

**14, 16, 18, 20 and 22 Church Street, Watlington**  
**Remediation Summary Statement**  
**South Oxfordshire District Council**



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**February 2012**

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## Ecus Ltd

Report to: **South Oxfordshire District Council  
Benson Lane  
Crowmarsh Gifford  
Wallingford  
OX10 8NL**

Report Title: **14, 16, 18, 20 and 22 Church Street, Watlington  
Remediation Summary Statement**

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## CONTENTS

<b>Executive Summary</b>	<b>vii</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Terms of Reference	1
1.2 Objectives of the Remediation and Remediation Summary Statement	1
1.3 Site Location	1
1.4 Basis of the Requirement for Remediation	1
1.5 Chosen Remediation Technique	2
<b>2 Organisations involved in the Remediation</b>	<b>3</b>
2.1 Employer	3
2.2 Remediation Contractor	3
2.3 Remediation Supervisor	3
2.4 CDM Co-ordinator	3
2.5 Dates of the Remediation Works	3
<b>3 Description of the Remediation Works</b>	<b>4</b>
3.1 Site Clearance and Enabling Works	4
3.2 Excavation of Contaminated Soils	4
3.3 Unexpected Contamination	4
3.4 Treatment of Underground Structures	5
3.5 Disposal of Contaminated Soils	5
<b>4 Placement of the Clean Soil Cover System</b>	<b>6</b>
4.1 Geofabric and Warning Barrier Layer	6
4.2 Subsoil	6
4.3 Topsoil	6
<b>5 Reinstatement</b>	<b>7</b>
5.1 Reinstatement Works Undertaken	7
<b>6 Conclusions</b>	<b>8</b>
6.1 Confirmation that the Remediation has been Undertaken Satisfactorily	8
6.2 Confirmation that the Remediation Objectives have been achieved	8
6.3 Precautions to be undertaken during Future Excavation	8
6.4 Summary	8
<b>Appendix A: Figures</b>	

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## Executive Summary

<b>Site Location and Description:</b>	<p>Residential properties at 14, 16, 18, 20 &amp; 22, Church Street, Watlington, Oxfordshire.</p> <p>The National Grid Reference for the site is 468710, 194600.</p> <p>The site comprises five residential properties and their curtilages, four of which were occupied during the period of the remediation works.</p> <p>The area remediated comprised the rear gardens of the properties.</p>
<b>Proposed Site Use:</b>	<p>The site is to remain in residential use.</p>
<b>Site History:</b>	<p>The site was occupied by a gas works from approximately 1866 to 1928. The site was redeveloped with property Nos. 16, 18, 20 &amp; 22 in the 1950s. No. 14 was part of the original gas works.</p>
<b>Contaminated Land Inspection Work:</b>	<p>The site has been subject to various phases of inspection for potentially contaminated land by South Oxfordshire District Council under Part 2A of the Environmental Protection Act 1990. The conclusion of the inspections was that there was a significant possibility of significant harm to human health from several PAH compounds within soils in rear gardens at the site.</p>
<b>Remediation Contractor:</b>	<p>Hydrock Contracting Ltd, Over Court Barns, Over Lane, Almondsbury, Bristol. BS32 4DF.</p>
<b>Remediation Supervisor:</b>	<p>Ecus Ltd, Brook Holt, 3 Blackburn Road, Sheffield, South Yorkshire. S61 2DW.</p>
<b>Remediation Date</b>	<p>September to December 2011.</p>
<b>Remedial Works Undertaken:</b>	<p>The existing contaminated topsoil and underlying made ground were substantially excavated to a depth of 600mm and removed from site by licensed waste carriers to licensed waste management facilities. A clean cover system was then installed, comprising geofabric separator, high visibility warning barrier, clean imported subsoil and topsoil prior to site reinstatement with turf, fences and sheds.</p>
<b>Outcome of the Remediation Works:</b>	<p>The remediation works have been undertaken in general accordance with the Remediation Method Statement and to the satisfaction of the residents and local authority. The risk to the health of the residents living on the site has been removed and therefore the site is no longer be considered to be 'contaminated land' as defined within Part 2A of the Environmental Protection Act 1990.</p>

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## **1 Introduction**

### **1.1 Terms of Reference**

- 1.1.1 Ecus Ltd (hereafter Ecus) was instructed by South Oxfordshire District Council (SODC) to produce a Remediation Verification Report for land at 14, 16, 18, 20 and 22 Church Street, Watlington, Oxfordshire, hereafter referred to as 'the site'.
- 1.1.2 The site previously formed part of a gas works, and has previously been subject to several phases of inspection as being potentially 'contaminated land' under Part 2A of the Environmental Protection Act 1990 (hereafter Part 2A), as reported within several reports produced by Ecus between 2006 and 2009.
- 1.1.3 The site was determined as 'contaminated land' as defined within Part 2A by SODC based on the evidence and recommendations within the reports produced by Ecus, due to the risk posed to site residents from exposure to soils contaminated by gasworks wastes remaining on the site.
- 1.1.4 Accordingly, SODC employed Ecus to produce a Remediation Method Statement in April 2011 to describe how the site should be remediated so that it no longer met the definition of 'contaminated land' and the risk to the site residents was reduced to an acceptable level.
- 1.1.5 This Remediation Summary Statement is a non-technical summary of the main Remediation Verification Report produced by Ecus. Reference should be made to the full Remediation Verification Report for all technical details relating to the remediation works.
- 1.1.6 All previous site investigation reports, the Remediation Method Statement and the Remediation Verification Report are available for inspection at the offices of SODC at Benson Lane, Crowmarsh Gifford, Wallingford, OX10 8NL.

### **1.2 Objectives of the Remediation and Remediation Summary Statement**

- 1.2.1 The main objective of the remediation works, as set out in the Remediation Method Statement (RMS) is to remove contaminated soils from the site and replace with clean soils, so that the risks to the health of the residents living on the site is removed.
- 1.2.2 The objectives of this Remediation Summary Statement are as follows:
- To state where information relating to the remediation may be accessed;
  - To summarise the remediation works;
  - To confirm that the remediation and reinstatement of the site has been undertaken satisfactorily;
  - To confirm that the risks to the health of site residents from contaminated soils have been removed, and that the land is no longer 'contaminated land'.

### **1.3 Site Location**

- 1.3.1 The location of the site, which centres on National Grid Reference 468710, 194600, is shown in Figures A1 and A2, Appendix A.
- 1.3.2 The site comprises five residential dwellings and their curtilages; 14 Church Street, a detached house, and 16, 18, 20 and 22 Church Street, a row of four town houses.

### **1.4 Basis of the Requirement for Remediation**

- 1.4.1 Local authorities are required to inspect land within their areas for the purposes of identifying any land that meets the definition of contaminated land under Part 2A.

1.4.2 After several investigations by Ecus, the Council determined the site as being contaminated land under Part 2A, based on the risk to the health of residents living on the site from soil contaminants including several polycyclic aromatic hydrocarbon (PAH) compounds.

## **1.5 Chosen Remediation Technique**

1.5.1 The chosen remediation technique was the removal of existing contaminated soils to a depth of 600mm in order to allow installation of the clean soil cover system while maintaining the existing ground levels.

## **2 Organisations involved in the Remediation**

### **2.1 Employer**

2.1.1 The Employer is South Oxfordshire District Council of Benson Lane, Crowmarsh Gifford, Wallingford, OX10 8NL.

### **2.2 Remediation Contractor**

2.2.1 The remediation works were undertaken by Hydrock Contracting Ltd of Over Court Barns, Over Lane, Almondsbury, Bristol, BS32 4DF.

2.2.2 The Remediation Contractor was responsible for all setting out, site clearance, excavation and disposal of contaminated soils, importation and replacement of clean soils and reinstatement of the site. Subcontractors were used for haulage and waste disposal and for the treatment of tar tanks that were encountered during the work.

### **2.3 Remediation Supervisor**

2.3.1 The remediation works were supervised by Ecus Ltd. The Remediation Supervisor was responsible for supervision of the remediation works to ensure compliance with the Remediation Method Statement.

### **2.4 CDM Co-ordinator**

2.4.1 The remediation works were notifiable under the Construction (Design & Management) Regulations 2007 (CDM Regulations). The CDM Co-ordinator was Atkins Ltd.

### **2.5 Dates of the Remediation Works**

2.5.1 The remediation works were undertaken between September and December 2011.

### **3 Description of the Remediation Works**

#### **3.1 Site Clearance and Enabling Works**

- 3.1.1 During the site clearance phase, fences and hedges between the gardens were removed along with trees, bushes and other vegetation within the gardens. The vegetation was chipped on site and removed by skip to a licensed waste management facility as green waste. Sheds were emptied and disassembled and where present, paving stone paths and shed-bases taken up and stored for replacement following the remediation works.
- 3.1.2 Prior to the remediation works, topographical, boundary, utility and structural surveys were carried out by the Contractor for all properties on the site and on Church Street. Survey stations were set up on the houses (Nos. 14, 16, 18, 20 and 22) themselves as a precautionary measure to ensure no movement occurred in structures during the shallow excavation works.

#### **3.2 Excavation of Contaminated Soils**

- 3.2.1 Contaminated soils were excavated primarily using a 1.5 tonne mini-digger, with localised excavation by hand where required.
- 3.2.2 The depth of excavation was generally 600mm below existing ground level (bgl).
- 3.2.3 Those areas of the site where excavation of existing soils to 600mm below ground level was not possible are indicated on Figure A3, Appendix A. This area equates to 4% of the rear garden areas. Calculations show that there is no risk to the health of residents from soils remaining in the rear gardens on the site.
- 3.2.4 No natural subsoils were encountered during the works.
- 3.2.5 Excavated soils were stored for a minimal period within the designated soil storage area prior to removal from the site via grab-wagon. Prior to stockpiling, the affected front garden areas were covered with plastic sheeting and plywood boards to avoid contact with the underlying ground.

#### **3.3 Unexpected Contamination**

- 3.3.1 During excavation works, two underground structures believed to be redundant tar tanks or sumps from the former gas works were encountered within the rear garden of No. 16.
- 3.3.2 One was a brick-lined circular tank or sump, approximately 1.8m in diameter and 1.5m deep below ground level. The other was a brick-lined rectangular tank or sump, approximately 3.1m x 1.6m in plan and 1m deep.
- 3.3.3 These structures contained both liquid and semi-solid coal tar, along with much rubble, bricks and timber, etc.
- 3.3.4 In order to remove the coal tar materials from site and clean the tar tanks, Hydrock sub-contracted Cleansing Services Group (CSG) to carry out the works. Due to the unsuitability of some of the material to be removed by CSG's methods, Arrow Environmental Services were also sub-contracted to remove the remaining material from the rectangular tank.
- 3.3.5 Once the tanks were empty, the sides and bases were cleansed of tar using a high pressure, high temperature jetwash system, with any washings pumped from the tanks to a vacuum tanker for disposal. The empty tanks were then backfilled with clean 40mm single-sized stone to 0.6m bgl, ready for installation of the clean cover system as per the rest of the site.

### 3.4 Treatment of Underground Structures

- 3.4.1 In addition to the two tar tanks described above, a small brick-built structure was encountered within the rear garden of No. 20, which may have been part of a former drainage system. This was mostly empty of material and was therefore backfilled with clean stone.
- 3.4.2 A significant quantity of metal pipework relating to the former gasworks was encountered across much of the site. This was grubbed up and disposed of as scrap metal at a licensed recycling facility.

### 3.5 Disposal of Contaminated Soils

- 3.5.1 The tonnages of wastes disposed from the site are summarised in Table 1.

**Table 1: Tonnages of Waste Soils Removed from Site**

Waste Type	Tonnage Removed
Non-hazardous waste soils	207.06
Hazardous waste soils	304.14
<b>TOTAL</b>	<b>511.2</b>

- 3.5.2 All waste soils were removed from site by Lynch Plant Hire and Haulage Ltd, Lynch House, Parr Road, Stanmore, HA7 1LE, who are an Environment Agency-licensed waste carrier.
- 3.5.3 All waste soils were disposed of at the following licensed waste disposal facilities, as shown in Table 2.

**Table 2: Disposal Sites for Waste Soils Removed from Site**

Waste Management Site	Operator	Waste Classification
Chapel Farm, Blunsdon St Andrew, Oxfordshire	Hills Waste Solutions Ltd	Non-hazardous waste soils
Parkgate Farm, Purton, Wiltshire	Hills Waste Solutions Ltd	Hazardous waste soils

- 3.5.4 No pre-treatment of waste soils was undertaken on the site prior to removal.
- 3.5.5 The liquid waste from cleansing of the tar tanks (1,000 gallons / 4,546 litres) was disposed of at CSG, Botley Waste Treatment, Grange Road, Botley, Southampton, Hampshire, SO30 2GD.
- 3.5.6 The sludgy tar waste from cleansing of the tar tanks (approximately 2,000 litres) was taken for disposal / transfer by Haz Environmental Ltd, Bullock Street, West Bromwich, B70 7HE, an Environment Agency licensed waste carrier at Arrow Environmental Services, Exchange Works, Kelvin Way, West Bromwich, B70 7JW.

## **4 Placement of the Clean Soil Cover System**

### **4.1 Geofabric and Warning Barrier Layer**

4.1.1 Following excavation of contaminated soils and prior to the placement of clean soils, a geofabric separator layer was laid to prevent mixing of the clean cover system and underlying potentially contaminated soils. A layer of orange warning barrier mesh was placed above this to indicate to residents, builders etc., digging or excavating on the site in the future the barrier between clean soil and potentially contaminated soil.

### **4.2 Subsoil**

4.2.1 A 300mm thick layer of subsoil was placed over the geofabric and warning barrier layer.

4.2.2 The subsoil comprised as-dug quarry overburden (light yellow-brown slightly gravelly sand) delivered directly to the site from Shellingford Quarry near Faringdon, Oxfordshire.

4.2.3 Samples of the subsoil imported to the site were analysed for the suite of chemical determinants specified within the Remediation Method Statement by Chemtest, Newmarket, a UKAS accredited testing laboratory, on behalf of the Remediation Contractor.

4.2.4 The results of the chemical analysis met the chemical acceptance criteria within the Remediation Method Statement, and the subsoil was found to be acceptable for use within residential gardens.

### **4.3 Topsoil**

4.3.1 The topsoil comprised quarry overburden delivered directly to the site from Shellingford Quarry near Faringdon in Oxfordshire.

4.3.2 Laboratory analysis provided by the supplier confirmed that the topsoil is in accordance with British Standard BS3882:2007, *Specification for Topsoil and Requirements for use*.

4.3.3 Samples of the topsoil imported to the site were analysed as specified within the Remediation Method Statement by Chemtest on behalf of the Remediation Contractor.

4.3.4 The results of the chemical analysis met the chemical acceptance criteria within the Remediation Method Statement, and the topsoil was found to be acceptable for use within residential gardens

## **5 Reinstatement**

### **5.1 Reinstatement Works Undertaken**

- 5.1.1 Following replacement of the clean soil cover system, the Remediation Contractor reinstated the site in accordance with the Remediation Method Statement to render it suitable for continuing residential use.
- 5.1.2 The Remediation Contractor undertook ground levelling surveys before excavation of contaminated soils and after replacement with clean imported soils. These surveys showed that the finished ground levels are within 50mm of the original ground levels across the site. Accordingly, the restoration of ground levels is considered to be in accordance with the Remediation Method Statement.
- 5.1.3 Following placement of clean topsoil, imported turf was laid within the garden areas. The turf was supplied by certified suppliers and pre-treated with non-residual herbicides.
- 5.1.4 A strip of topsoil was left bare on the boundary of Nos. 14 and 16 to allow the residents to plant the yew hedge.
- 5.1.5 Post and lapped-timber panel fences, 1.8m high, were erected to form the boundaries between the rear gardens of the properties to replace those removed during the remediation works. A fence was also placed at the rear of No. 16, to replace a hedge of conifers removed during the works. The boundary between No. 16 and the front path to No. 14 was reinstated with a timber post and rail fence.

## **6 Conclusions**

### **6.1 Confirmation that the Remediation has been Undertaken Satisfactorily**

6.1.1 Existing contaminated soils have been substantially removed from the site to a depth of 600mm below existing ground level and removed to licensed waste management facilities, and replaced with a clean cover system constructed in accordance with the Remediation Method Statement. It is therefore confirmed that the remediation has been undertaken satisfactorily.

### **6.2 Confirmation that the Remediation Objectives have been achieved**

6.2.1 The remediation works were undertaken to the satisfaction of the residents and the Remediation Supervisor on behalf of SODC.

### **6.3 Precautions to be undertaken during Future Excavation**

6.3.1 Care should be taken during future digging or excavation within the rear gardens to avoid damage to the geofabric separating layer located 600mm below finished ground level. There is a bright orange plastic marker barrier layer above the geofabric to alert anyone excavating to the fact that they have reached the base of the clean cover system and should not excavate further.

6.3.2 It was identified and accepted within the Remediation Method Statement that it would be likely that some areas of existing soils would have to remain in place, as it would not be possible to excavate them without creating a risk of damage to structures, trees or underground services, etc.

6.3.3 The areas in which complete excavation was not undertaken, and therefore in which existing soils may remain within 600mm of the ground surface are shown on Figure A3, Appendix A.

6.3.4 When digging in those areas highlighted in Figure A3, it is advisable to take the following precautions:

- Gloves should be worn when contact with the soils is possible;
- Any soil that is attached to clothes, boots, etc., should be removed before they are taken indoors;
- There should be no eating, drinking or smoking when working in contact with the soils;
- Any contractors employed to undertake works involving excavation in the future should be shown this document so that they are aware of the precautions that they should adopt.
- If any building or excavation works that may extend deeper than 600mm below ground level in the rear garden areas are planned, South Oxfordshire District Council must be contacted for advice.

6.3.5 If there is any doubt as to the precautions that should be undertaken when excavating on the site, South Oxfordshire District Council should be contacted in the first instance for advice.

### **6.4 Summary**

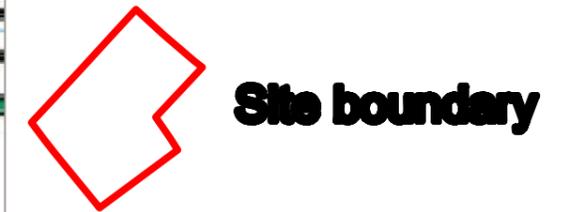
6.4.1 There is no longer a risk to the health of residents from contaminated soils on the site. Therefore, the site no longer meets the definition of 'contaminated land' under Part 2A of the Environmental Protection Act 1990.

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## **Appendix A: Figures**

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**KEY**



**Remediation Verification Report**

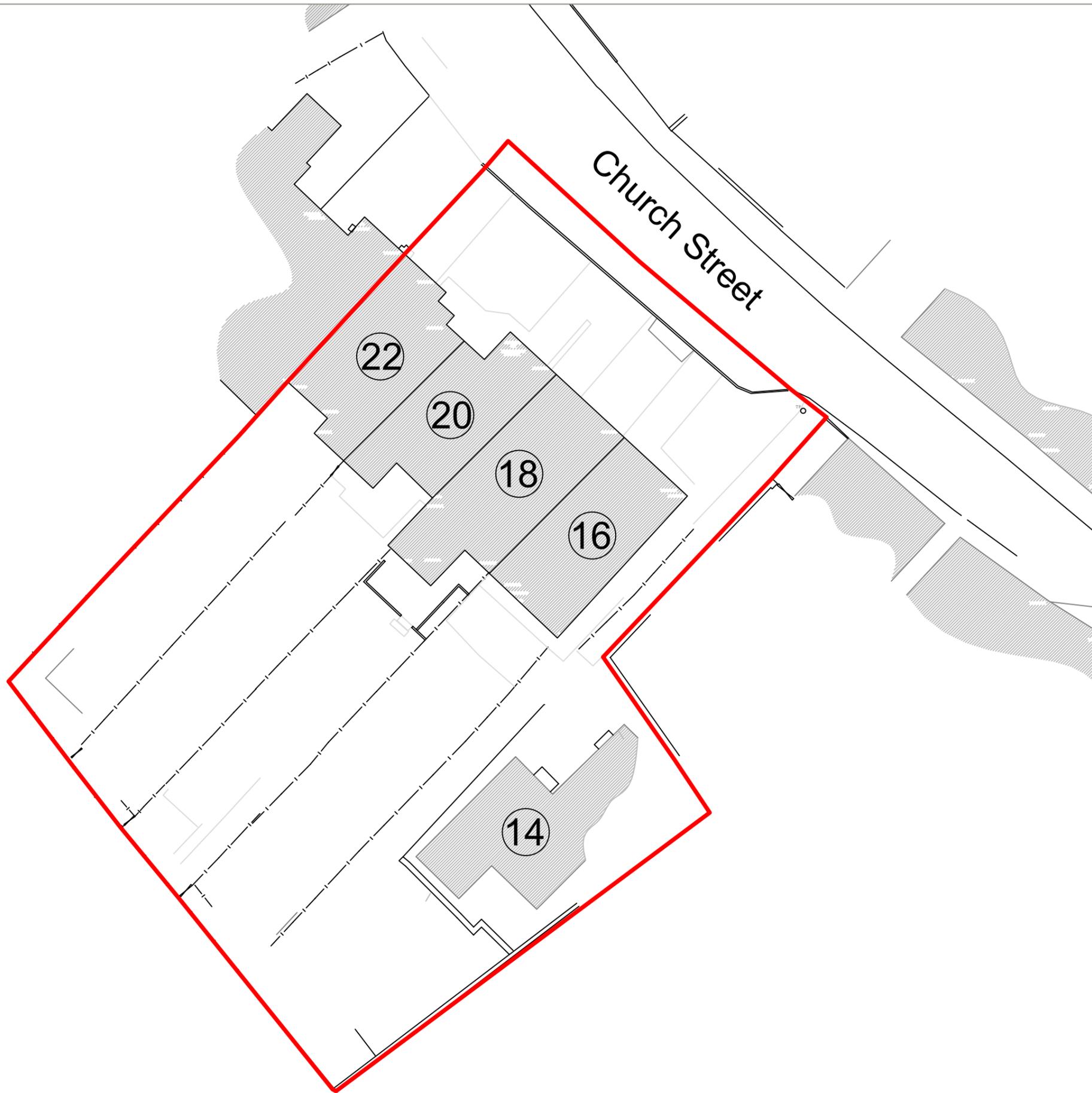
**14, 16, 18, 20 and 22 Church Street,  
Watlington**

**Job No. 2911**

**Site Location Plan**

Brook Holt ■ Blackburn Road ■ Sheffield ■ S61 2DW  
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KEY



Remediation Verification Report

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**KEY**

-  Site boundary
-  Dust monitoring point
-  Area where soil excavated to at least 0.6m below ground level
-  Area where no excavation undertaken and contaminated soils could remain within 0.6m of surface
-  Area where depth of excavation was less than 0.6m
-  Area not investigated or remediated where contaminated soils could remain within 0.6m of surface (houses and patios)
-  Areas left blank within the red site boundary were investigated but did not require remediation

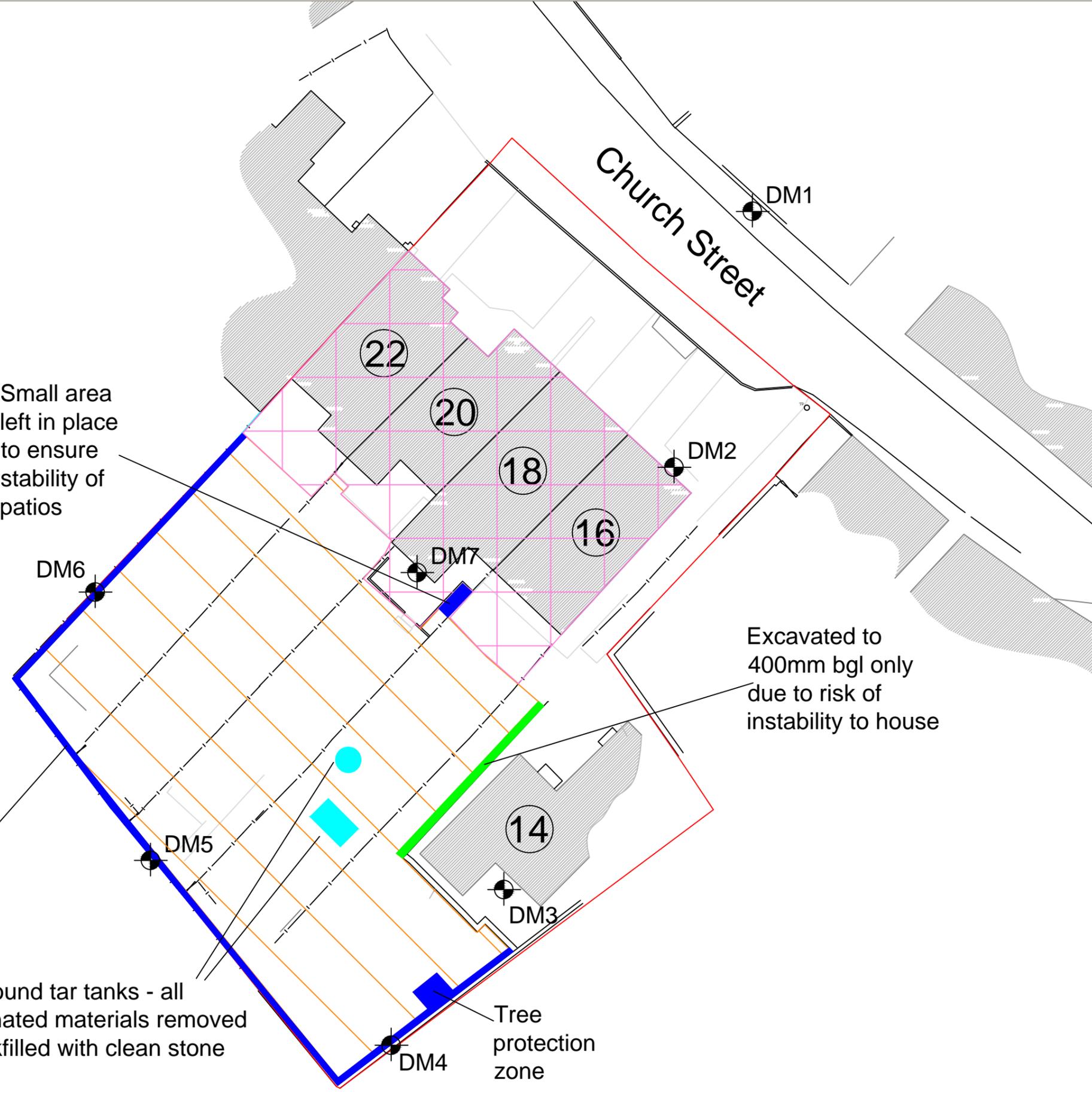
Small area left in place to ensure stability of patios

300mm wide boundary stand-off

Underground tar tanks - all contaminated materials removed and backfilled with clean stone

Excavated to 400mm bgl only due to risk of instability to house

Tree protection zone



Remediation Verification Report

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Remediation Features Plan

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