generic assessment criteria. An overall summary from this further assessment taken from Parsons Brinckerhoff's report is provided below:

- Parsons Brinckerhoff has assessed that the entire site area is likely to meet the definition of contaminated land under Part 2A of the Environmental Protection Act



- 1990 (i.e. that there is the significant possibility of significant harm occurring to the modelled receptor) owing to site-wide contamination with non-threshold PAH.
- Additional significant pollutant linkages associated with benzo(a)pyrene have been identified at 74 Hartley Avenue.

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish these contaminants are unlikely to represent a significant possibility of significant harm and have therefore been excluded as a possible basis for determination as Contaminated Land. For arsenic, it is acknowledged that this contaminant was identified by Parsons Brinckerhoff as being present on the site at levels that may represent significant possibility of significant harm. However, as discussed previously it has been decided not to include arsenic in this Record of Determination.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of site-wide polyaromatic hydrocarbons and localised benzo(a)pyrene identified at the properties at the site to represent a significant possibility of significant harm.**

## 6 - REFERENCES

### Site Specific Information

#### Parsons Brinckerhoff

"Combined Phase 1 Delineation Factual & Interpretative Site Investigation Addendum Report, PLS00007\*. Meanwood, Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*July 2009, ref FSE96695A.2151 – Issue 2 Final*)

#### Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*May 2009, ref FSE96695A.2078*)

#### Land Quality Management

"Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime" prepared by Land Quality Management for Leeds City Council (*10 January 2008, LQM Ref No 0931, Client Ref No 2947421*)

### Statutory Guidance

#### DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

#### Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

#### Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

#### DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

#### DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

#### Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

#### Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)



## PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990

### RECORD OF DETERMINATION THAT LAND IS CONTAMINATED LAND

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following property:

- **50 Hartley Avenue (LS6 2LP)**  
**MEANWOOD, LEEDS**

*(Identified on the attached plan as the land within the red boundary)*

**National grid reference 429578 435745**

("the Land")

Site reference number – PLS00007X/50 Hartley Avenue

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.

The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

Dated 23 October 2009

Stephen Speak  
Deputy Chief Planning Officer  
City Development, Leeds City Council, The Leonardo Building  
2 Rossington Street, Leeds LS2 8HD

**The Land at:**

- **50 Hartley Avenue (LS6 2LP)**  
**MEANWOOD, LEEDS**

*(Identified on the plan below as the land within the red line boundary)*



## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the house.

The significant pollutant linkages found are outlined in the following table:

<b>Pollutants</b>	<b>Pathways</b>	<b>Receptor</b>
Site wide combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these source-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is a residential property with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

Report – “Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime” prepared by Land Quality Management (LQM) for Leeds City Council dated 10 January 2008 (LQM Ref No 0931, Client Ref No 2947421)

Although this report does not refer specifically to 50 Hartley Avenue, it includes data collected from properties at the PLS00007X site in the immediate vicinity and north west of 50 Hartley Avenue.

This report included a review of the following data specific to the site PLS00007X:

- Leeds City Council initial limited soil sampling work in November 2006
  - o total number of soil augering holes = 4

- total number of soil samples analysed = 10
- Leeds City Council additional limited soil sampling work in August 2007
  - total number of soil augering holes = 1
  - total number of soil samples analysed = 2

LQM concluded that the available datasets appeared to indicate the existence of potentially significant pollutant linkages in the area within the context of the Part 2A contaminated land regime. LQM recommended additional detailed monitoring of the site to provide suitable, robust and defensible evidence on which any potential determinations under Part 2A could be based for PLS00007X.

Report – “Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated May 2009 (ref FSE96695A.2078)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008 collected from properties at the PLS00007X site in the immediate vicinity and north west of 50 Hartley Avenue.

- total number of hand dug pits = 44
- total number of soil samples analysed = 106

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present, with localised contamination of arsenic, lead and mercury.

Report – “Naphthalene Monitoring Report, PLS00007X and PLS00018X. Meanwood, Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated July 2009 (ref FSE96695A.2154)

This report includes information on soil vapour monitoring work carried out by Parsons Brinckerhoff in March and April 2009 at 4 properties. Two of those properties are located in the area to the north west and in the vicinity of 50 Hartley Avenue and two at another site in the local area:

- total number of hand dug pits window sample holes = 5
- total number of soil samples analysed = 11
- total number of monitoring wells installed = 4
- total number of rounds of air monitoring carried out = 5
- total number of subfloor voids monitored = 1

Air monitoring for naphthalene has been carried out by Parsons Brinckerhoff at two properties in PLS00007X, 54 and 70A Hartley Avenue, where maximum naphthalene concentrations of 2398 mg/kg and 357.7 mg/kg were detected, respectively. Active and passive air monitoring was carried out by Parsons Brinckerhoff using Tenax tubes in boreholes situated within gardens and in sub floor voids. Naphthalene was not detected above the detection limits in any of the samples and as such indoor and outdoor air inhalation of naphthalene were not considered potential pathways. Based on this information, a Contaminated Land Exposure Assessment risk assessment was carried out by Parsons Brinckerhoff omitting the vapour inhalation pathways to assess the risk posed by naphthalene within the soil and a Site Specific Assessment Criteria of 99 mg/kg was generated for the soil.

Report – “Site Investigation Report for Land at 50 Hartley Avenue (PLS00007X)”  
prepared by Leeds City Council (September 2009)

This report included information on the following detailed soil sampling work carried out by Leeds City Council in August 2009:

- total number of hand dug pits = 9
- total number of soil samples analysed = 15

Based on a statistical review of Leeds City Council's data, it was concluded that site-wide contamination of combined non-threshold polyaromatic hydrocarbons was present on the site that posed a significant possibility of significant harm in relation to a 0-6 year old female child.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying as noted on the historical plans dated from the 1850s to 1908. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill quarries and/or provide a development platform for the current residential development area.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Leeds City Council undertook a detailed site investigation and assessment of 50 Hartley Avenue to characterise the amount and extent of contamination present, and conclude whether this property should be determined as Contaminated Land.

Leeds City Council's review of their site investigation data also considered all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from the front, side and rear gardens of the property aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria as derived by Parsons Brinckerhoff for PLS00007X. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

Comparison with generic screening values against the soil analytical data indicated the following:

- site-wide exceedances of lead, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3,-c,d)pyrene and dibenzo(a,h)anthracene
- individual exceedances of naphthalene, copper, zinc, vanadium and lead

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved using site specific assessment criteria (derived by Parsons Brinckerhoff for use on PLS00007X) against which the analytical results for those parameters that had exceeded the generic assessment criteria were compared. An overall summary from this further assessment taken from Leeds City Council's report is provided below:

- Site-wide contamination with non-threshold PAHs was identified at 50 Hartley Avenue.
- Although one elevated level of naphthalene was found this was not considered to be significant.
- Localised elevated levels of copper, zinc, vanadium and lead have not been considered further as a Significant Pollutant Linkage exists due to the presence of non-threshold PAHs present at the site and any remediation to address the non-threshold PAHs are likely to address the elevated levels of copper, zinc, vanadium and lead.

Based on the above findings 50 Hartley Avenue meets the definition of Contaminated Land under Part 2A of the Environmental Protection Act 1990 and should be determined as such.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of site-wide non-threshold polyaromatic hydrocarbons at the site to represent a significant possibility of significant harm.**



## 6 - REFERENCES

### Site Specific Information

#### Leeds City Council

"Site Investigation Report for Land at 50 Hartley Avenue (PLS00007X)" prepared by Leeds City Council (September 2009)

#### Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (May 2009, ref FSE96695A.2078)

#### Land Quality Management

"Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime" prepared by Land Quality Management for Leeds City Council (10 January 2008, LQM Ref No 0931, Client Ref No 2947421)

#### Parsons Brinckerhoff

"Naphthalene monitoring report, PLS00007X and PLS00018X. Meanwood, Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (July 2009, ref FSE96695A.2154)

### Statutory Guidance

#### DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (September 2006)

### Procedural Guidance

#### Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (May 2006)

#### Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (2007)

#### DEFRA

Applying the Definition of Contaminated Land under Part 2A of the Environmental Protection Act 1990 (July 2008)

#### DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (22 July 2008)

#### Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (23 September 2008)

#### Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (June 2001) + accompanying annual review reports

STATEMENT of  
REMEDIAL TREATMENT ACTIONS  
CARRIED OUT

PLS00018X



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**STATEMENT of  
REMEDIAL TREATMENT ACTIONS CARRIED OUT**

**PREPARED BY LEEDS CITY COUNCIL**

A Remediation Statement was prepared by Leeds City Council in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (Appendix 1). The Remedial Treatment Actions identified in Schedule 2 of this Remediation Statement have now been completed for the following properties in Table 1:

<b>Table 1 - Address of properties no longer considered to represent the Significant Possibility of Significant Harm</b>	<b>Easting</b>	<b>Northing</b>
Land at 1 Claremont Crescent, Headingley, Leeds LS6 2BL	428933	436379
Land at 2 Claremont Crescent, Headingley, Leeds LS6 2BL	428917	436400
Land at 3 Claremont Crescent, Headingley, Leeds LS6 2BL	428929	436374
Land at 4 Claremont Crescent, Headingley, Leeds LS6 2BL	428912	436397
Land at 5 Claremont Crescent, Headingley, Leeds LS6 2BL	428921	436367
Land at 6 Claremont Crescent, Headingley, Leeds LS6 2BL	428903	436393
Land at 7 Claremont Crescent, Headingley, Leeds LS6 2BL	428919	436362
Land at 8 Claremont Crescent, Headingley, Leeds LS6 2BL	428897	436391
Land at 9 Claremont Crescent, Headingley, Leeds LS6 2BL	428908	436357
Land at 10 Claremont Crescent, Headingley, Leeds LS6 2BL	428889	436382
Land at 11 Claremont Crescent, Headingley, Leeds LS6 2BL	428903	436357
Land at 12 Claremont Crescent, Headingley, Leeds LS6 2BL	428887	436377
Land at 14 Claremont Crescent, Headingley, Leeds LS6 2BL	428888	436366
Land at 16 Claremont Crescent, Headingley, Leeds LS6 2BL	428892	436361
Land at 483 Meanwood Road, Meanwood, Leeds LS6 2BH	428969	436361
Land at 485 Meanwood Road, Meanwood, Leeds LS6 2BH	428966	436365
Land at 487 Meanwood Road, Meanwood, Leeds LS6 2BH	428961	436374
Land at 489 Meanwood Road, Meanwood, Leeds LS6 2BH	428956	436377
Land at 491 Meanwood Road, Meanwood, Leeds LS6 2BH	428951	436385

Land at 493 Meanwood Road, Meanwood, Leeds LS6 2BH	428947	436390
Land at 495 Meanwood Road, Meanwood, Leeds LS6 2BH	428932	436411
Land at 497 Meanwood Road, Meanwood, Leeds LS6 2BH	428929	436416
Land at 499 Meanwood Road, Meanwood, Leeds LS6 2BH	428923	436423
Land at 501 Meanwood Road, Meanwood, Leeds LS6 2BH	428919	436427

The above properties are shown on the plan in Schedule 1 of Appendix 1 and represent the extent of the land (the Land).

The Remedial Treatment Actions broadly comprised the removal of contaminated soil to a depth of 600mm from the gardens of the properties listed in Table 1, followed by the laying of geomembrane and geogrid layers and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions were carried out by the environmental consultant, Grontmij, and the remediation contractor, VHE. Further details are available in the following report produced by Grontmij:

- Remediation of Site PLS000018X/18X\*, Claremont Crescent/Meanwood Road, Meanwood, Leeds – Remediation Verification Report, dated October 2010 (Ref102286) Final version

Property specific reports are also available for review.

Based on the above reports and how the Land was left on 9 July 2010, Leeds City Council no longer considers that the Land meets the definition of Contaminated Land. This Statement confirms that the Remedial Treatment Actions outlined in the Remediation Statement for the Land have been carried out and that the Land no longer poses the Significant Possibility of Significant Harm with regard to human health.

Please note, however, that whilst this situation is the case as of 9 July 2010, Leeds City Council cannot give any guarantee, as with any other land, that any site will never be classified as Contaminated Land due to changes to such matters as, for example, legislation, amendments to risk assessment criteria, new site-specific data

Enquires relating to this Statement of Remedial Treatment Actions Carried Out should be made to the Contaminated Land team at Leeds City Council.

**Signed:** 

**Name:** Steve Speak

**Position:** Deputy Chief Planning Officer

**Date:** 18 November 2010

# Appendix 1

## **Remediation Statement**



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**REMEDIATION STATEMENT**

**PREPARED BY LEEDS CITY COUNCIL**

This Remediation Statement is prepared by Leeds City Council, in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (the 1990 Act).

The Contaminated Land to which this Remediation Statement relates is located at the following addresses:

<b>Address of properties determined as Contaminated Land</b>	<b>Easting</b>	<b>Northing</b>
Land at 1 Claremont Crescent, Headingley, Leeds LS6 2BL	428933	436379
Land at 2 Claremont Crescent, Headingley, Leeds LS6 2BL	428917	436400
Land at 3 Claremont Crescent, Headingley, Leeds LS6 2BL	428929	436374
Land at 4 Claremont Crescent, Headingley, Leeds LS6 2BL	428912	436397
Land at 5 Claremont Crescent, Headingley, Leeds LS6 2BL	428921	436367
Land at 6 Claremont Crescent, Headingley, Leeds LS6 2BL	428903	436393
Land at 7 Claremont Crescent, Headingley, Leeds LS6 2BL	428919	436362
Land at 8 Claremont Crescent, Headingley, Leeds LS6 2BL	428897	436391
Land at 9 Claremont Crescent, Headingley, Leeds LS6 2BL	428908	436357
Land at 10 Claremont Crescent, Headingley, Leeds LS6 2BL	428889	436382
Land at 11 Claremont Crescent, Headingley, Leeds LS6 2BL	428903	436357
Land at 12 Claremont Crescent, Headingley, Leeds LS6 2BL	428887	436377
Land at 14 Claremont Crescent, Headingley, Leeds LS6 2BL	428888	436366
Land at 16 Claremont Crescent, Headingley, Leeds LS6 2BL	428892	436361
Land at 483 Meanwood Road, Meanwood, Leeds LS6 2BH	428969	436361
Land at 485 Meanwood Road, Meanwood, Leeds LS6 2BH	428966	436365
Land at 487 Meanwood Road, Meanwood, Leeds LS6 2BH	428961	436374
Land at 489 Meanwood Road, Meanwood, Leeds LS6 2BH	428956	436377
Land at 491 Meanwood Road, Meanwood, Leeds LS6 2BH	428951	436385
Land at 493 Meanwood Road, Meanwood, Leeds LS6 2BH	428947	436390
Land at 495 Meanwood Road, Meanwood, Leeds LS6 2BH	428932	436411

Land at 497 Meanwood Road, Meanwood, Leeds LS6 2BH	428929	436416
Land at 499 Meanwood Road, Meanwood, Leeds LS6 2BH	428923	436423
Land at 501 Meanwood Road, Meanwood, Leeds LS6 2BH	428919	436427

The extent of this Contaminated Land (the Land) is indicated in red on the plan (the Plan) (Schedule 1).

Leeds City Council, as enforcing authority in relation to the Land, is precluded by section 78H(5)(d) of the 1990 Act from serving a Remediation Notice and has therefore prepared this Remediation Statement in accordance with section 78H(7) and (8).

The things which are expected to be done by way of remediation and the period within which each of these things are expected to be done are set out in Schedule 2.

Particulars of the substances and the significant harm by reason of which the Land is Contaminated Land are set out in Schedule 3.

The current use of the Land is residential housing with private gardens.

The name of the organisation that is expected to do each of the things set out in Schedule 2 to this Remediation Statement is Leeds City Council.

Leeds City Council's address for the purposes of this Remediation Statement is:

**The Contaminated Land Team  
Leeds City Council  
City Development  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD**

Telephone: **0113 247 8156**  
Fax: **0113 247 6484**  
Email: **contaminatedland@leeds.gov.uk**

Enquires relating to this Remediation Statement should be made to the team as detailed above.

**Signed:** 

**Position:** **Minerals, Waste and Contaminated Land Manager**

**Date:** **1<sup>st</sup> March 2010**

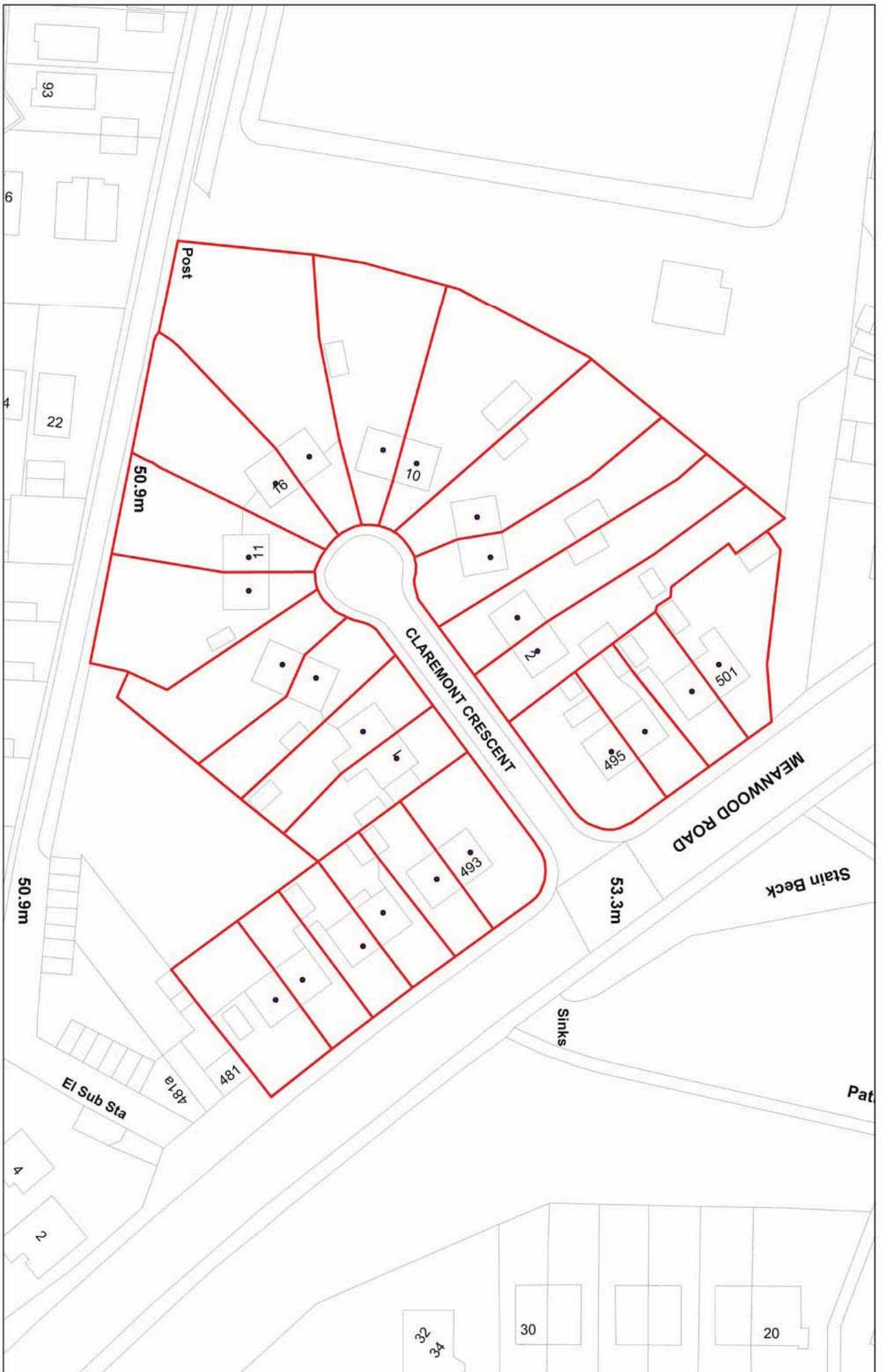
## Schedule 1

### **Location and Extent of Contaminated Land to which this Remediation Statement Relates**

All the Land edged in red on the Plan attached to this Statement.



Produced by the Development Department, Leeds City Council



## Schedule 2

### **Remediation Requirements and Periods (Section 78H(7)(b))**

The Remediation Actions detailed in this Schedule fall under the definition of Remedial Treatment Actions as defined in Section 78A(7)(b) of the 1990 Act. These Actions are intended to secure the remediation of all of the significant pollutant linkages identified in Schedule 3, and as such are characterised as a “shared action” as defined by Paragraph D.21(b) and a “common action” as defined by Paragraph D.22 (1a) of the Statutory Guidance contained in the DEFRA Circular 01/2006.

The requirements of the Remedial Treatment Actions are to carry out works to prevent the effects of the Significant Possibility of Significant Harm of the Contaminated Land identified in Schedule 1, and address the significant pollutant(s) identified in Schedule 3.

The Remedial Treatment Actions described in this Schedule are referable to the land identified in Schedule 1.

The Remedial Treatment Actions will comprise the removal of 600mm of the contaminated soil from the gardens of the properties identified in Schedule 1, the laying of a geomembrane and marker layer and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions described in this Schedule are expected to be completed by 31 October 2010.

## Schedule 3

### **Particulars of Substances and the Significant Possibility of Significant Harm**

See Records of Determination appended (refs CLRoD-PLS00018X and CLRoD-PLS00018X\*)



## PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990

### RECORD OF DETERMINATION THAT LAND IS CONTAMINATED LAND

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following properties:

- **4, 6, 8, 10, 12, 14 and 16 Claremont Crescent**  
**HEADINGLEY, LEEDS LS6 2BL**

*(Identified on the attached plan (referenced as figure 6 from Parson Brinckerhoff's Interpretative Report) as the shaded land within the red boundary)*

National grid reference 428880 436381

("the Land")

Site reference number PLS00018X

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.

The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

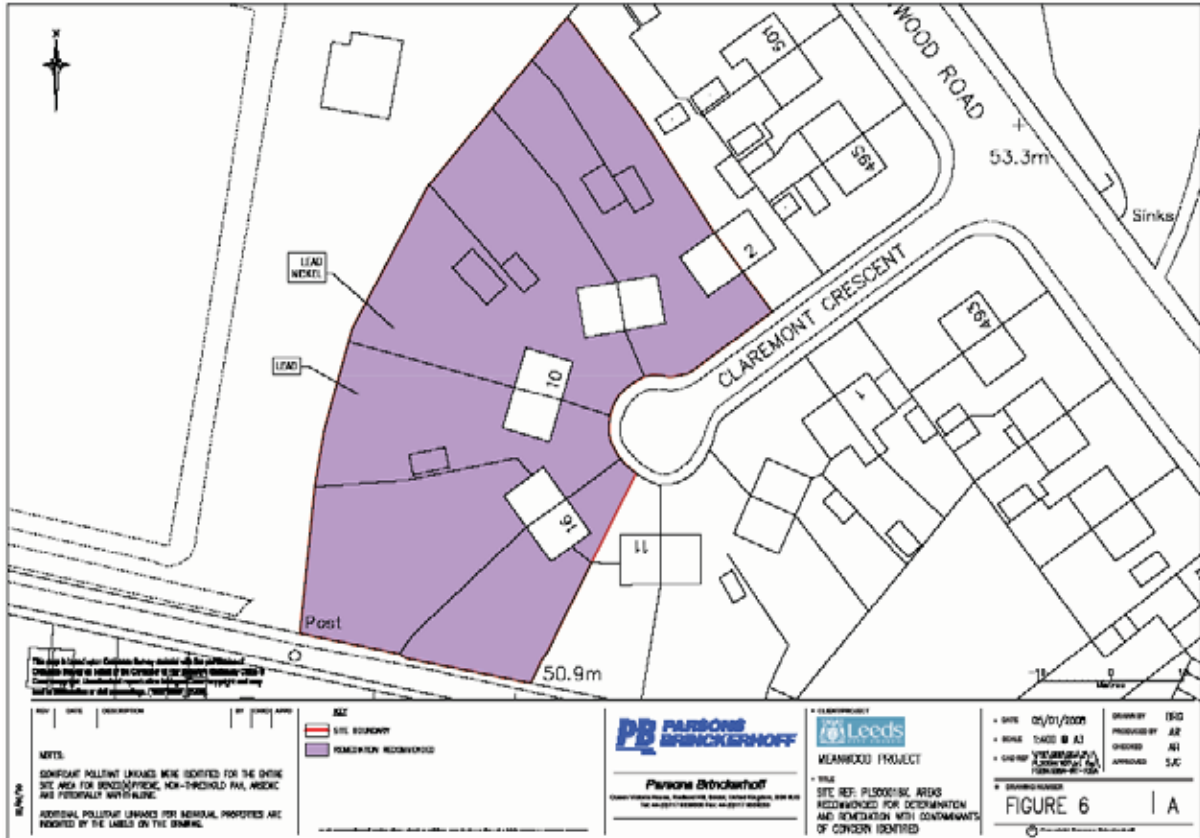
Dated 11 May 2009

Stephen Speak  
Strategy and Policy Chief Officer  
City Development  
Leeds City Council  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD

**The Land at:**

- **4, 6, 8, 10, 12, 14 and 16 Claremont Crescent  
HEADINGLEY, LEEDS LS6 2BL**

(Identified on the plan below (referenced as figure 6 from Parson Brinkckerhoff's Interpretative Report) as the shaded land within the red boundary)



## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the houses.

The significant pollutant linkages found are outlined in the following table:

Pollutants	Pathways	Receptor
Site wide arsenic, benzo(a)pyrene and combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils + localised lead and nickel in surface soils	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these pollutant-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is residential semi-detached properties with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

Report – “Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime” prepared by Land Quality Management (LQM) for Leeds City Council dated 10 January 2008 (LQM Ref No 0931, Client Ref No 2947421)

This report included a review of the following data specific to the site PLS00018X:

- Leeds City Council initial limited soil sampling work in February 2007
  - o total number of soil augering holes = 3
  - o total number of soil samples analysed = 6
- Leeds City Council additional limited soil sampling work in August 2007
  - o total number of soil augering holes = 3

- total number of soil samples analysed = 6

LQM concluded that the available datasets appeared to indicate the existence of potentially significant pollutant linkages in the context of the Part 2A contaminated land regime. LQM recommended additional detailed monitoring of the site to provide suitable, robust and defensible evidence on which any potential determinations under Part 2A could be based for PLS00018X.

Report – “Interpretative Site Investigation Report, PLS00018X. Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated April 2009 (ref FSE96695A.2084)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008:

- total number of hand dug pits = 29
- total number of soil samples analysed = 75

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of arsenic, benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present, with localised contamination of lead and nickel.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying. The historical plans dated 1908 (scale 1:2,500) and 1909 (scale 1:10,000) show a quarry within the site boundary. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill the quarry and/or provide a development platform for the current residential development.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the site. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parson Brinckerhoff’s review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from all properties aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment

criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

The ground conditions were divided into two types:

- 'soil' exhibiting topsoil-like geological properties (typically 0-300mm below ground level) and
- 'waste' generally comprehensive or granular made ground (typically underlying the 'soil')

Comparison with generic screening values against the 'soil' and 'waste' data indicated the following:

- 'soil' data
  - o site-wide exceedances of arsenic, cadmium, zinc and non-threshold PAHs
  - o individual exceedances of copper, lead and naphthalene
- 'waste' data
  - o site-wide exceedances of arsenic, cadmium, copper, zinc, non-threshold PAHs and naphthalene
  - o individual exceedances of lead, nickel and aliphatic hydrocarbons (>EC8-EC10 and >EC10-EC12).

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved deriving site specific assessment criteria against which to compare the analytical results for those parameters that had exceeded the generic assessment criteria. An overall summary from this further assessment taken from Parsons Brinckerhoff's report is provided below:

- Parsons Brinckerhoff has assessed that the entire site area is likely to meet the definition of contaminated land under Part 2A of the Environmental Protection Act 1990 (i.e. that there is the significant possibility of significant harm occurring to the modelled receptor) owing to site-wide contamination with benzo(a)pyrene, non-threshold PAH and arsenic.
- A site-wide potential risk from naphthalene within waste material has been identified and further assessment of this risk is advised, including monitoring for the presence of naphthalene vapour, to test the existence of the indoor inhalation pathway.
- Additional significant pollutant linkages associated with lead and nickel have been identified at individual properties.

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish these contaminants are unlikely to represent a significant possibility of significant harm and have therefore been excluded as a possible basis for determination as Contaminated Land.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of site-wide arsenic, benzo(a)pyrene and other polyaromatic hydrocarbons and localised nickel and lead identified at the properties at the site to represent a significant possibility of significant harm.**



Ongoing investigations are currently taking place with regard to naphthalene. Dependent on the outcome of these investigations, this record of determination will be updated accordingly.

## 6 - REFERENCES

### Site Specific Information

#### Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00018X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*April 2009, ref FSE96695A.2084*)

#### Land Quality Management

"Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime" prepared by Land Quality Management for Leeds City Council (*10 January 2008, LQM Ref No 0931, Client Ref No 2947421*)

### Statutory Guidance

#### DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

#### Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

#### Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

#### DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

#### DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

#### Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

#### Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)



## **PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990**

### **RECORD OF DETERMINATION** **THAT LAND IS CONTAMINATED LAND**

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following properties:

- **1, 2, 3, 5, 7, 9 and 11 Claremont Crescent, HEADINGLEY, LEEDS LS6 2BL; and**
- **483, 485, 487, 489, 491, 493, 495, 497, 499 and 501 Meanwood Road, MEANWOOD, LEEDS, LS6 2BH**

*(Identified on the attached plan (referenced as figure 4 from Parson Brinckerhoff's Factual and Interpretative Report) as the shaded land)*

National grid reference 428931 436384

("the Land")

Site reference number PLS00018X\*

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

**The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.**

**The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.**

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

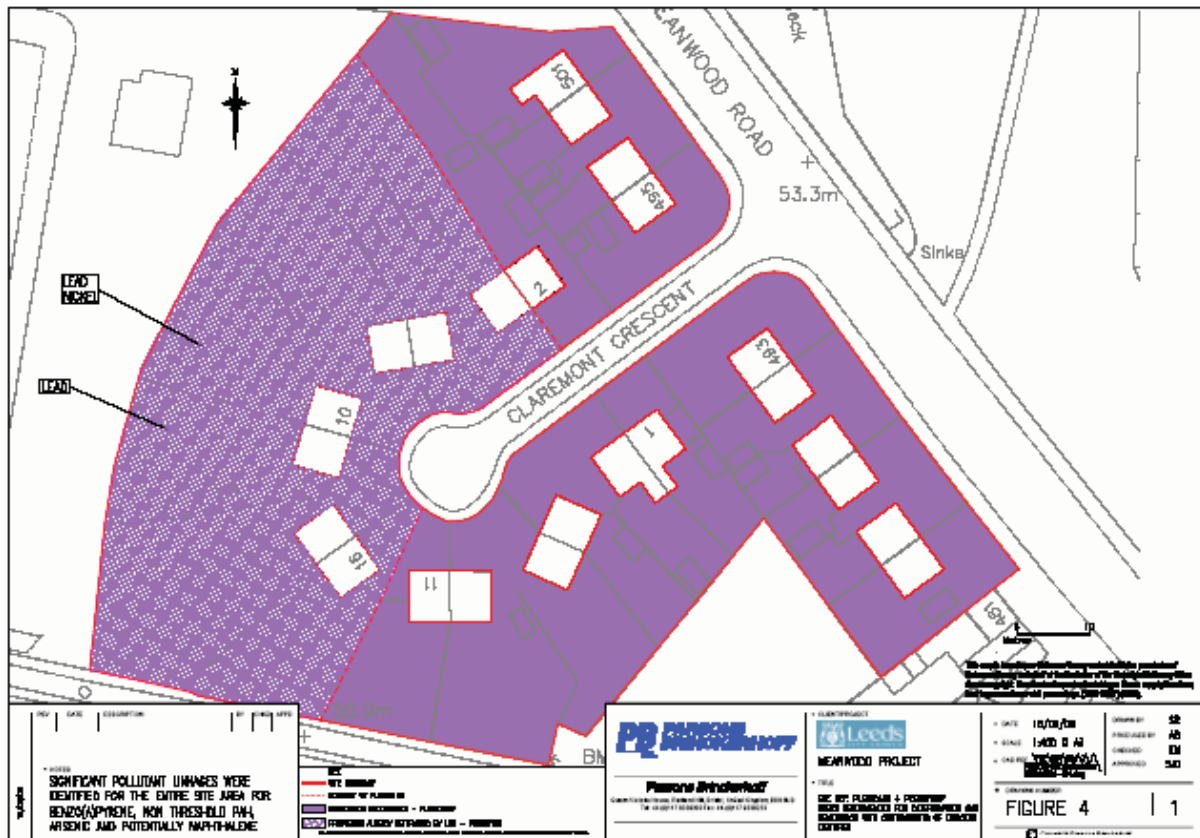
Dated 13 July 2009

Stephen Speak  
Deputy Chief Planning Officer  
City Development  
Leeds City Council  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD

## The Land at:

- 1, 2, 3, 5, 7, 9 and 11 Claremont Crescent, HEADINGLEY, LEEDS LS6 2BL; and
- 483, 485, 487, 489, 491, 493, 495, 497, 499 and 501 Meanwood Road, MEANWOOD, LEEDS, LS6 2BH

(Identified on the plan below (referenced as figure 4 from Parson Brinkckerhoff's Factual and Interpretative Report) as the shaded land)



Please note that the hatched area on the plan refers to a previous record of determination (ref CLRoD-PLS00018X) made for these properties by Leeds City Council on 11 May 2009. This hatched area is the site referred to as PLS00018; the shaded area on the plan which is the subject of this record of determination is referred to as PLS00018\*.

## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the houses.

The significant pollutant linkages found are outlined in the following table:

Pollutants	Pathways	Receptor
Site wide arsenic, benzo(a)pyrene and combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these pollutant-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is residential semi-detached properties with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

Report – “Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime” prepared by Land Quality Management (LQM) for Leeds City Council dated 10 January 2008 (LQM Ref No 0931, Client Ref No 2947421)

This report included a review of the following data specific to the site PLS00018X:

- Leeds City Council initial limited soil sampling work in February 2007
  - o total number of soil augering holes = 3
  - o total number of soil samples analysed = 6
- Leeds City Council additional limited soil sampling work in August 2007
  - o total number of soil augering holes = 3
  - o total number of soil samples analysed = 6

LQM concluded that the available datasets appeared to indicate the existence of potentially significant pollutant linkages in the context of the Part 2A contaminated land regime. LQM recommended additional detailed monitoring of the site to provide suitable, robust and defensible evidence on which any potential determinations under Part 2A could be based for PLS00018X.

Report – “Interpretative Site Investigation Report, PLS00018X. Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated April 2009 (ref FSE96695A.2084 – Issue 3)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008:

- total number of hand dug pits = 29
- total number of soil samples analysed = 75

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of arsenic, benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present, with localised contamination of lead and nickel.

Report – “Combined Phase 1 Delineation Factual & Interpretative Site Investigation Addendum Report, PLS00018\*. Meanwood, Leeds” prepared by Parsons Brinckerhoff for Leeds City Council (July 2009, ref FSE96695A.2125 – Issue 3 Final)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in March 2009:

- total number of hand dug pits = 60
- total number of soil samples analysed = 121

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of arsenic, benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying. The historical plans dated 1908 (scale 1:2,500) and 1909 (scale 1:10,000) show a quarry within the site boundary of PLS00018. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill the quarry and/or to provide a development platform for the current residential development that comprises PLS00018X and PLS000018X\*.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the site. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parsons Brinckerhoff’s review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list

below. This information also included site investigation data Parsons Brinckerhoff had collected at PLS00018X in August and September 2008.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from all properties aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A. Where statistical analysis was carried out, the datasets from PLS00018 and PLS00018\* were combined, where relevant, as the contamination found was considered to be from a source that was similar across both of these sites.

The ground conditions were divided into two types:

- 'soil' exhibiting topsoil-like geological properties (typically 0-300mm below ground level) and
- 'waste' generally comprehensive or granular made ground (typically underlying the 'soil')

Comparison with generic screening values against the 'soil' and 'waste' data indicated the following:

- 'soil' data
  - o site-wide exceedances of arsenic, non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) and naphthalene
  - o individual exceedances of cadmium, lead, zinc and fluoranthene
- 'waste' data
  - o site-wide exceedances of arsenic, non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) and naphthalene
  - o individual exceedances of mercury, nickel, copper, zinc, lead and fluoranthene

These identified contaminants of concern that were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. The detailed quantitative risk assessment involved deriving site specific assessment criteria against which to compare the analytical results. An overall summary from this further assessment taken from Parsons Brinckerhoff's report is provided below:

- Parsons Brinckerhoff has assessed that the entire site area is likely to meet the definition of contaminated land under Part 2A of the Environmental Protection Act 1990 (i.e. that there is the significant possibility of significant harm occurring to

the modelled receptor) owing to site-wide contamination with benzo(a)pyrene, non-threshold PAH and arsenic.

- A site-wide potential risk from naphthalene within waste material has been identified and further assessment of this risk is advised

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish that these contaminants are unlikely to represent a significant possibility of significant harm and they have therefore been excluded as a possible basis for determination as Contaminated Land.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of site-wide arsenic, benzo(a)pyrene and other polyaromatic hydrocarbons at the properties at the site to represent a significant possibility of significant harm.**

Ongoing investigations are currently taking place with regard to naphthalene. Dependent on the outcome of these investigations, this record of determination will be updated accordingly.



## 6 - REFERENCES

### Site Specific Information

#### Parsons Brinckerhoff

"Combined Phase 1 Delineation Factual & Interpretative Site Investigation Addendum Report, PLS00018\*. Meanwood, Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*July 2009, ref FSE96695A.2125 – Issue 3 Final*)

#### Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00018X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*April 2009, ref FSE96695A.2084 – Issue 3*)

#### Land Quality Management

"Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime" prepared by Land Quality Management for Leeds City Council (*10 January 2008, LQM Ref No 0931, Client Ref No 2947421*)

### Statutory Guidance

#### DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

#### Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

#### Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

#### DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

#### DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

#### Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

#### Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)

STATEMENT of  
REMEDIAL TREATMENT ACTIONS  
CARRIED OUT

PLS00007X



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**STATEMENT of  
REMEDIAL TREATMENT ACTIONS CARRIED OUT**

**PREPARED BY LEEDS CITY COUNCIL**

A Remediation Statement was prepared by Leeds City Council in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (Appendix 1). The Remedial Treatment Actions identified in Schedule 2 of this Remediation Statement have now been completed for the following properties in Table 1:

<b>Table 1 - Address of properties no longer considered to represent the Significant Possibility of Significant Harm</b>	<b>Easting</b>	<b>Northing</b>
Land at 50 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429572	435745
Land at 52 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429562	435750
Land at 54 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429559	435752
Land at 56 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429549	435755
Land at 57 Hartley Avenue, Woodhouse, Leeds LS6 2LW	429497	435757
Land at 58 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429545	435758
Land at 60 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429528	435768
Land at 64 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429520	435772
Land at 66 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429516	435774
Land at 68 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429508	435778
Land at 68A Hartley Avenue, Woodhouse, Leeds LS6 2LP	429498	435775
Land at 70 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429502	435788
Land at 70A Hartley Avenue, Woodhouse, Leeds LS6 2LP	429494	435786
Land at 72 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429481	435796
Land at 74 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429473	435799
Land at 76 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429465	435806
Land at 1 Burchett Place, Headingley, Leeds LS6 2LN	429478	435767

The above properties are shown on the plan in Schedule 1 of Appendix 1 and represent the extent of the land (the Land).

The Remedial Treatment Actions broadly comprised the removal of contaminated soil to a depth of 600mm from the gardens of the properties listed in Table 1, followed by the laying of geomembrane and geogrid layers and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions were carried out by the environmental consultant, Grontmij, and the remediation contractor, VHE. Further details are available in the following report produced by Grontmij:

- Remediation of Site PLS00007X/7X\*/7X/50, Hartley Avenue/Burchett Place, Leeds – Remediation Verification Report, dated October 2010 (Ref102286) Final version

Property specific reports are also available for review.

Based on the above reports and how the Land was left on 9 July 2010, Leeds City Council no longer considers that the Land meets the definition of Contaminated Land. This Statement confirms that the Remedial Treatment Actions outlined in the Remediation Statement for the Land have been carried out and that the Land no longer poses the Significant Possibility of Significant Harm with regard to human health.

Please note, however, that whilst this situation is the case as of 9 July 2010, Leeds City Council cannot give any guarantee, as with any other land, that any site will never be classified as Contaminated Land due to changes to such matters as, for example, legislation, amendments to risk assessment criteria, new site-specific data.

Enquires relating to this Statement of Remedial Treatment Actions Carried Out should be made to the Contaminated Land team at Leeds City Council.

**Signed:** 

**Name:** Steve Speak

**Position:** Deputy Chief Planning Officer

**Date:** 18 November 2010

# Appendix 1

## **Remediation Statement**



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**REMEDICATION STATEMENT**

**PREPARED BY LEEDS CITY COUNCIL**

This Remediation Statement is prepared by Leeds City Council, in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (the 1990 Act).

The Contaminated Land to which this Remediation Statement relates is located at the following addresses:

<b>Address of properties determined as Contaminated Land</b>	<b>Easting</b>	<b>Northing</b>
Land at 50 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429572	435745
Land at 52 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429562	435750
Land at 54 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429559	435752
Land at 56 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429549	435755
Land at 57 Hartley Avenue, Woodhouse, Leeds LS6 2LW	429497	435757
Land at 58 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429545	435758
Land at 60 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429528	435768
Land at 64 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429520	435772
Land at 66 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429516	435774
Land at 68 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429508	435778
Land at 68A Hartley Avenue, Woodhouse, Leeds LS6 2LP	429498	435775
Land at 70 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429502	435788
Land at 70A Hartley Avenue, Woodhouse, Leeds LS6 2LP	429494	435786
Land at 72 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429481	435796
Land at 74 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429473	435799
Land at 76 Hartley Avenue, Woodhouse, Leeds LS6 2LP	429465	435806
Land at 1 Burchett Place, Headingley, Leeds LS6 2LN	429478	435767

The extent of this Contaminated Land (the Land) is indicated in red on the plan (the Plan) (Schedule 1).

Leeds City Council, as enforcing authority in relation to the Land, is precluded by section 78H(5)(d) of the 1990 Act from serving a Remediation Notice and has therefore prepared this Remediation Statement in accordance with section 78H(7) and (8).

The things which are expected to be done by way of remediation and the period within which each of these things are expected to be done are set out in Schedule 2.

Particulars of the substances and the significant harm by reason of which the Land is Contaminated Land are set out in Schedule 3.

The current use of the Land is residential housing with private gardens.

The name of the organisation that is expected to do each of the things set out in Schedule 2 to this Remediation Statement is Leeds City Council.

Leeds City Council's address for the purposes of this Remediation Statement is:

**The Contaminated Land Team  
Leeds City Council  
City Development  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD**

Telephone: **0113 247 8156**  
Fax: **0113 247 6484**  
Email: **contaminatedland@leeds.gov.uk**

Enquires relating to this Remediation Statement should be made to the team as detailed above.

**Signed:** 

**Position:** **Minerals, Waste and Contaminated Land Manager**

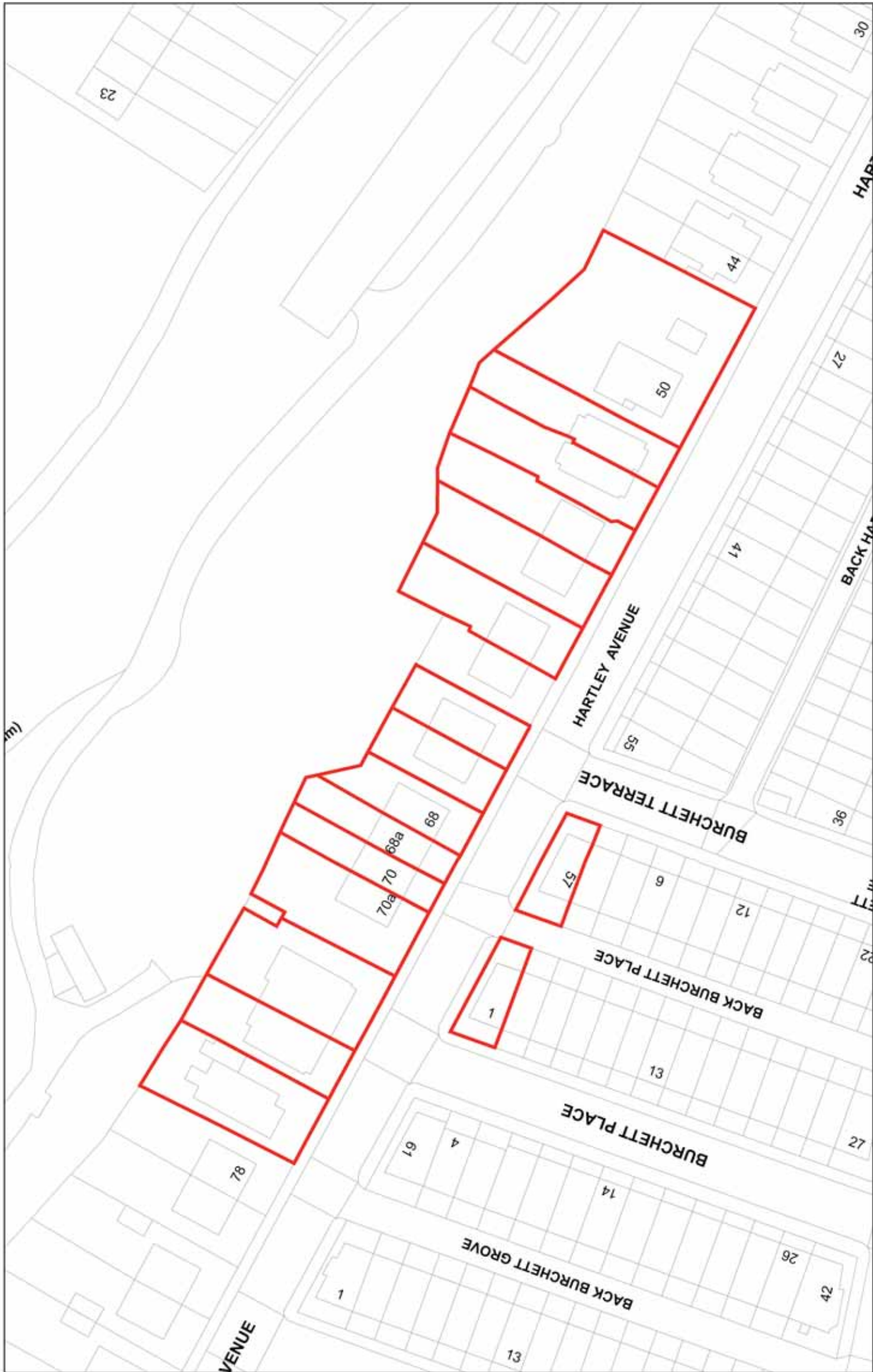
**Date:** **1<sup>st</sup> March 2010**

## Schedule 1

### **Location and Extent of Contaminated Land to which this Remediation Statement Relates**

All the Land edged in red on the Plan attached to this Statement.





## Schedule 2

### **Remediation Requirements and Periods (Section 78H(7)(b))**

The Remediation Actions detailed in this Schedule fall under the definition of Remedial Treatment Actions as defined in Section 78A(7)(b) of the 1990 Act. These Actions are intended to secure the remediation of all of the significant pollutant linkages identified in Schedule 3, and as such are characterised as a “shared action” as defined by Paragraph D.21(b) and a “common action” as defined by Paragraph D.22 (1a) of the Statutory Guidance contained in the DEFRA Circular 01/2006.

The requirements of the Remedial Treatment Actions are to carry out works to prevent the effects of the Significant Possibility of Significant Harm of the Contaminated Land identified in Schedule 1, and address the significant pollutant(s) identified in Schedule 3.

The Remedial Treatment Actions described in this Schedule are referable to the land identified in Schedule 1.

The Remedial Treatment Actions will comprise the removal of 600mm of the contaminated soil from the gardens of the properties identified in Schedule 1, the laying of a geomembrane and marker layer and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions described in this Schedule are expected to be completed by 31 October 2010.

## Schedule 3

### **Particulars of Substances and the Significant Possibility of Significant Harm**

See Records of Determination appended (refs CLRoD-PLS00007X\_v2, CLRoD-PLS00007X\* and CLRoD-PLS00007X/50 Hartley Avenue)



## PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990

### RECORD OF DETERMINATION THAT LAND IS CONTAMINATED LAND

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following properties:

- **52, 54, 56, 58, 60, 64, 66, 68, 68a, 70, 70a, 72 Hartley Avenue (LS6 2LP)**
  - **57 Hartley Avenue (LS6 2LW)**
  - **1 Burchett Place (LS6 2LN)**
- MEANWOOD, LEEDS**

*(Identified on the attached plan (referenced as figure 6 from Parsons Brinckerhoff's Interpretative Report) as the shaded land within the red boundary)*

**National grid reference 429504 435780**

("the Land")

Site reference number PLS00007X

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.

The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

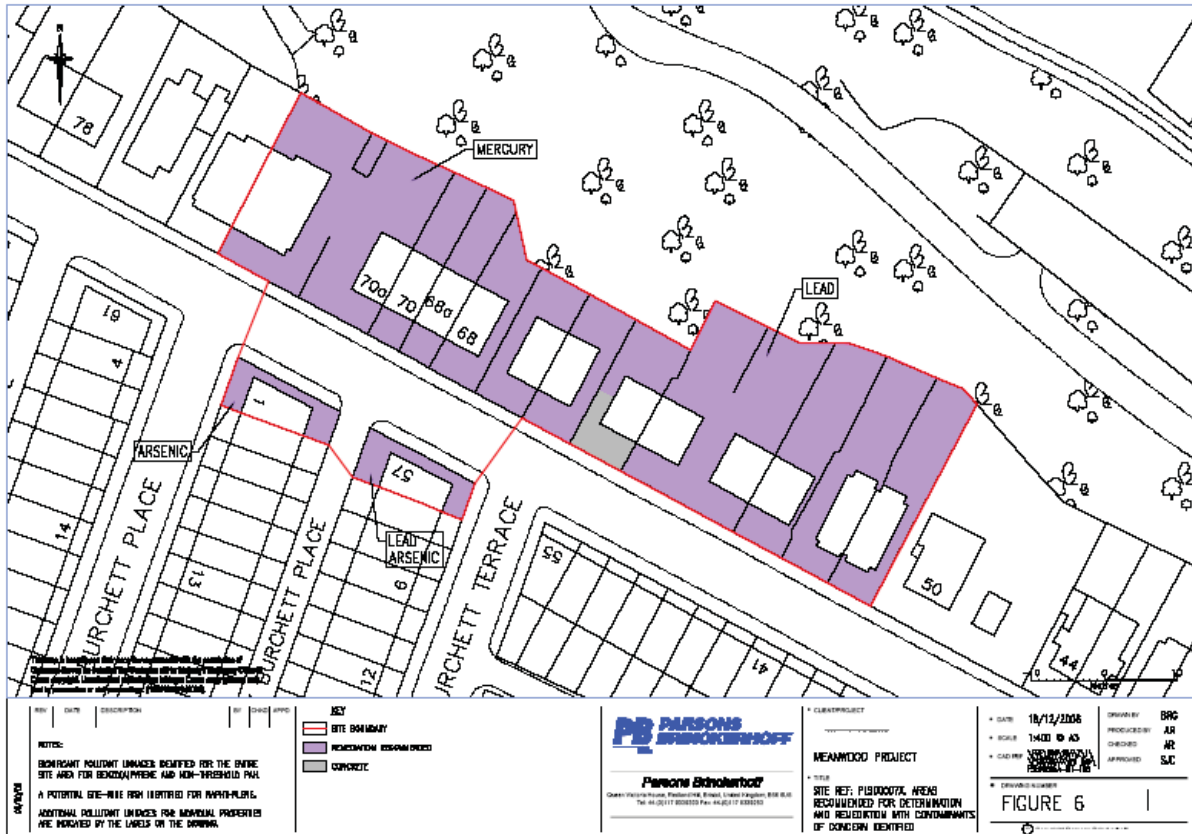
Dated 22 July 2009

Stephen Speak  
Deputy Chief Planning Officer  
City Development, Leeds City Council, The Leonardo Building  
2 Rossington Street, Leeds LS2 8HD

**The Land at:**

- 52, 54, 56, 58, 60, 64, 66, 68, 68a, 70, 70a, 72 Hartley Avenue (LS6 2LP)
  - 57 Hartley Avenue (LS6 2LW)
  - 1 Burchett Place (LS6 2LN)
- MEANWOOD, LEEDS**

(Identified on the plan below (referenced as figure 6 from Parsons Brinckerhoff's Interpretative Report) as the shaded land within the red boundary)



Since Parsons Brinckerhoff's Interpretative report was finalised, on closer inspection it was found that all garden areas are concreted at 62 Hartley Avenue. As such, no significant pollutant linkage exists as the pathways listed in Section 1 of the Schedule below do not apply to this property. 62 Hartley Avenue is therefore no longer considered to be Contaminated Land. This Record of Determination therefore supersedes the Record of Determination dated 11 May 2009 (ref CLRoD-PLS00007X) and the determination for 62 Hartley Avenue is now considered revoked.

## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the houses.

The significant pollutant linkages found are outlined in the following table:

<b>Pollutants</b>	<b>Pathways</b>	<b>Receptor</b>
Site wide benzo(a)pyrene and combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils + localised arsenic, lead and mercury in surface soils	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these source-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is residential properties with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

Report – “Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime” prepared by Land Quality Management (LQM) for Leeds City Council dated 10 January 2008 (LQM Ref No 0931, Client Ref No 2947421)

This report included a review of the following data specific to the site PLS00007X:

- Leeds City Council initial limited soil sampling work in November 2006
  - o total number of soil augering holes = 4
  - o total number of soil samples analysed = 10

- Leeds City Council additional limited soil sampling work in August 2007
  - o total number of soil augering holes = 1
  - o total number of soil samples analysed = 2

LQM concluded that the available datasets appeared to indicate the existence of potentially significant pollutant linkages in the area within which the site in question formed a part, within the context of the Part 2A contaminated land regime. LQM recommended additional detailed monitoring of the site to provide suitable, robust and defensible evidence on which any potential determinations under Part 2A could be based for PLS00007X.

Report – “Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated May 2009 (ref FSE96695A.2078)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008:

- total number of hand dug pits = 44
- total number of soil samples analysed = 106

Based on a statistical review of Parsons Brinckerhoff’s data, it was concluded that site-wide contamination of benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present, with localised contamination of arsenic, lead and mercury.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying. The historical plans dated from the 1850s to 1908 show quarrying within the site boundary. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill the quarry and/or provide a development platform for the current residential development.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the site. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parsons Brinckerhoff’s review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from all properties aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

The ground conditions were divided into two types:

- 'soil' exhibiting topsoil-like geological properties (typically 0-300mm below ground level) and
- 'waste' generally comprehensive or granular made ground (typically underlying the 'soil')

Comparison with generic screening values against the 'soil' and 'waste' data indicated the following:

- 'soil' data
  - o site-wide exceedances of arsenic, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene and dibenzo(a,h)anthracene
  - o individual exceedances of chromium, lead, mercury, naphthalene, indeno(1,2,3-cd)pyrene and benzo(g,h,i)perylene,
- 'waste' data
  - o site-wide exceedances of naphthalene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene and benzo(g,h,i)perylene
  - o individual exceedances of arsenic, mercury, copper, fluoranthene and aliphatic hydrocarbons (>EC10-EC12 and >EC12-16)

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved deriving site specific assessment criteria against which to compare the analytical results for those parameters that had exceeded the generic assessment criteria. An overall summary from this further assessment taken from Parsons Brinckerhoff's report is provided below:

- Parsons Brinckerhoff has assessed that the entire site area is likely to meet the definition of contaminated land under Part 2A of the Environmental Protection Act 1990 (i.e. that there is the significant possibility of significant harm occurring to the modelled receptor) owing to site-wide contamination with benzo(a)pyrene and non-threshold PAH.
- A site-wide potential risk from naphthalene within waste material has been identified and further assessment of this risk is advised, including monitoring for the presence of naphthalene vapour, to test the existence of the indoor inhalation pathway.
- Additional significant pollutant linkages associated with arsenic, mercury and lead have been identified at individual properties.

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish these contaminants are unlikely to represent a significant possibility



of significant harm and have therefore been excluded as a possible basis for determination as Contaminated Land.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polycyclic aromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of site-wide benzo(a)pyrene and other polycyclic aromatic hydrocarbons and localised arsenic, lead and mercury identified at the properties at the site to represent a significant possibility of significant harm.**

Further naphthalene monitoring works have now been completed for the site. It has been concluded that naphthalene levels at the site are not sufficient to cause this PLS00007X site to meet the definition of Contaminated Land. For further information, please refer to the 'Naphthalene Monitoring Addendum Report, PLS00007X and PLS00018X. Meanwood, Leeds' prepared by Parsons Brinckerhoff for Leeds City Council dated July 2009 (ref FSE96695A.2154).

## 6 - REFERENCES

### Site Specific Information

#### Parsons Brinckerhoff

"Naphthalene Monitoring Addendum Report, PLS00007X and PLS00018X. Meanwood, Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*July 2009 (ref FSE96695A.2154)*)

#### Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*May 2009, ref FSE96695A.2078*)

#### Land Quality Management

"Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime" prepared by Land Quality Management for Leeds City Council (*10 January 2008, LQM Ref No 0931, Client Ref No 2947421*)

### Statutory Guidance

#### DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

#### Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

#### Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

#### DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

#### DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

#### Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

#### Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)



## **PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990**

### **RECORD OF DETERMINATION** **THAT LAND IS CONTAMINATED LAND**

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following properties:

**- 74 and 76 Hartley Avenue (LS6 2LP)**  
**MEANWOOD, LEEDS**

*(Identified on the attached plan (referenced as figure 4 from Parson Brinkckerhoff's Factual & Interpretative Report) as the shaded land)*

**National grid reference 429469 435800**

("the Land")

Site reference number PLS00007X\*

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

**The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.**

**The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.**

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

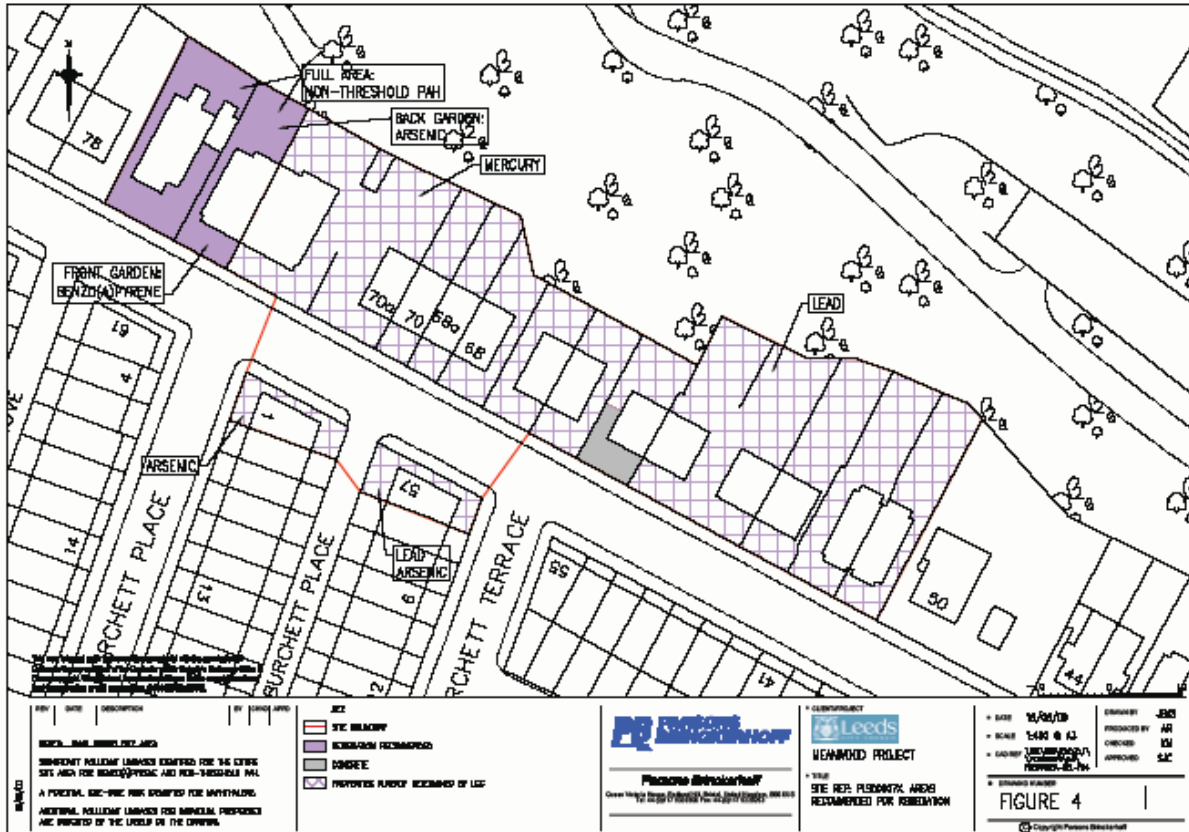
Dated 16 July 2009

Stephen Speak  
Deputy Chief Planning Officer  
City Development, Leeds City Council, The Leonardo Building  
2 Rossington Street, Leeds LS2 8HD

**The Land at:**

**- 74 and 76 Hartley Avenue (LS6 2LP)  
MEANWOOD, LEEDS**

(Identified on the plan below (referenced as figure 4 from Parson Brinkckerhoff's Factual & Interpretative Report) as the shaded land)



Please note that the hatched area on the plan refers to a previous Record of Determination (ref CLRoD-PLS00007X) made for these properties by Leeds City Council on 11 May 2009. This hatched area is the site referred to as PLS00007X; the shaded area on the plan which is the subject of this Record of Determination is referred to as PLS00007X\*.

## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the houses.

The significant pollutant linkages found are outlined in the following table:

<b>Pollutants</b>	<b>Pathways</b>	<b>Receptor</b>
Site wide combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils + localised benzo(a)pyrene	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these source-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is residential properties with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

Report – “Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime” prepared by Land Quality Management (LQM) for Leeds City Council dated 10 January 2008 (LQM Ref No 0931, Client Ref No 2947421)

This report included a review of the following data specific to the site PLS00007X:

- Leeds City Council initial limited soil sampling work in November 2006
  - o total number of soil augering holes = 4
  - o total number of soil samples analysed = 10
- Leeds City Council additional limited soil sampling work in August 2007
  - o total number of soil augering holes = 1

- total number of soil samples analysed = 2

LQM concluded that the available datasets appeared to indicate the existence of potentially significant pollutant linkages in the area within which the site in question formed a part, within the context of the Part 2A contaminated land regime. LQM recommended additional detailed monitoring of the site to provide suitable, robust and defensible evidence on which any potential determinations under Part 2A could be based for PLS00007X.

Report – “Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated May 2009 (ref FSE96695A.2078)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008:

- total number of hand dug pits = 44
- total number of soil samples analysed = 106

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present, with localised contamination of arsenic, lead and mercury.

Report – “Combined Phase 1 Delineation Factual & Interpretative Site Investigation Addendum Report, PLS00007X\*. Meanwood, Leeds” prepared by Parsons Brinckerhoff for Leeds City Council (July 2009, ref FSE96695A.2151 – Issue 2 Final)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in March 2009:

- total number of hand dug pits = 6
- total number of soil samples analysed = 12

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of combined non-threshold polyaromatic hydrocarbons and localised contamination of benzo(a)pyrene was present. Although localised elevated arsenic was also identified within the report, this significant pollutant linkage has not been included in this Record of Determination as the levels found may not be indicative of significant possibility of significant harm given recently published guidance.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying. The historical plans dated from the 1850s to 1908 show quarrying within the site boundary. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill the quarry and/or provide a development platform for the current residential development of PLS00007X and PLS00007X\*.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the site. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parson Brinckerhoff's review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from all properties aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

The ground conditions were divided into two types:

- 'soil' exhibiting topsoil-like geological properties (typically 0-300mm below ground level) and
- 'waste' generally comprehensive or granular made ground (typically underlying the 'soil')

Comparison with generic screening values against the 'soil' and 'waste' data indicated the following:

- 'soil' data
  - o site-wide exceedances of arsenic, fluoranthene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene and dibenzo(a,h)anthracene
  - o individual exceedances of lead
- 'waste' data
  - o site-wide exceedances of fluoranthene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene and benzo(g,h,i)perylene
  - o individual exceedances of arsenic

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved deriving site specific assessment criteria against which to compare the analytical results for those parameters that had exceeded the generic assessment criteria. An overall summary from this further assessment taken from Parsons Brinckerhoff's report is provided below:

- Parsons Brinckerhoff has assessed that the entire site area is likely to meet the definition of contaminated land under Part 2A of the Environmental Protection Act

1990 (i.e. that there is the significant possibility of significant harm occurring to the modelled receptor) owing to site-wide contamination with non-threshold PAH.

- Additional significant pollutant linkages associated with benzo(a)pyrene have been identified at 74 Hartley Avenue.

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish these contaminants are unlikely to represent a significant possibility of significant harm and have therefore been excluded as a possible basis for determination as Contaminated Land. For arsenic, it is acknowledged that this contaminant was identified by Parsons Brinckerhoff as being present on the site at levels that may represent significant possibility of significant harm. However, as discussed previously it has been decided not to include arsenic in this Record of Determination.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of site-wide polyaromatic hydrocarbons and localised benzo(a)pyrene identified at the properties at the site to represent a significant possibility of significant harm.**



## 6 - REFERENCES

### Site Specific Information

#### Parsons Brinckerhoff

"Combined Phase 1 Delineation Factual & Interpretative Site Investigation Addendum Report, PLS00007\*. Meanwood, Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*July 2009, ref FSE96695A.2151 – Issue 2 Final*)

#### Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*May 2009, ref FSE96695A.2078*)

#### Land Quality Management

"Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime" prepared by Land Quality Management for Leeds City Council (*10 January 2008, LQM Ref No 0931, Client Ref No 2947421*)

### Statutory Guidance

#### DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

#### Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

#### Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

#### DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

#### DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

#### Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

#### Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)



## PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990

### RECORD OF DETERMINATION THAT LAND IS CONTAMINATED LAND

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following property:

- **50 Hartley Avenue (LS6 2LP)**  
**MEANWOOD, LEEDS**

*(Identified on the attached plan as the land within the red boundary)*

**National grid reference 429578 435745**

("the Land")

Site reference number – PLS00007X/50 Hartley Avenue

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.

The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

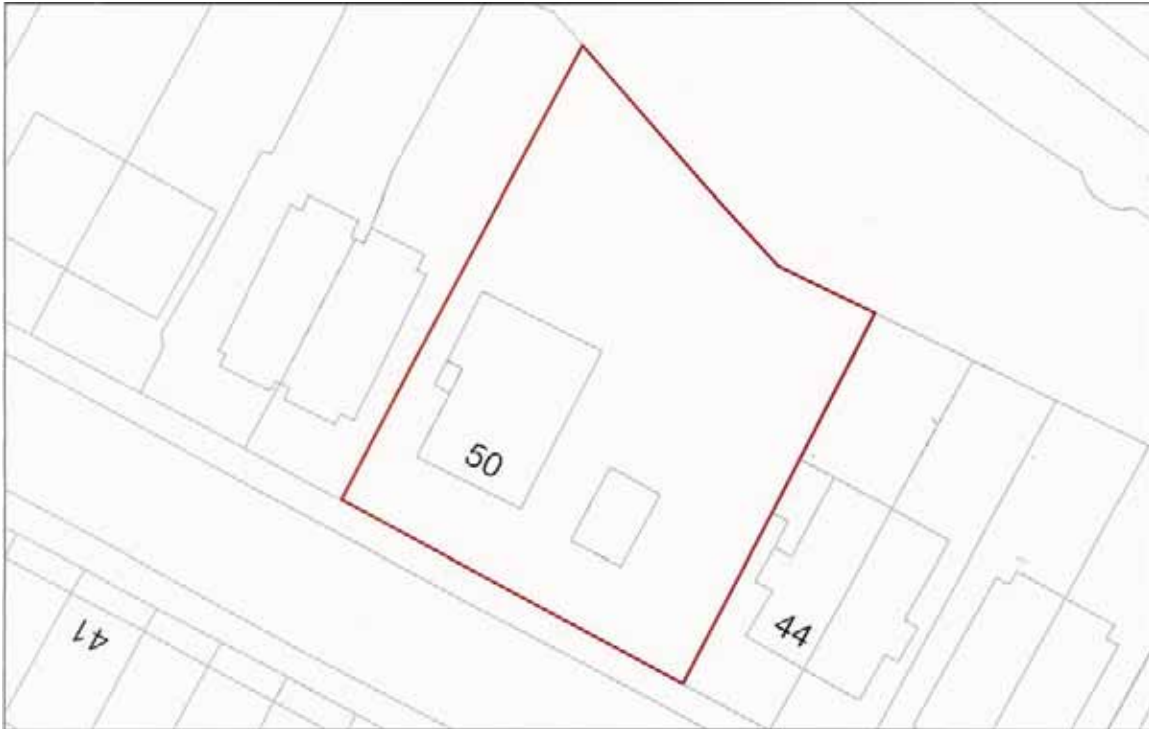
Dated 23 October 2009

Stephen Speak  
Deputy Chief Planning Officer  
City Development, Leeds City Council, The Leonardo Building  
2 Rossington Street, Leeds LS2 8HD

**The Land at:**

- **50 Hartley Avenue (LS6 2LP)**  
**MEANWOOD, LEEDS**

*(Identified on the plan below as the land within the red line boundary)*



## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the house.

The significant pollutant linkages found are outlined in the following table:

<b>Pollutants</b>	<b>Pathways</b>	<b>Receptor</b>
Site wide combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these source-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is a residential property with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

Report – “Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime” prepared by Land Quality Management (LQM) for Leeds City Council dated 10 January 2008 (LQM Ref No 0931, Client Ref No 2947421)

Although this report does not refer specifically to 50 Hartley Avenue, it includes data collected from properties at the PLS00007X site in the immediate vicinity and north west of 50 Hartley Avenue.

This report included a review of the following data specific to the site PLS00007X:

- Leeds City Council initial limited soil sampling work in November 2006
  - o total number of soil augering holes = 4

- total number of soil samples analysed = 10
- Leeds City Council additional limited soil sampling work in August 2007
  - total number of soil augering holes = 1
  - total number of soil samples analysed = 2

LQM concluded that the available datasets appeared to indicate the existence of potentially significant pollutant linkages in the area within the context of the Part 2A contaminated land regime. LQM recommended additional detailed monitoring of the site to provide suitable, robust and defensible evidence on which any potential determinations under Part 2A could be based for PLS00007X.

Report – “Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated May 2009 (ref FSE96695A.2078)

This report included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008 collected from properties at the PLS00007X site in the immediate vicinity and north west of 50 Hartley Avenue.

- total number of hand dug pits = 44
- total number of soil samples analysed = 106

Based on a statistical review of Parson Brinckerhoff’s data, it was concluded that site-wide contamination of benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present, with localised contamination of arsenic, lead and mercury.

Report – “Naphthalene Monitoring Report, PLS00007X and PLS00018X. Meanwood, Leeds” prepared by Parsons Brinckerhoff for Leeds City Council dated July 2009 (ref FSE96695A.2154)

This report includes information on soil vapour monitoring work carried out by Parsons Brinckerhoff in March and April 2009 at 4 properties. Two of those properties are located in the area to the north west and in the vicinity of 50 Hartley Avenue and two at another site in the local area:

- total number of hand dug pits window sample holes = 5
- total number of soil samples analysed = 11
- total number of monitoring wells installed = 4
- total number of rounds of air monitoring carried out = 5
- total number of subfloor voids monitored = 1

Air monitoring for naphthalene has been carried out by Parsons Brinckerhoff at two properties in PLS00007X, 54 and 70A Hartley Avenue, where maximum naphthalene concentrations of 2398 mg/kg and 357.7 mg/kg were detected, respectively. Active and passive air monitoring was carried out by Parsons Brinckerhoff using Tenax tubes in boreholes situated within gardens and in sub floor voids. Naphthalene was not detected above the detection limits in any of the samples and as such indoor and outdoor air inhalation of naphthalene were not considered potential pathways. Based on this information, a Contaminated Land Exposure Assessment risk assessment was carried out by Parsons Brinckerhoff omitting the vapour inhalation pathways to assess the risk posed by naphthalene within the soil and a Site Specific Assessment Criteria of 99 mg/kg was generated for the soil.

Report – “Site Investigation Report for Land at 50 Hartley Avenue (PLS00007X)”  
prepared by Leeds City Council (September 2009)

This report included information on the following detailed soil sampling work carried out by Leeds City Council in August 2009:

- total number of hand dug pits = 9
- total number of soil samples analysed = 15

Based on a statistical review of Leeds City Council's data, it was concluded that site-wide contamination of combined non-threshold polyaromatic hydrocarbons was present on the site that posed a significant possibility of significant harm in relation to a 0-6 year old female child.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying as noted on the historical plans dated from the 1850s to 1908. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill quarries and/or provide a development platform for the current residential development area.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Leeds City Council undertook a detailed site investigation and assessment of 50 Hartley Avenue to characterise the amount and extent of contamination present, and conclude whether this property should be determined as Contaminated Land.

Leeds City Council's review of their site investigation data also considered all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from the front, side and rear gardens of the property aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria as derived by Parsons Brinckerhoff for PLS00007X. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

Comparison with generic screening values against the soil analytical data indicated the following:

- site-wide exceedances of lead, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3,-c,d)pyrene and dibenzo(a,h)anthracene
- individual exceedances of naphthalene, copper, zinc, vanadium and lead

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved using site specific assessment criteria (derived by Parsons Brinckerhoff for use on PLS00007X) against which the analytical results for those parameters that had exceeded the generic assessment criteria were compared. An overall summary from this further assessment taken from Leeds City Council's report is provided below:

- Site-wide contamination with non-threshold PAHs was identified at 50 Hartley Avenue.
- Although one elevated level of naphthalene was found this was not considered to be significant.
- Localised elevated levels of copper, zinc, vanadium and lead have not been considered further as a Significant Pollutant Linkage exists due to the presence of non-threshold PAHs present at the site and any remediation to address the non-threshold PAHs are likely to address the elevated levels of copper, zinc, vanadium and lead.

Based on the above findings 50 Hartley Avenue meets the definition of Contaminated Land under Part 2A of the Environmental Protection Act 1990 and should be determined as such.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of site-wide non-threshold polyaromatic hydrocarbons at the site to represent a significant possibility of significant harm.**

## 6 - REFERENCES

### Site Specific Information

#### Leeds City Council

"Site Investigation Report for Land at 50 Hartley Avenue (PLS00007X)" prepared by Leeds City Council (September 2009)

#### Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00007X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (May 2009, ref FSE96695A.2078)

#### Land Quality Management

"Review of Information Relating to Five Sites in the Context of the Part 2A Contaminated Land Regime" prepared by Land Quality Management for Leeds City Council (10 January 2008, LQM Ref No 0931, Client Ref No 2947421)

#### Parsons Brinckerhoff

"Naphthalene monitoring report, PLS00007X and PLS00018X. Meanwood, Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (July 2009, ref FSE96695A.2154)

### Statutory Guidance

#### DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (September 2006)

### Procedural Guidance

#### Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (May 2006)

#### Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (2007)

#### DEFRA

Applying the Definition of Contaminated Land under Part 2A of the Environmental Protection Act 1990 (July 2008)

#### DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (22 July 2008)

#### Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (23 September 2008)

#### Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (June 2001) + accompanying annual review reports



# REMEDIATION STATEMENT

PLS00009X



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**REMEDIATION STATEMENT**

**PREPARED BY LEEDS CITY COUNCIL**

This Remediation Statement is prepared by Leeds City Council, in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (the 1990 Act).

The Contaminated Land to which this Remediation Statement relates is located at the following addresses:

<b>Address of properties determined as Contaminated Land</b>	<b>Easting</b>	<b>Northing</b>
Land at 69 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429335	435838
Land at 71 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429343	435834
Land at 73 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429350	435831
Land at 75 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429355	435828
Land at 77 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429361	435825
Land at 79 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429368	435823

The extent of this Contaminated Land (the Land) is indicated in red on the plan (the Plan) (Schedule 1).

Leeds City Council, as enforcing authority in relation to the Land, is precluded by section 78H(5)(d) of the 1990 Act from serving a Remediation Notice and has therefore prepared this Remediation Statement in accordance with section 78H(7) and (8).

The things which are expected to be done by way of remediation and the period within which each of these things are expected to be done are set out in Schedule 2.

Particulars of the substances and the significant harm by reason of which the Land is Contaminated Land are set out in Schedule 3.

The current use of the Land is residential housing with private gardens.

The organisation that is expected to do each of the things set out in Schedule 2 to this Remediation Statement is Leeds City Council.

Leeds City Council's address for the purposes of this Remediation Statement is:

**The Contaminated Land Team  
Leeds City Council  
City Development  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD**

Telephone: **0113 247 8156**  
Fax: **0113 247 6484**  
Email: **contaminatedland@leeds.gov.uk**

Enquires relating to this Remediation Statement should be made to the team as detailed above.

**Signed:** 

**Position:** **Minerals, Waste and Contaminated Land Manager**

**Date:** **29 September 2011**

## Schedule 1

### **Location and Extent of Contaminated Land to which this Remediation Statement Relates**

All the Land edged in red on the Plan attached to this Statement.



## Schedule 2

### **Remediation Requirements and Periods (Section 78H(7)(b))**

The Remediation Actions detailed in this Schedule fall under the definition of Remedial Treatment Actions as defined in Section 78A(7)(b) of the 1990 Act. These Actions are intended to secure the remediation of all of the significant pollutant linkages identified in Schedule 3, and as such are characterised as a “shared action” as defined by Paragraph D.21(b) and a “common action” as defined by Paragraph D.22 (1a) of the Statutory Guidance contained in the DEFRA Circular 01/2006.

The requirements of the Remedial Treatment Actions are to carry out works to prevent the effects of the Significant Possibility of Significant Harm of the Contaminated Land identified in Schedule 1, and address the significant pollutant(s) identified in Schedule 3.

The Remedial Treatment Actions described in this Schedule are referable to the land identified in Schedule 1.

The Remedial Treatment Actions will comprise the removal of 600mm depth of the contaminated soil from the gardens of the properties identified in Schedule 1, the laying of a geomembrane and marker layer and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions described in this Schedule are expected to be completed by 31 March 2012.

## Schedule 3

### **Particulars of Substances and the Significant Possibility of Significant Harm**

See Record of Determination appended (ref CLRoD-PLS00009X)



## **PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990**

### **RECORD OF DETERMINATION** **THAT LAND IS CONTAMINATED LAND**

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following properties:

**69, 71, 73, 75, 77, 79 Hartley Avenue,  
Woodhouse, Leeds LS6 2HY**

*(Identified on the attached plan as the shaded land within the red boundary)*

National grid reference 429353 435830

("the Land")

Site reference number PLS00009X

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

**The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.**

**The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.**

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

Dated 24 September 2010

Stephen Speak  
Deputy Strategy Chief Planning Officer  
City Development  
Leeds City Council  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD



**The Land at:**

**69, 71, 73, 75, 77, 79 Hartley Avenue,  
Woodhouse, Leeds LS6 2HY**

(Identified in Figure 1 below as the shaded land within the red boundary)

Figure 1: Plan showing the Land

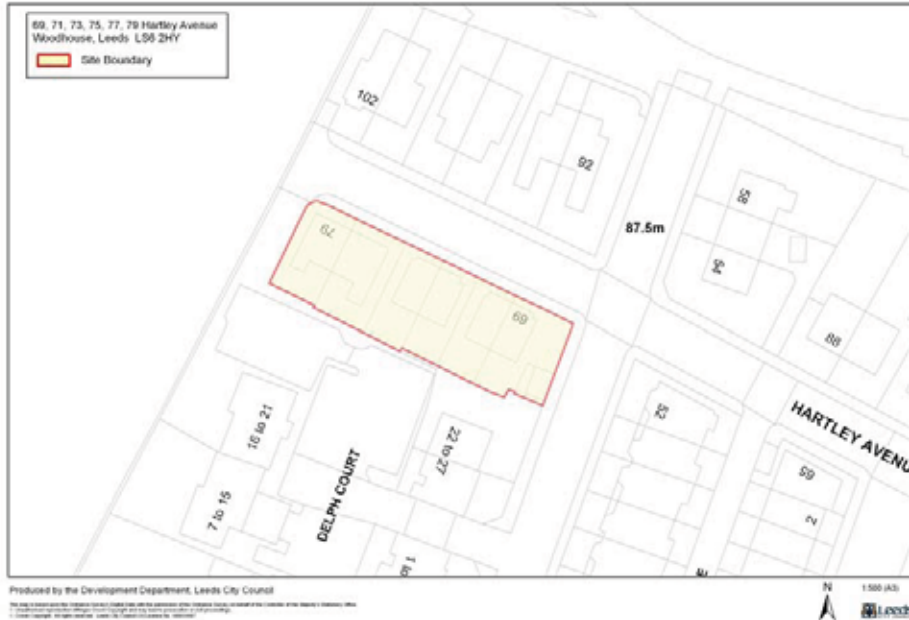
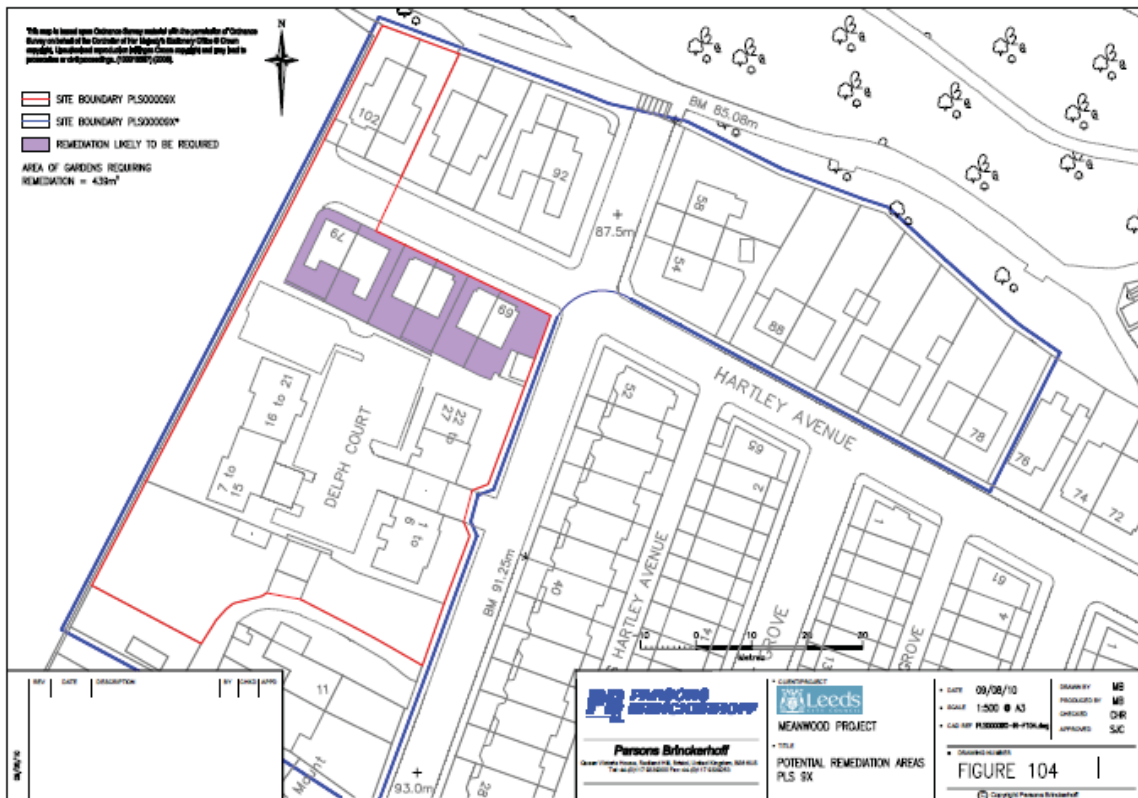


Figure 2: Plan showing the Land in relation to the original PLS00009X boundary



From the Interpretative Site Investigation Report, PLS00009X, Meanwood Leeds” by Parsons Brinckerhoff November 2009

## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the houses.

The significant pollutant linkages found are outlined in the following table:

Pollutants	Pathways	Receptor
Site wide benzo(a)pyrene and combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils.	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined properties)

In combination, these pollutant-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is residential semi-detached properties with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following report and evidence:

“Interpretative Site Investigation Report, PLS00009X, Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council, November 2009 (ref FSE96695A.2083)

The site investigation of PLS00009X included the Land at the 6 properties to be determined but also extended over a larger area. The following data, was obtained with respect to only the 6 determined properties:

- Leeds City Council initial limited soil sampling work in March 2007
  - o total number of soil augering holes at the 6 properties = 3
  - o total number of soil samples analysed from the 6 properties = 6

and also included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008:

- total number of hand dug pits at the 6 properties = 12
- total number of soil samples analysed from the 6 properties = 28

Based on a statistical review of Parson Brinckerhoff's data for the entire site, it was concluded that contamination of benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present on the Land of the 6 properties.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying. The historical plans dated 1893 (scale 1:2,500) and 1894 (scale 1:10,000) show a quarry within the site boundary. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill the quarry and/or provide a development platform for the current residential development.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the Land and surrounding area. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parson Brinckerhoff's review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from all properties aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

The ground conditions were divided into two types:

- 'soil' exhibiting topsoil-like geological properties (typically 0-300mm below ground level) and
- 'waste' generally comprehensive or granular made ground (typically underlying the 'soil')

Comparison with generic screening values against the 'soil' and 'waste' data indicated the following:

- 'soil' data
  - o Land-wide exceedances of benzo(a)pyrene and non-threshold PAHs
- 'waste' data
  - o Land-wide exceedances of benzo(a)pyrene and non-threshold PAHs

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved deriving site specific assessment criteria against which to compare the analytical results for those parameters that had exceeded the generic assessment criteria. An overall summary from this further assessment, which is applicable to the Land at the 6 properties, was taken from Parsons Brinckerhoff's report and is provided below:

- Parsons Brinckerhoff has assessed that the entire Land is likely to meet the definition of contaminated land under Part 2A of the Environmental Protection Act 1990 (i.e. that there is the significant possibility of significant harm occurring to the modelled receptor) owing to Land-wide contamination with benzo(a)pyrene and non-threshold PAH.

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish these contaminants are unlikely to represent a significant possibility of significant harm and have therefore been excluded as a possible basis for determination as Contaminated Land.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of widespread benzo(a)pyrene and the other non-threshold polyaromatic hydrocarbons identified in the Land of the properties to represent a significant possibility of significant harm.**

## 6 - REFERENCES

### Site Specific Information

Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00009X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*November 2009, ref FSE96695A.2083*)

### Statutory Guidance

DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)

# REMEDIATION STATEMENT

PLS00484X



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**REMEDICATION STATEMENT**

**PREPARED BY LEEDS CITY COUNCIL**

This Remediation Statement is prepared by Leeds City Council, in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (the 1990 Act).

The Contaminated Land to which this Remediation Statement relates is located at the following addresses:

<b>Address of properties determined as Contaminated Land</b>	<b>Easting</b>	<b>Northing</b>
Land at 17 Whack House Close, Yeadon, Leeds LS19 7LZ	420077	440894

The extent of this Contaminated Land (the Land) is indicated in red on the plan (the Plan) (Schedule 1).

Leeds City Council, as enforcing authority in relation to the Land, is precluded by section 78H(5)(d) of the 1990 Act from serving a Remediation Notice and has therefore prepared this Remediation Statement in accordance with section 78H(7) and (8).

The things which are expected to be done by way of remediation and the period within which each of these things are expected to be done are set out in Schedule 2.

Particulars of the substances and the significant harm by reason of which the Land is Contaminated Land are set out in Schedule 3.

The current use of the Land is residential housing with private gardens.

The organisation that is expected to do each of the things set out in Schedule 2 to this Remediation Statement is Leeds City Council.

Leeds City Council's address for the purposes of this Remediation Statement is:

**The Contaminated Land Team  
Leeds City Council  
City Development  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD**

Telephone: **0113 247 8156**  
Fax: **0113 247 6484**  
Email: **contaminatedland@leeds.gov.uk**

Enquires relating to this Remediation Statement should be made to the team as detailed above.

**Signed:** 

**Position:** **Minerals, Waste and Contaminated Land Manager**

**Date:** **29 September 2011**



## Schedule 1

### **Location and Extent of Contaminated Land to which this Remediation Statement Relates**

All the Land edged in red on the Plan attached to this Statement.



## Schedule 2

### **Remediation Requirements and Periods (Section 78H(7)(b))**

The Remediation Actions detailed in this Schedule fall under the definition of Remedial Treatment Actions as defined in Section 78A(7)(b) of the 1990 Act. These Actions are intended to secure the remediation of all of the significant pollutant linkages identified in Schedule 3, and as such are characterised as a “shared action” as defined by Paragraph D.21(b) and a “common action” as defined by Paragraph D.22 (1a) of the Statutory Guidance contained in the DEFRA Circular 01/2006.

The requirements of the Remedial Treatment Actions are to carry out works to prevent the effects of the Significant Possibility of Significant Harm of the Contaminated Land identified in Schedule 1, and address the significant pollutant(s) identified in Schedule 3.

The Remedial Treatment Actions described in this Schedule are referable to the land identified in Schedule 1.

The Remedial Treatment Actions will comprise the removal of 600mm depth of the contaminated soil from the gardens of the properties identified in Schedule 1, the laying of a geomembrane and marker layer and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions described in this Schedule are expected to be completed by 31 March 2012.

## Schedule 3

### **Particulars of Substances and the Significant Possibility of Significant Harm**

See Record of Determination appended (ref CLRoD-PLS00484X)



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990**

**RECORD OF DETERMINATION**  
**THAT LAND IS CONTAMINATED LAND**

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following property:

**17 Whack House Close,  
Yeadon, Leeds LS19 7LZ**

*(Identified on the attached plan as the shaded land within the red boundary)*

National grid reference 420077 440894

("the Land")

Site reference number PLS00484X

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

**The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.**

**The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.**

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

Dated 3 May 2011

Stephen Speak  
Deputy Chief Planning Officer  
City Development  
Leeds City Council  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD

**The Land at:**

**17 Whack House Close,  
Yeadon, Leeds LS19 7LZ**

*(Identified in Figure 1 below as the shaded land within the red boundary)*

*Figure 1: Plan showing the Land*



Produced by the Development Department, Leeds City Council  
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## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is debris from a works building which is alleged to have burnt down on the site.

The significant pollutant linkages found are outlined in the following table:

<b>Pollutants</b>	<b>Pathways</b>	<b>Receptor</b>
Site wide combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils.	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these pollutant-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is a residential semi-detached property with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

“Factual and Interpretative Site Investigation Report, ..... 17 Whack House Close ....., Yeadon, Leeds” prepared by Parsons Brinckerhoff for Leeds City Council, January 2011 (ref FSE97361A)

The following site investigation data, was obtained with respect to 17 Whack House Close:

- Leeds City Council initial limited soil sampling work in October 2007 and March 2009
  - o total number of soil augering holes at the property = 3
  - o total number of soil samples analysed from the property = 4

and also included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in July 2010:

- total number of hand dug pits at the property = 5
- total number of soil samples analysed from the property = 12

“Determination Report for PLS00484X. Conclusions for further work or determination”, prepared by Leeds City Council, March 2011.

The Determination Report for PLS00484X contained additional assessment of risk and included details of the rationale behind the conclusions reached for 17 Whack House Close.

Based on an individual statistical review of Parson Brinckerhoff’s data for the “shallow soils” at the property and the “deeper soils” at the property and the additional assessment of risk, it was concluded that contamination of combined non-threshold polyaromatic hydrocarbons was present in the “shallow soils” on the Land at 17 Whack House Close. “Shallow soils” were representative of the strata encountered within the upper 0.6m of soil, “deeper soils” were representative of the strata encountered below 0.6m. Where the stratum was present both above and below 0.6m depth, the analytical results for the sample taken from that stratum were included both within the shallow and deep datasets.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The property that is being determined is in the location of a former works building which is alleged to have burnt down. The historical plans dated 1933 (scale 1:10000), 1956 (scale 1:10000), 1963 (scale 1:1250), 1964 (scale 1:1:2500) and 1967 (scale 1:10000) show a building present where 17 Whack House Close currently stands. On the 1972 historic plan (scale 1:1250), the building is no longer shown as being present. It is unclear what the source of contamination is although it is likely to be associated with debris from the building which is alleged to have burnt down.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the Land and surrounding area. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parson Brinckerhoff’s review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils.



The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

The ground conditions were divided into two types:

- 'shallow soil' soil that is representative of the strata encountered within the upper 0.6m
- 'deeper soil' soil that is representative of the strata encountered below 0.6m.

Comparison with generic screening values against the 'shallow soil' and 'deep soil' data indicated the following:

- 'shallow soil' data
  - o Property wide exceedances of combined non-threshold PAHs, naphthalene, arsenic and chromium. Statistical outliers of lead and benzo(b)anthracene
- 'deep soil' data
  - o Property wide exceedances of Naphthalene and aromatic total petroleum hydrocarbons fractions C8-10, C10-12 and C12-16

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved deriving site specific assessment criteria against which to compare the analytical results for those parameters that had exceeded the generic assessment criteria. An overall summary from this further assessment, which is applicable to the Land at the 17 Whack House Close, is provided below:

- Parsons Brinckerhoff has assessed that combined non-threshold PAH is present across the Land and on a balance of probabilities the land is likely to meet the definition of contaminated Land under Part 2A of the Environmental Protection Act 1990.

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish these contaminants are unlikely to represent a significant possibility of significant harm and have therefore been excluded as a possible basis for determination as Contaminated Land.

The Determination Report prepared by Leeds City Council further supports this conclusion.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of widespread non-threshold polyaromatic hydrocarbons identified in the Land of the property to represent a significant possibility of significant harm.**

## 6 - REFERENCES

### Site Specific Information

Parsons Brinckerhoff

Factual and Interpretative Site Investigation Report, ..... 17 Whack House Close....., Yeadon, Leeds, January 2011 (ref FSE97361A)

Leeds City Council

Determination Report for PLS00484X. Conclusions for further work or determination, March 2011.

### Statutory Guidance

DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)

STATEMENT of  
REMEDIAL TREATMENT ACTIONS  
CARRIED OUT

PLS00009X



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**STATEMENT of  
REMEDIAL TREATMENT ACTIONS CARRIED OUT**

**PREPARED BY LEEDS CITY COUNCIL**

A Remediation Statement was prepared by Leeds City Council in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (Appendix 1). The Remedial Treatment Actions identified in Schedule 2 of this Remediation Statement have now been completed for the following properties in Table 1:

<b>Table 1 - Address of properties no longer considered to represent the Significant Possibility of Significant Harm</b>	<b>Easting</b>	<b>Northing</b>
Land at 69 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429335	435838
Land at 71 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429343	435834
Land at 73 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429350	435831
Land at 75 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429355	435828
Land at 77 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429361	435825
Land at 79 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429368	435823

The above properties are shown on the plan in Schedule 1 of Appendix 1 and represent the extent of the land (the Land).

The Remedial Treatment Actions broadly comprised the removal of contaminated soil to a depth of 600mm from the gardens of the properties listed in Table 1, followed by the laying of geomembrane and geogrid layers and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions were carried out by Leeds City Council's Geotechnical and Property Maintenance/Demolition Teams. Further details are available in the following report produced by Leeds City Council's Geotechnical Team:

- Remediation Verification & Completion Report – PLS00009X 69 Hartley Avenue, Meanwood, Leeds, dated March 2012 (Report No 716400 - 1)
- Remediation Verification & Completion Report – PLS00009X 71 Hartley Avenue, Meanwood, Leeds, dated March 2012 (Report No 716400 - 2)
- Remediation Verification & Completion Report – PLS00009X 73 Hartley Avenue, Meanwood, Leeds, dated March 2012 (Report No 716400 - 3)
- Remediation Verification & Completion Report – PLS00009X 75 Hartley Avenue, Meanwood, Leeds, dated March 2012 (Report No 716400 - 4)
- Remediation Verification & Completion Report – PLS00009X 77 Hartley Avenue, Meanwood, Leeds, dated March 2012 (Report No 716400 - 5)
- Remediation Verification & Completion Report – PLS00009X 79 Hartley Avenue, Meanwood, Leeds, dated March 2012 (Report No 716400 - 6)

Based on the above reports and how the Land was left on 13 March 2012 (ref Leeds City Council, Geotechnical Section, Certificate of Completion issued 21 March 2012), Leeds City Council no longer considers that the Land meets the definition of Contaminated Land. This Statement confirms that the Remedial Treatment Actions outlined in the Remediation Statement for the Land have been carried out and that the Land no longer poses the Significant Possibility of Significant Harm with regard to human health.

Please note, however, that whilst this situation is the case as of 13 March 2012, Leeds City Council cannot give any guarantee, as with any other land, that any site will never be classified as Contaminated Land due to changes to such matters as, for example, legislation, amendments to risk assessment criteria, new site-specific data

Enquires relating to this Statement of Remedial Treatment Actions Carried Out should be made to the Contaminated Land team at Leeds City Council.

**Signed:** 

**Name:** Steve Speak

**Position:** Deputy Chief Planning Officer

**Date:** 4 April 2012

# Appendix 1

## **Remediation Statement**



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**REMEDICATION STATEMENT**

**PREPARED BY LEEDS CITY COUNCIL**

This Remediation Statement is prepared by Leeds City Council, in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (the 1990 Act).

The Contaminated Land to which this Remediation Statement relates is located at the following addresses:

<b>Address of properties determined as Contaminated Land</b>	<b>Easting</b>	<b>Northing</b>
Land at 69 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429335	435838
Land at 71 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429343	435834
Land at 73 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429350	435831
Land at 75 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429355	435828
Land at 77 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429361	435825
Land at 79 Hartley Avenue, Woodhouse, Leeds LS6 2HY	429368	435823

The extent of this Contaminated Land (the Land) is indicated in red on the plan (the Plan) (Schedule 1).

Leeds City Council, as enforcing authority in relation to the Land, is precluded by section 78H(5)(d) of the 1990 Act from serving a Remediation Notice and has therefore prepared this Remediation Statement in accordance with section 78H(7) and (8).

The things which are expected to be done by way of remediation and the period within which each of these things are expected to be done are set out in Schedule 2.

Particulars of the substances and the significant harm by reason of which the Land is Contaminated Land are set out in Schedule 3.

The current use of the Land is residential housing with private gardens.

The organisation that is expected to do each of the things set out in Schedule 2 to this Remediation Statement is Leeds City Council.

Leeds City Council's address for the purposes of this Remediation Statement is:

**The Contaminated Land Team  
Leeds City Council  
City Development  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD**

Telephone: **0113 247 8156**  
Fax: **0113 247 6484**  
Email: **contaminatedland@leeds.gov.uk**

Enquires relating to this Remediation Statement should be made to the team as detailed above.

**Signed:** 

**Position:** **Minerals, Waste and Contaminated Land Manager**

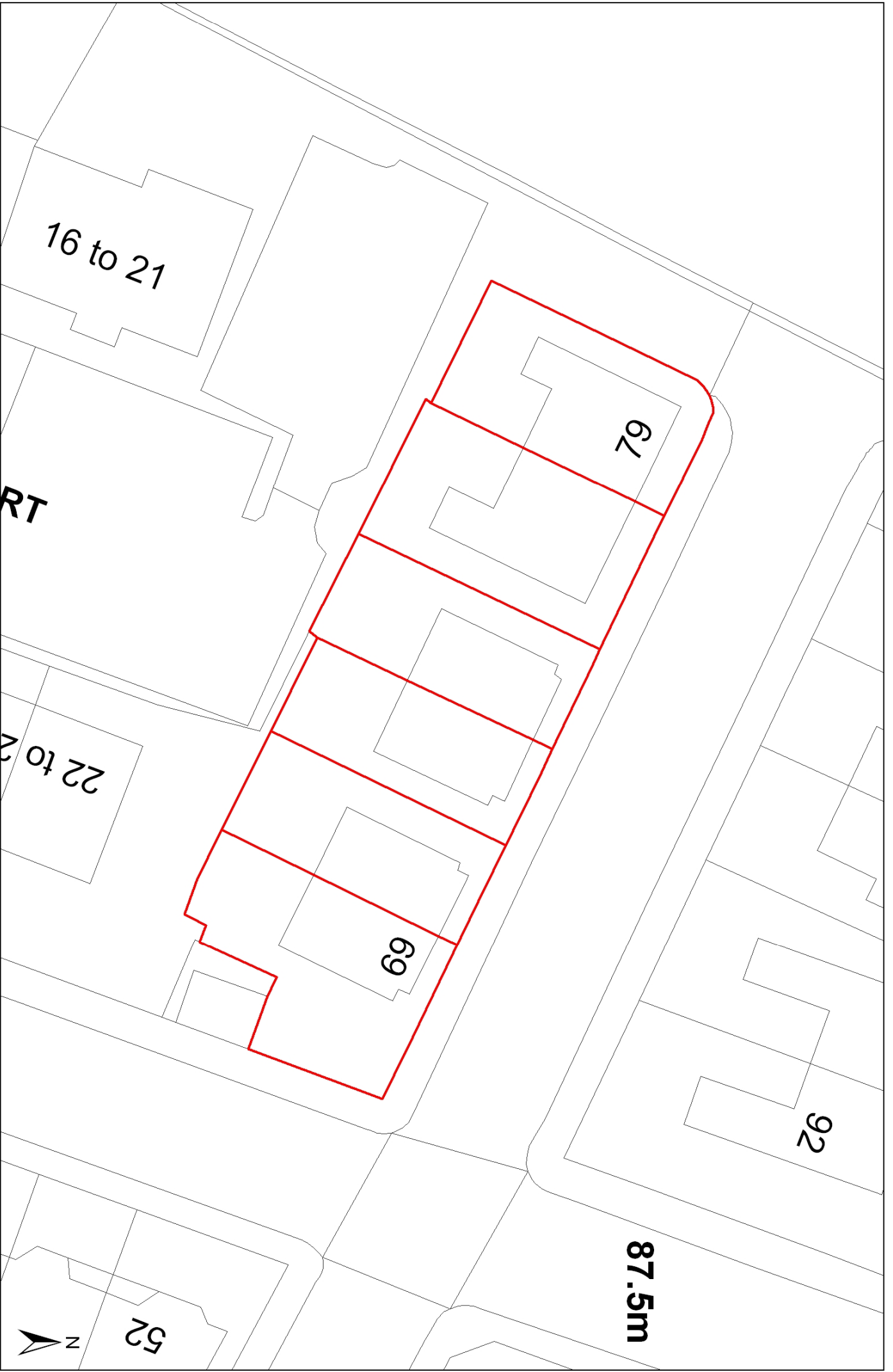
**Date:** **29 September 2011**



## Schedule 1

### **Location and Extent of Contaminated Land to which this Remediation Statement Relates**

All the Land edged in red on the Plan attached to this Statement.



## Schedule 2

### **Remediation Requirements and Periods (Section 78H(7)(b))**

The Remediation Actions detailed in this Schedule fall under the definition of Remedial Treatment Actions as defined in Section 78A(7)(b) of the 1990 Act. These Actions are intended to secure the remediation of all of the significant pollutant linkages identified in Schedule 3, and as such are characterised as a “shared action” as defined by Paragraph D.21(b) and a “common action” as defined by Paragraph D.22 (1a) of the Statutory Guidance contained in the DEFRA Circular 01/2006.

The requirements of the Remedial Treatment Actions are to carry out works to prevent the effects of the Significant Possibility of Significant Harm of the Contaminated Land identified in Schedule 1, and address the significant pollutant(s) identified in Schedule 3.

The Remedial Treatment Actions described in this Schedule are referable to the land identified in Schedule 1.

The Remedial Treatment Actions will comprise the removal of 600mm depth of the contaminated soil from the gardens of the properties identified in Schedule 1, the laying of a geomembrane and marker layer and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions described in this Schedule are expected to be completed by 31 March 2012.

## Schedule 3

### **Particulars of Substances and the Significant Possibility of Significant Harm**

See Record of Determination appended (ref CLRoD-PLS00009X)



## **PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990**

### **RECORD OF DETERMINATION** **THAT LAND IS CONTAMINATED LAND**

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following properties:

**69, 71, 73, 75, 77, 79 Hartley Avenue,  
Woodhouse, Leeds LS6 2HY**

*(Identified on the attached plan as the shaded land within the red boundary)*

National grid reference 429353 435830

("the Land")

Site reference number PLS00009X

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

**The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.**

**The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.**

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

Dated 24 September 2010

Stephen Speak  
Deputy Strategy Chief Planning Officer  
City Development  
Leeds City Council  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD

**The Land at:**

**69, 71, 73, 75, 77, 79 Hartley Avenue,  
Woodhouse, Leeds LS6 2HY**

(Identified in Figure 1 below as the shaded land within the red boundary)

Figure 1: Plan showing the Land

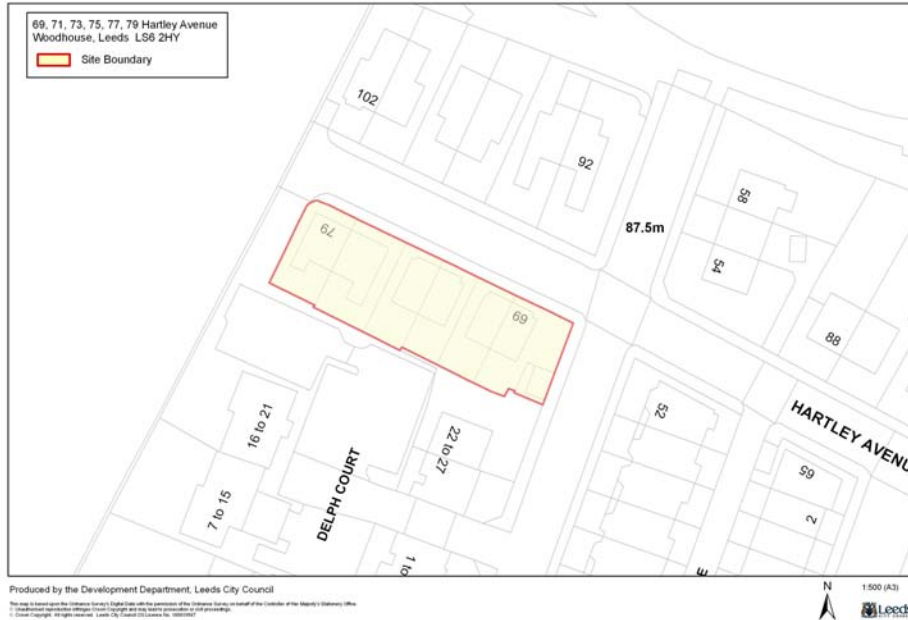
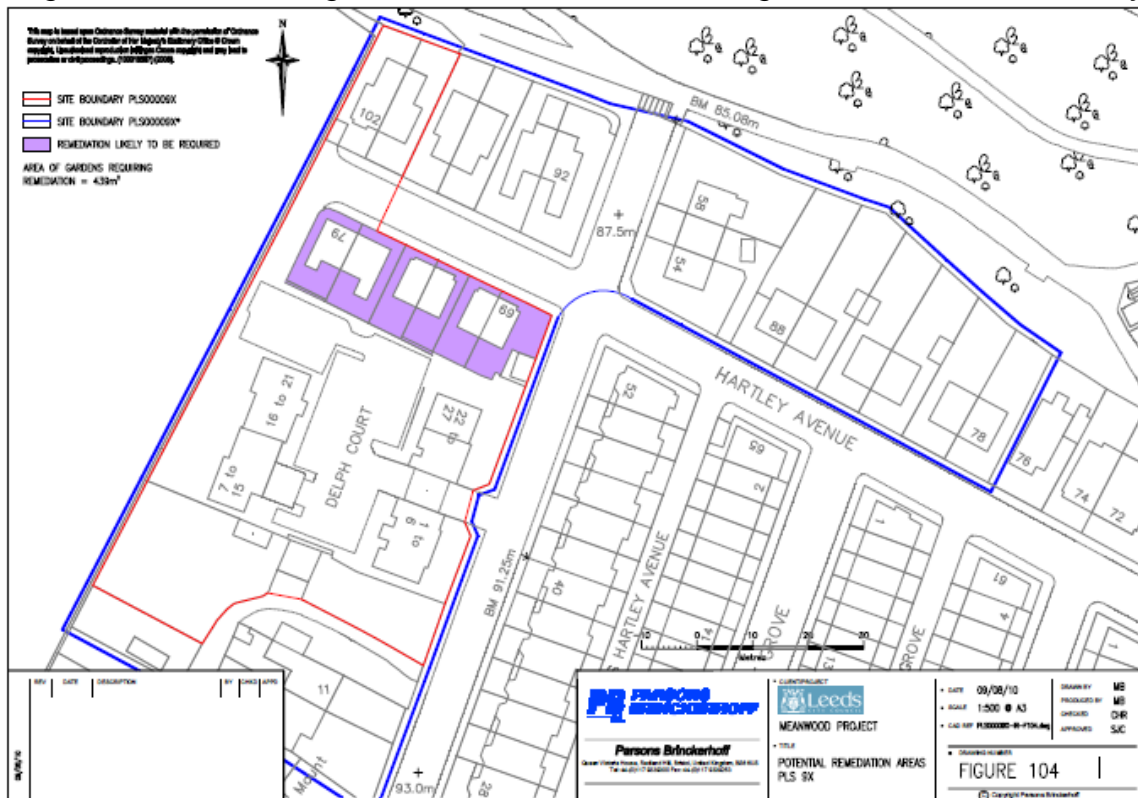


Figure 2: Plan showing the Land in relation to the original PLS00009X boundary



From the Interpretative Site Investigation Report, PLS00009X, Meanwood Leeds” by Parsons Brinckerhoff November 2009

## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is infill from the quarry sites in the area. This material might have also formed part of the development platform for the houses.

The significant pollutant linkages found are outlined in the following table:

<b>Pollutants</b>	<b>Pathways</b>	<b>Receptor</b>
Site wide benzo(a)pyrene and combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils.	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined properties)

In combination, these pollutant-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is residential semi-detached properties with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following report and evidence:

“Interpretative Site Investigation Report, PLS00009X, Meanwood Leeds” prepared by Parsons Brinckerhoff for Leeds City Council, November 2009 (ref FSE96695A.2083)

The site investigation of PLS00009X included the Land at the 6 properties to be determined but also extended over a larger area. The following data, was obtained with respect to only the 6 determined properties:

- Leeds City Council initial limited soil sampling work in March 2007
  - o total number of soil augering holes at the 6 properties = 3
  - o total number of soil samples analysed from the 6 properties = 6

and also included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in August and September 2008:

- total number of hand dug pits at the 6 properties = 12
- total number of soil samples analysed from the 6 properties = 28

Based on a statistical review of Parson Brinckerhoff's data for the entire site, it was concluded that contamination of benzo(a)pyrene and the combined non-threshold polyaromatic hydrocarbons was present on the Land of the 6 properties.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The site that is being determined is in an area of former quarrying. The historical plans dated 1893 (scale 1:2,500) and 1894 (scale 1:10,000) show a quarry within the site boundary. It is unclear what the source of contamination is although it is highly likely to be associated with the tipping of material in the area to infill the quarry and/or provide a development platform for the current residential development.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the Land and surrounding area. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parson Brinckerhoff's review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils, with samples taken from all properties aiming to provide good coverage across the site.

The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

The ground conditions were divided into two types:

- 'soil' exhibiting topsoil-like geological properties (typically 0-300mm below ground level) and
- 'waste' generally comprehensive or granular made ground (typically underlying the 'soil')



Comparison with generic screening values against the 'soil' and 'waste' data indicated the following:

- 'soil' data
  - o Land-wide exceedances of benzo(a)pyrene and non-threshold PAHs
- 'waste' data
  - o Land-wide exceedances of benzo(a)pyrene and non-threshold PAHs

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved deriving site specific assessment criteria against which to compare the analytical results for those parameters that had exceeded the generic assessment criteria. An overall summary from this further assessment, which is applicable to the Land at the 6 properties, was taken from Parsons Brinckerhoff's report and is provided below:

- Parsons Brinckerhoff has assessed that the entire Land is likely to meet the definition of contaminated land under Part 2A of the Environmental Protection Act 1990 (i.e. that there is the significant possibility of significant harm occurring to the modelled receptor) owing to Land-wide contamination with benzo(a)pyrene and non-threshold PAH.

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish these contaminants are unlikely to represent a significant possibility of significant harm and have therefore been excluded as a possible basis for determination as Contaminated Land.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of widespread benzo(a)pyrene and the other non-threshold polyaromatic hydrocarbons identified in the Land of the properties to represent a significant possibility of significant harm.**

## 6 - REFERENCES

### Site Specific Information

Parsons Brinckerhoff

"Interpretative Site Investigation Report, PLS00009X. Meanwood Leeds" prepared by Parsons Brinckerhoff for Leeds City Council (*November 2009, ref FSE96695A.2083*)

### Statutory Guidance

DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)

STATEMENT of  
REMEDIAL TREATMENT ACTIONS  
CARRIED OUT

PLS00484X



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**STATEMENT of  
REMEDIAL TREATMENT ACTIONS CARRIED OUT**

**PREPARED BY LEEDS CITY COUNCIL**

A Remediation Statement was prepared by Leeds City Council in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (Appendix 1). The Remedial Treatment Actions identified in Schedule 2 of this Remediation Statement have now been completed for the following property in Table 1:

<b>Table 1 - Address of properties no longer considered to represent the Significant Possibility of Significant Harm</b>	<b>Easting</b>	<b>Northing</b>
Land at 17 Whack House Close, Yeadon, Leeds LS19 7LZ	420077	440894

The above property is shown on the plan in Schedule 1 of Appendix 1 and represents the extent of the land (the Land).

The Remedial Treatment Actions broadly comprised the removal of contaminated soil to a depth of 600mm from the gardens of the property listed in Table 1, followed by the laying of geomembrane and geogrid layers and the placing of 600mm of clean material.

The Remedial Treatment Actions were carried out by Leeds City Council's Geotechnical and Property Maintenance/Demolition Teams. Further details are available in the following report produced by Leeds City Council's Geotechnical Team:

- Remediation Verification & Completion Report – PLS00484X, 17 Whackhouse Close, Yeadon, Leeds, dated March 2012 (Report No 716401)

Based on the above report and how the Land was left on 13 March 2012 (ref Leeds City Council, Geotechnical Section, Certificate of Completion issued on 21 March 2012), Leeds City Council no longer considers that the Land meets the definition of Contaminated Land. This Statement confirms that the

Remedial Treatment Actions outlined in the Remediation Statement for the Land have been carried out and that the Land no longer poses the Significant Possibility of Significant Harm with regard to human health.

Please note, however, that whilst this situation is the case as of 13 March 2012, Leeds City Council cannot give any guarantee, as with any other land, that any site will never be classified as Contaminated Land due to changes to such matters as, for example, legislation, amendments to risk assessment criteria, new site-specific data

Enquires relating to this Statement of Remedial Treatment Actions Carried Out should be made to the Contaminated Land team at Leeds City Council.

**Signed:** 

**Name:** Steve Speak

**Position:** Deputy Chief Planning Officer

**Date:** 4 April 2012

# Appendix 1

## **Remediation Statement**



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990  
SECTION 78H(7)**

**THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2006  
(S.I. 2006/1380)**

**REMEDIATION STATEMENT**

**PREPARED BY LEEDS CITY COUNCIL**

This Remediation Statement is prepared by Leeds City Council, in relation to Contaminated Land identified under section 78B of the Environmental Protection Act 1990 (the 1990 Act).

The Contaminated Land to which this Remediation Statement relates is located at the following addresses:

<b>Address of properties determined as Contaminated Land</b>	<b>Easting</b>	<b>Northing</b>
Land at 17 Whack House Close, Yeadon, Leeds LS19 7LZ	420077	440894

The extent of this Contaminated Land (the Land) is indicated in red on the plan (the Plan) (Schedule 1).

Leeds City Council, as enforcing authority in relation to the Land, is precluded by section 78H(5)(d) of the 1990 Act from serving a Remediation Notice and has therefore prepared this Remediation Statement in accordance with section 78H(7) and (8).

The things which are expected to be done by way of remediation and the period within which each of these things are expected to be done are set out in Schedule 2.

Particulars of the substances and the significant harm by reason of which the Land is Contaminated Land are set out in Schedule 3.

The current use of the Land is residential housing with private gardens.

The organisation that is expected to do each of the things set out in Schedule 2 to this Remediation Statement is Leeds City Council.

Leeds City Council's address for the purposes of this Remediation Statement is:

**The Contaminated Land Team  
Leeds City Council  
City Development  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD**

Telephone: **0113 247 8156**  
Fax: **0113 247 6484**  
Email: **contaminatedland@leeds.gov.uk**

Enquires relating to this Remediation Statement should be made to the team as detailed above.

**Signed:** 

**Position:** **Minerals, Waste and Contaminated Land Manager**

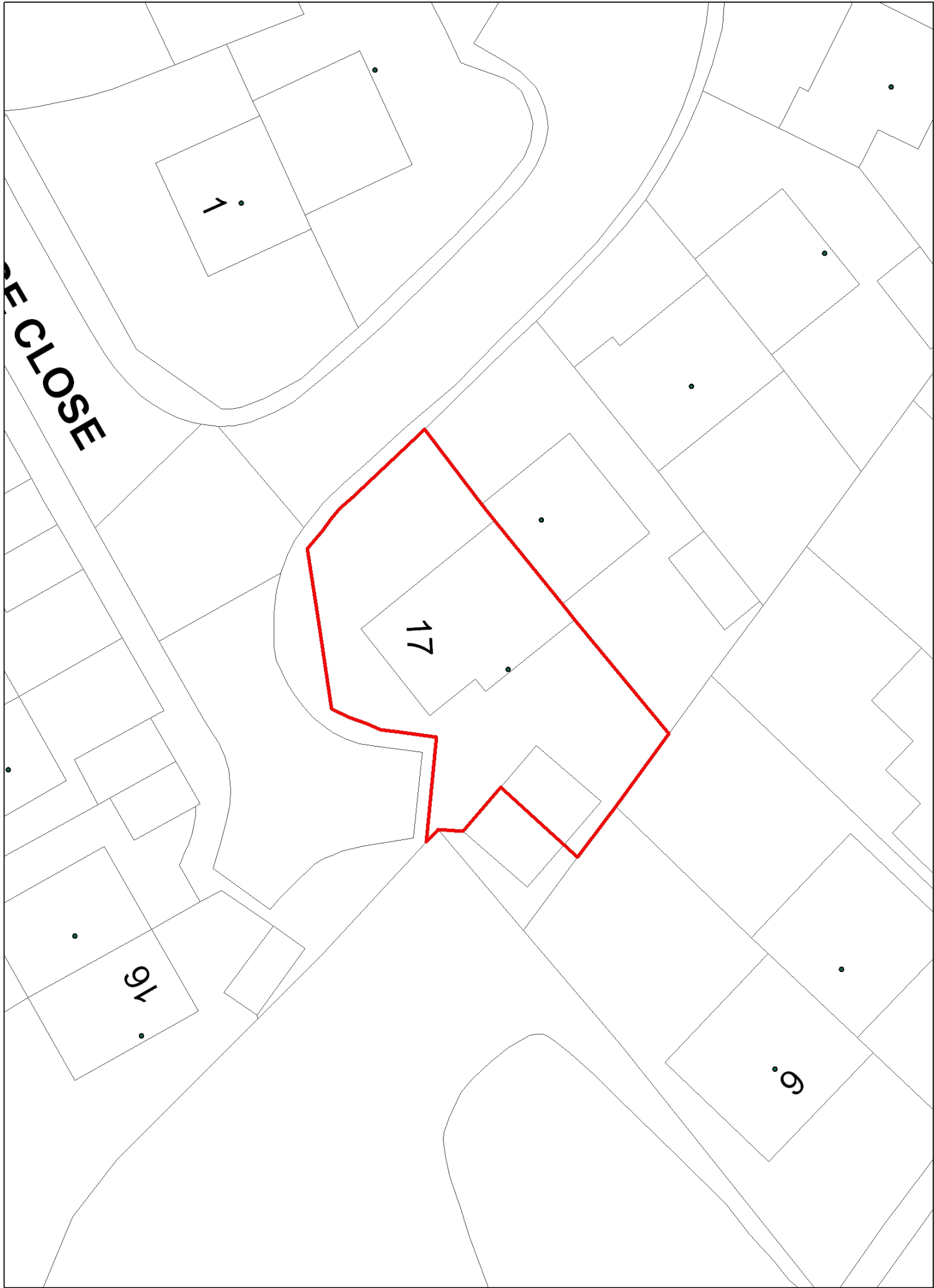
**Date:** **29 September 2011**



## Schedule 1

### **Location and Extent of Contaminated Land to which this Remediation Statement Relates**

All the Land edged in red on the Plan attached to this Statement.



## Schedule 2

### **Remediation Requirements and Periods (Section 78H(7)(b))**

The Remediation Actions detailed in this Schedule fall under the definition of Remedial Treatment Actions as defined in Section 78A(7)(b) of the 1990 Act. These Actions are intended to secure the remediation of all of the significant pollutant linkages identified in Schedule 3, and as such are characterised as a “shared action” as defined by Paragraph D.21(b) and a “common action” as defined by Paragraph D.22 (1a) of the Statutory Guidance contained in the DEFRA Circular 01/2006.

The requirements of the Remedial Treatment Actions are to carry out works to prevent the effects of the Significant Possibility of Significant Harm of the Contaminated Land identified in Schedule 1, and address the significant pollutant(s) identified in Schedule 3.

The Remedial Treatment Actions described in this Schedule are referable to the land identified in Schedule 1.

The Remedial Treatment Actions will comprise the removal of 600mm depth of the contaminated soil from the gardens of the properties identified in Schedule 1, the laying of a geomembrane and marker layer and the placing of 300mm clean subsoil and 300mm clean topsoil.

The Remedial Treatment Actions described in this Schedule are expected to be completed by 31 March 2012.

## Schedule 3

### **Particulars of Substances and the Significant Possibility of Significant Harm**

See Record of Determination appended (ref CLRoD-PLS00484X)



**PART 2A of the ENVIRONMENTAL PROTECTION ACT 1990**

**RECORD OF DETERMINATION**  
**THAT LAND IS CONTAMINATED LAND**

In accordance with Part 2A of the Environmental Protection Act 1990 as amended ("the Act"), Leeds City Council ("the Council") has determined that the land at the following property:

**17 Whack House Close,  
Yeadon, Leeds LS19 7LZ**

*(Identified on the attached plan as the shaded land within the red boundary)*

National grid reference 420077 440894

("the Land")

Site reference number PLS00484X

is **CONTAMINATED LAND**, as defined by section 78A(2) of the Environmental Protection Act 1990, because:

**The Council, as enforcing authority, has identified the presence of various contamination sources, pathways, and a receptor with respect to the current use of the land. The Council is satisfied that as a consequence of the presence of these pollutant linkages, a significant possibility of significant harm to human health exists.**

**The Council does not consider this Contaminated Land to be a Special Site within the meaning of Regulations 2 and 3, with Schedule 1, of the Contaminated Land (England) Regulations 2006, and as such the Council is the enforcing authority for the purposes of the Act.**

A summary of the basis on which this determination has been made is set out in the Schedule to this record.

Dated 3 May 2011

Stephen Speak  
Deputy Chief Planning Officer  
City Development  
Leeds City Council  
The Leonardo Building  
2 Rossington Street  
Leeds LS2 8HD

**The Land at:**

**17 Whack House Close,  
Yeadon, Leeds LS19 7LZ**

*(Identified in Figure 1 below as the shaded land within the red boundary)*

*Figure 1: Plan showing the Land*



Produced by the Development Department, Leeds City Council  
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## SCHEDULE

### 1 – SOURCE OF CONTAMINATION AND DESCRIPTION OF THE SIGNIFICANT POLLUTANT LINKAGES

The Council considers that the most likely source of contamination is debris from a works building which is alleged to have burnt down on the site.

The significant pollutant linkages found are outlined in the following table:

Pollutants	Pathways	Receptor
Site wide combined non-threshold PAHs (benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, chrysene, benzo(a)anthracene, fluoranthene) in surface soils.	Ingestion of soil and indoor and outdoor dust Ingestion of home-grown produce and soil attached to home-grown produce Dermal contact with soil and indoor and outdoor dust Inhalation of indoor and outdoor dust	Residents (the risk assessment has taken into account the most vulnerable receptor of a female child (age 0-6 years) potentially resident at the determined property)

In combination, these pollutant-pathway-receptor linkages are considered to represent a significant pollutant linkage indicative of a significant possibility of significant harm to human health.

### 2 – CURRENT USE OF THE LAND

The current use of the land is a residential semi-detached property with gardens.

### 3 - SUMMARY OF THE EVIDENCE UPON WHICH THE DETERMINATION IS BASED

This determination is based on the following reports and evidence:

“Factual and Interpretative Site Investigation Report, ..... 17 Whack House Close ....., Yeadon, Leeds” prepared by Parsons Brinckerhoff for Leeds City Council, January 2011 (ref FSE97361A)

The following site investigation data, was obtained with respect to 17 Whack House Close:

- Leeds City Council initial limited soil sampling work in October 2007 and March 2009
  - o total number of soil augering holes at the property = 3
  - o total number of soil samples analysed from the property = 4

and also included information on the following detailed soil sampling work carried out by Parsons Brinckerhoff in July 2010:

- total number of hand dug pits at the property = 5
- total number of soil samples analysed from the property = 12

“Determination Report for PLS00484X. Conclusions for further work or determination”, prepared by Leeds City Council, March 2011.

The Determination Report for PLS00484X contained additional assessment of risk and included details of the rationale behind the conclusions reached for 17 Whack House Close.

Based on an individual statistical review of Parson Brinckerhoff’s data for the “shallow soils” at the property and the “deeper soils” at the property and the additional assessment of risk, it was concluded that contamination of combined non-threshold polyaromatic hydrocarbons was present in the “shallow soils” on the Land at 17 Whack House Close. “Shallow soils” were representative of the strata encountered within the upper 0.6m of soil, “deeper soils” were representative of the strata encountered below 0.6m. Where the stratum was present both above and below 0.6m depth, the analytical results for the sample taken from that stratum were included both within the shallow and deep datasets.

#### **4 - DESCRIPTION OF POTENTIALLY CONTAMINATIVE ACTIVITY**

The property that is being determined is in the location of a former works building which is alleged to have burnt down. The historical plans dated 1933 (scale 1:10000), 1956 (scale 1:10000), 1963 (scale 1:1250), 1964 (scale 1:1:2500) and 1967 (scale 1:10000) show a building present where 17 Whack House Close currently stands. On the 1972 historic plan (scale 1:1250), the building is no longer shown as being present. It is unclear what the source of contamination is although it is likely to be associated with debris from the building which is alleged to have burnt down.

#### **5 - SUMMARY OF THE RELEVANT ASSESSMENT OF THE EVIDENCE**

Parsons Brinckerhoff undertook a detailed site investigation and assessment of the Land and surrounding area. This work was carried out on behalf of Leeds City Council to characterise the amount and extent of contamination present, and advise and recommend on whether any parts of the site should be determined as Contaminated Land.

Parson Brinckerhoff’s review of their site investigation data also took into account site investigation data which had been collected by Leeds City Council, considering all available existing information as outlined in the site-specific information references list below.

The sampling strategy was designed to ensure that sufficient information would be obtained to enable a detailed quantitative risk assessment to be carried out to identify whether the pollutant linkages under investigation could be considered significant as defined in Part 2A of the Environmental Protection Act 1990. The sampling strategy focussed on evaluating risks to human health arising principally from shallow soils.



The assessment of the soil analytical data followed a tiered approach, with data first being compared with relevant generic assessment criteria. A residential with plant uptake land use scenario was applied to the site. Where results exceeded the generic assessment criteria, these results were compared against site-specific assessment criteria. The use of site-specific assessment criteria is considered necessary as Leeds City Council recognises that exceedance of a generic assessment criterion does not equate to an unacceptable level of risk as defined by Part 2A.

The ground conditions were divided into two types:

- 'shallow soil' soil that is representative of the strata encountered within the upper 0.6m
- 'deeper soil' soil that is representative of the strata encountered below 0.6m.

Comparison with generic screening values against the 'shallow soil' and 'deep soil' data indicated the following:

- 'shallow soil' data
  - o Property wide exceedances of combined non-threshold PAHs, naphthalene, arsenic and chromium. Statistical outliers of lead and benzo(b)anthracene
- 'deep soil' data
  - o Property wide exceedances of Naphthalene and aromatic total petroleum hydrocarbons fractions C8-10, C10-12 and C12-16

These identified contaminants of concern were taken forward to a detailed quantitative risk assessment stage for further consideration on a site-specific level. This process involved deriving site specific assessment criteria against which to compare the analytical results for those parameters that had exceeded the generic assessment criteria. An overall summary from this further assessment, which is applicable to the Land at the 17 Whack House Close, is provided below:

- Parsons Brinckerhoff has assessed that combined non-threshold PAH is present across the Land and on a balance of probabilities the land is likely to meet the definition of contaminated Land under Part 2A of the Environmental Protection Act 1990.

For the remainder of the potential contaminants of concern not mentioned above, it is possible to establish these contaminants are unlikely to represent a significant possibility of significant harm and have therefore been excluded as a possible basis for determination as Contaminated Land.

The Determination Report prepared by Leeds City Council further supports this conclusion.

**Considering these 'lines of evidence', the requirement to keep the potential intake of non-threshold substances such as benzo(a)pyrene and other polyaromatic hydrocarbons as low as reasonably practicable, and local conditions and factors, Leeds City Council considers the quantity of widespread non-threshold polyaromatic hydrocarbons identified in the Land of the property to represent a significant possibility of significant harm.**

## 6 - REFERENCES

### Site Specific Information

Parsons Brinckerhoff

Factual and Interpretative Site Investigation Report, ..... 17 Whack House Close....., Yeadon, Leeds, January 2011 (ref FSE97361A)

Leeds City Council

Determination Report for PLS00484X. Conclusions for further work or determination, March 2011.

### Statutory Guidance

DEFRA

Circular 01/2006 Environmental Protection Act 1990: Part 2A, Contaminated Land (*September 2006*)

### Procedural Guidance

Chartered Institute of Environmental Health

Professional Practice Note: The determination of contaminated land; deciding what is an 'unacceptable intake' (*May 2006*)

Chartered Institute of Environmental Health

Local Authority Guide to the Application of Part 2A of the Environmental Protection Act 1990 – Extended to cover Radioactive Contaminated Land (*2007*)

DEFRA

Applying the Definition of contaminated land under Part 2A of the EPA 1990 (*July 2008*)

DEFRA

Improvements to Contaminated Land Guidance: Outcomes of the 'Way Forward' Exercise on Soil Guideline Values (*22 July 2008*)

Leeds City Council

Leeds City Council's Contaminated Land Inspection Strategy (*June 2001*) + accompanying annual review reports

Environment Agency

Guidance on human health risk assessment (SPOSH) fact sheet v4 (*23 September 2008*)