

CONLON LIMITED

Trenchard Circle, Upper Heyford
Phase 2 Environmental Risk Assessment

Report Ref. 163408/ERA/001

Job No. 163408

December 2016



AAe

Environmental Consultants

AA Environmental Limited
Unit 4 to 8 Cholswell Court
Shippon
Abingdon
Oxford
OX13 6HX
T 01235 536042
F 01235 523849
www.aae-lp.com

Document Control

Report for

Conlon Limited
Manor Farm
Calcutt
Nr. Cricklade
Wiltshire
SN6 6JR

**Trenchard Circle
Upper Heyford
Bicester
OX25 5TB**

Prepared by

[Redacted]

.....
J N Taylor BSc (Hons) AIEMA

Approved by

[Redacted]

.....
M J M Lawman MSc BSc (Hons)

Issue Date	Issue
13 th December 2016	Final

Document Reference

163408/ERA/001

AA Environmental Limited

4-8 Cholswell Court
Shippon
Abingdon
OX13 6HX

T 01235 536042
F 01235 523849
E info@aae-llp.com
W www.aae-llp.com

**Registered Office (England and Wales) as above
Company No. 8474322**

Table of Revisions

Contents

	Page No
1.0 INTRODUCTION	1
2.0 ENVIRONMENTAL SETTING	4
3.0 POTENTIAL SOURCES OF CONTAMINATION	7
4.0 SITE INVESTIGATION AND TESTING	9
5.0 CONCEPTUAL SITE MODEL AND SIGNIFICANT POLLUTION LINKAGES	15
6.0 CONCLUSIONS AND RECOMMENDATIONS	22

FIGURES

Figure 1	Site Location Plan
Figure 2	Former Site Layout
Figure 3	Site Investigation Plan
Figure 4	Remedial Plan

APPENDICES

Appendix A	Conceptual Site Model Methodology
Appendix B	Planning Documents
Appendix C	Historic Map Extracts
Appendix D	Correspondence
Appendix E	Site Investigation Logs
Appendix F	Certificates of Analysis
Appendix G	Consolidated Soil Results
Appendix H	Tier 1 Soil Guidance Values

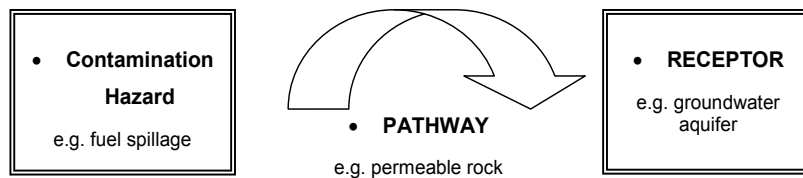
1.0 INTRODUCTION

Overview

- 1.1 AA Environmental Limited (AAe) has been commissioned by Conlon Limited (hereafter referred to as the 'Client') to carry out a Phase 2 Environmental Risk Assessment (ERA) and ground investigation for the proposed redevelopment of land at Trenchard Circle, Upper Heyford, Bicester, OX25 5TB. The site is centred at National Grid Reference SP 51839 26059 and is shown on the Site Location Plan (Figure 1).
- 1.2 The site is located on the eastern edge of Upper Heyford approximately 6 km north-west of Bicester. The site occupies an area of approximately 1.2 hectares on the southern side of Upper Heyford Airfield (disused).
- 1.3 The site currently comprises a vacant plot of land, with a pumping station in the north-western corner. The site was formerly occupied by 7 pairs of semi-detached residential properties with gardens, which have recently been demolished. The site is bound by the disused airfield to the north and residential properties to the west, east and south. The site is accessed from the south-eastern boundary, connecting to Trenchard Circle.
- 1.4 Planning permission (16/00196/F) was granted by Cherwell District Council on the 9th March 2016 for the demolition of the former residential units, and construction of 13 new dwellings with private gardens and associated car parking. The approved site layout and a copy of the planning Decision Notice are presented in Appendix B. Condition 10 of the permission addresses contaminated land, as specified below:
- If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the local planning authority) shall be carried out until the developer has submitted a remediation strategy to the local planning authority detailing how this unsuspected contamination shall be dealt with and obtained written approval from the local planning authority. The remediation strategy shall be implemented as approved.*
- Reason National Planning Policy Framework (NPPF) paragraph 109 states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of water pollution. Government policy also states that planning policies and decisions should ensure that adequate site investigation information, prepared by a competent person, is presented (NPPF, paragraph 121).*
- 1.5 No other geo-environmental reports for the site have been made available.
- 1.6 In November 2016 AAe undertook an intrusive investigation at the site, comprising the excavation of 7 no. Trial Pits and additional verification Trial Pits. Representative soil and water samples were collected and submitted for laboratory analysis.
- 1.7 The purpose of this report is to provide a summary of the initial desktop study (site history, potential contaminants and baseline setting), present the findings of the site investigation, assess the ground conditions and evaluate the chemical results against current standards. A Conceptual Site Model (CSM) is presented and the need for any further assessment of the site determined, dependent on the presence of any potential pollutant linkages. Potential environmental risks are identified and, if required, further investigation, remediation and mitigation measures to alleviate those risks are specified.

Methodology

- 1.8 The following legislation and policy has been consulted to provide the basis of the assessment:
- Part 2A of *The Environmental Protection Act 1990 (as amended)* is a legal framework introduced to identify and remediate contaminated land. *The Contaminated Land Statutory Guidance (2012)* issued by Department for Environment, Food and Rural Affairs (DEFRA) should be read in accordance with Part 2A;
 - British Standard (BS) *BS 10175:2011 - Investigation of potentially contaminated sites. Code of practice*; and
 - *The Model Procedures for the Management of Land Contamination (Contaminated Land Report 11)* have been developed by the Environment Agency (EA) and DEFRA to provide the technical framework for applying a risk management process when dealing with land affected by contamination.
- 1.9 The potential environmental impacts have been quantitatively assessed by considering the sensitivity of the site in relation to the geology, hydrogeology and general environment. The historical uses of the site have also been considered to inform the environmental risk assessment using contaminant-pathway-receptor-analysis.
- 1.10 Current guidance in the assessment of contamination risk advocates the use of a CSM, to establish connecting links between a contaminant source and a sensitive receptor, via an exposure pathway. A contamination hazard, a receptor and a pathway can all exist independently. However, a risk is only present when all three elements are linked together so a contaminant impacts upon a receptor via an exposure pathway, termed a pollution linkage. Thus, the mere presence of a contamination hazard at a particular site does not necessarily imply the existence of associated risks. A pollution linkage schematic is presented below.



- 1.11 If the contaminant and/or sensitivity of the receptor is such that significant harm can occur then the outcome is called a Significant Pollution Linkage (SPL). In such circumstances, the level of contaminant or the available pathway must be modified in some manner to reduce the severity of the impact to an acceptable level. The detailed assessment methodology is set out in Appendix A.
- 1.12 Evaluation of the existing baseline environment has been assessed through a desk-based study, considering the following sources of information:
- Ordnance Survey (OS) Explorer Map series at 1:25,000 scale, Sheet 191;
 - British Geological Survey (BGS) Geology of Britain Viewer (Solid and Drift) (Contains British Geological Survey materials © NERC 2016) accessed October 2016;
 - Soil Map of England and Wales Scale 1:250,000 (Soil Survey of England and Wales 1983);
 - Radon Atlas of England and Wales (National Radiological Protection Board published 2002);
 - Environment Agency (EA) website (www.environment-agency.gov.uk) accessed October 2016;
 - Multi-Agency Geographic Information for the Countryside website (www.magic.gov.uk) accessed October 2016; and
 - Envirocheck Report (October 2016).

Project Limitations

- 1.13 The findings of this report are based upon information from a range of sources which are believed to be reliable. However, AAe do not guarantee the reliability or authenticity of the information taken from third-party data sets.
- 1.14 Geo-environmental assessments place a significant emphasis on results of chemical analysis, which have been sampled and managed according to established protocols. Whilst the work has been completed in line with industry guidance and quality requirements, it is possible that the ground investigation and assessment carried out does not identify, or fully determine, the extent of conditions beneath the site and the existence of other important contamination sources. The advice given in this report with respect to contamination is based on published guidelines available at the time of writing.

2.0 ENVIRONMENTAL SETTING

Site location and description

- 2.1 The site is located on the eastern edge of Upper Heyford approximately 6 km north-west of Bicester. The site occupies an area of approximately 1.2 hectares on the southern side of Upper Heyford Airfield (disused). Access to the site is via Trenchard Circle adjoining the south-eastern boundary, connecting to Camp Road approximately 200 m to the south.
- 2.2 The site currently comprises a vacant plot of land, with a pumping station in the north-western corner. The site was formerly occupied by 7 pairs of semi-detached residential properties with gardens, which have recently been demolished. All hardstanding and structures have been removed. The former site layout is presented on Figure 2.
- 2.3 The site is bound by the disused airfield to the north and residential properties to the west, east and south. The wider area comprises of agricultural fields to the south and east, the disused airfield to the north and Upper Heyford to the west.

Topography

- 2.4 The site lies at approximately 123 m Above Ordnance Datum (AOD). The site is generally flat, with a slight gradient from north to south.

Geology

- 2.5 Reference to BGS maps for the region indicates that the site is underlain by a Bedrock of Limestone (Great Oolite Group comprised of Limestone and argillaceous rocks (interbedded) from the Jurassic Period). There are no Superficial Deposits recorded at the site.
- 2.6 The site does not contain any features of international or national geological importance. The site is not within a coal mining affected area.
- 2.7 There are no BGS Borehole Logs on the site. There are 16 BGS Borehole Logs listed within 500 m of the site. Details of the four nearest Borehole Logs are presented in Table 2.1.

Location	ID	Distance from site (m)	Depth (m BGL)	Notes
RAF Upper Heyford, Oxfordshire.	SP52NW274	250 N	1.47	No groundwater encountered. Recorded geology of Made Ground to 0.15 m BGL; over weathered limestone to 1.10 m BGL; over oolite limestone to 1.5 m BGL.
RAF Upper Heyford, Oxfordshire.	SP52NW273	300 E	1.51	No groundwater encountered. Recorded geology of Made Ground to 0.80 m BGL; over weathered limestone to 1.40 m BGL; over oolite limestone to 1.5 m BGL.
Property Services Agency, Upper Heyford RAF.	SP52NW184	300 SW	2.00	Recorded as a Trial Pit. Slight seepage of groundwater recorded at 2.20 m BGL. Recorded geology of Made Ground to 0.6 m BGL; silty sandy clay to 0.90 m BGL; over weathered to 1.30 m BGL; over clayey silty sand to 2.20 m BGL; over limestone to 2.30 m BGL.
Property Services Agency, Upper Heyford RAF.	SP52NW186	300 SW	1.00	Recorded as a Trial Pit. No groundwater encountered. Geology recorded as Made Ground to 0.2 m BGL; over sandy clay to 0.5 m BGL; over limestone to 1.4 m BGL.

Soil

- 2.8 The Soil Map of England and Wales has been consulted to classify and describe the near-surface soil (namely topsoil and sub-soil):
- Aberford (511a) – Permian. Jurassic and Eocene limestone - Shallow, locally brashy, well drained calcareous fine loamy soils over limestone. Some deeper calcareous clayey soils.
- 2.9 It is considered likely that any naturally occurring topsoil onsite would have been removed or reworked according to the current and historical land uses.

Hydrogeology

- 2.10 The Bedrock is classified by the Environment Agency as a 'Principal Aquifer'. These are defined as '*...layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.*' It is considered likely that groundwater is present beneath the site.
- 2.11 There are no water abstractions on the site. The nearest registered water abstraction is located approximately 1100 m south-east of the site, registered to 'Mr CF Hilsdon' for the abstraction of groundwater for general agriculture and domestic use. There is no given end date for the licence and is therefore assumed to be active.
- 2.12 There are no Groundwater Source Protection Zones (GSPZ) located on or within 1 km of the site.
- 2.13 There are no springs or wells shown at or within 1 km of the site on the Ordnance Survey Maps.

Hydrology and Fluvial Flood Risk

- 2.14 The nearest surface water features to the site are a ditch running along the northern boundary of the site and a series of ponds to the north-east. The site walkover identified the drainage ditch to be positioned at a higher level than the site, indicating the channel is possibly lined. The ditch was observed to be flowing from west to east. The nearest main watercourse is the River Cherwell approximately 2 km west of the site
- 2.15 The site is located outwith Flood Zones 2 & 3, as identified by the EA flood map for planning (rivers and sea). The site is not considered at risk of fluvial flooding.
- 2.16 There are no active discharges on-site. The Envirocheck Report identifies that there are six registered discharge permits within 1 km of the site. The nearest three discharge consents are detailed in Table 2.2

Location	Start/end date	Distance from site (m)	Discharge	Receiving water
Letchmere Farm Cottage	17 th July 2006/not supplied	38 NE	Sewage discharges – final/treated effluent	Leys Farm Ditch
Heyford Leys Mobile Park Home	30 th June 1995/not supplied	464 S	Sewage discharges – final/treated effluent	Leys Farm Ditch
Heyford Park	27 th March 1997/not supplied	663 S	Sewage and trade combined - unspecified	Gallows Brook

Recorded pollution incidents

- 2.17 The Envirocheck Report shows no pollution incidents to controlled waters registered to the site. There have been six pollution incidents to controlled waters within 1 km of the site. The closest three are detailed in Table 2.3

Location	Incident date	Distance from site (m)	Pollutant	Receiving water	Incident Severity
Upper Heyford	22 nd August 1994	43 N	Oils - unknown	Not given	Category 2 – Significant Incident
Upper Heyford	21 st January 1991	48 N	Oils - unknown	Not given	Category 3 – Minor Incident
RAF, Upper Heyford	24 th October 1991	135 S	Chemicals - unknown	Not given	Category 3 - Minor

Ecosystems

- 2.18 There are no statutory ecological destinations (Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) or Special Protection Area (SPA)) on or within 1 km of the site.

Surrounding receptors

- 2.19 The closest residential receptors are located adjacent to the western, southern and eastern boundaries of the site.
- 2.20 There are no Public Rights of Way on or near to the site.
- 2.21 The nearest school is approximately 1.1 km south-west of the site.

Other matters (mining affected area, landfill and radon)

- 2.22 The site has been assessed for the potential presence of radon. The radon database shows that 1-3% of homes within the area are above the Action Level. Under the relevant guidance, there is no specific mitigation necessary for radon.
- 2.23 There are no historical or active landfill sites at or within 1 km of the site.
- 2.24 Asbestos is a known carcinogen, and if present could pose a health risk to the site occupiers if inappropriately controlled. It was used extensively as a building material in the UK from the 1950's through to the mid 1980's. Given the age of the buildings, it is possible that some of the former buildings and Made Ground could have contained Asbestos Containing Material (ACM).

3.0 POTENTIAL SOURCES OF CONTAMINATION

Historical Land Use

- 3.1 Historic maps in relation to the proposed development site have been reviewed, with a summary of the findings presented in Table 3.1. Extracts of the historical maps are presented in Appendix C.

Date (Scale)	On site	Off site
1881 (1:2,500)	The site comprises part an agricultural field.	The site is bound by woodland (Gorse Cover) to the west, by a farm access track and agricultural fields to the east and by agricultural fields to the north and south. North Leys Farm is located 100 m to the north-east of the site. There is a small quarry located within woodland, approximately 50 m south-west of the site.
1884-1885 (1:10,560)	As above.	The wider area comprises agricultural fields and scattered woodland.
1900 (1:2,500)	As above.	A pump is marked adjacent to the north-east corner of the site. A second pump is marked at North Leys Farm, 100 m north of the site. A well is marked approximately 150 m west of the site within Gorse Cover.
1900 (1:10,560)	As above.	There are four quarries within 1 km of the site, to the south-west, north-west and east. The closest is approximately 50 m south-west of the site.
1922 (1:2,500)	As above.	Two small buildings have been built immediately to the north-east of the site. The use is unknown.
1923 (1:10,560)	As above.	There is a spring approximately 1.1 km east of the site.
1955 (1:10,560)	As above.	Land to the north of the site is labelled as 'Airfield' but no features are shown on the map.
1966 (1:10,000)	As above.	Upper Heyford Airfield has expanded to the north and west of the site, with the main hangars and buildings located approximately 500 m to the west. There has been residential development 100 m south and 500 m south-west of the site. The farm to the north-east of the site is now called as 'Letchmere Farm'.
1975-1976 (1:2,500)	The site comprises the former site layout – 7 pairs of semi-detached houses on Trenchard Circle, a pumping station in the north-west corner, and an electrical substation in the south-east.	The buildings immediately north-east of the site are labelled 'North Leys Cottage'. A small pond is shown immediately north-east of the site. Immediately west of the site is a industrial site/warehouse, with residential developments to the south and east of the site.
1993 (1:10,000)	As above.	The wider area comprises what is largely the current day layout of Upper Heyford, including commercial, industrial and residential premises, including a shopping centre.
2016 (1:10,000)	As above.	A series of surface water features (ponds) are shown approximately 100 m east of the site at Letchmere Farm, adjacent to a drainage ditch.

- 3.2 The historical maps show that the site was first developed around the 1970s as residential housing associated with Upper Heyford Airfield, prior to which the site comprised open agricultural land. The wider surrounding areas were predominantly agricultural fields prior to the development of Upper Heyford Airfield around the 1950's.
- 3.3 The maps shown that land immediately west of the site was used for industrial/commercial purposes from the 1970s through to the 2010s. The industrial site was redeveloped for residential use in the last few years.
- 3.4 A number of former small quarries were located within the area. These features are not shown on current mapping and may have been infilled.

Consultation

3.5 As part of the desk-top study, Cherwell District Council (CDC) was consulted to undertake a contaminated land and pollution incident search. The full consultation response is presented in Appendix D and summarised as follows:

- There are no recorded pollution incidents at the site;
- Site is underlain by Limestone (Major Aquifer of High Groundwater Vulnerability);
- No wells, private wells or abstractions within 50 m of site;
- Site identified as residential land;
- Quarry activity and 'infilled ground' identified within 50 m of south-west of site; and
- Site is identified as 'Military Land'.

Site Uses

3.6 At the time of the site walkover and investigation on 1st November 2016 all former buildings and structures had been demolished and removed. The concrete base of an above-ground fuel storage tank was still present in the south-west corner of the site, along with some manhole structures to the rear of the former properties.

3.7 It is understood that the former residential properties were connected to a shallow (within upper 0.2 m BGL) oil pipe which passed along the northern and western perimeter of the site. This pipe had been removed during the demolition works, with some minor staining observed at surface.

Potentially Contaminating Land Uses

3.8 Potential contaminants associated with current and former land uses at the site are presented in Table 3.2.

Land uses	Key Potential Contaminants
Residential Properties (Airforce Accommodation) On-Site (historic/current)	<ul style="list-style-type: none"> • <i>PAHs (Polycyclic Aromatic Hydrocarbons)</i> – Products of burning and combustion, including bonfires. • <i>Hydrocarbons (Total Petroleum Hydrocarbons)</i> – Small-scale storage for residential use, vehicle storage. Heating oils from pipes. • <i>Heavy metals and non-metals</i> – Reworked ground, small-scale land-raise and levelling using waste and ash. • <i>Asbestos</i> – Present in buildings and structures, incorporation of ACM into Made Ground.
Industrial Works Off-site (historic)	<ul style="list-style-type: none"> • <i>Hydrocarbons (oils and fuels)</i> – Spills and leaks by former storage tanks/pipes, or vehicles using the site. • <i>Metals and metalloids</i> – Potential residues and by-products of processes/storage and disposal of ashes/wastes. • <i>PAHs (Polycyclic Aromatic Hydrocarbons)</i> – Products of burning and combustion.
Airfield and Industrial Uses (fuelling, de-icing, aircraft servicing and maintenance, fire control) Off-site (historic/current)	<ul style="list-style-type: none"> • <i>Asbestos</i> – Associated with buildings and pipelines. Materials may have been removed during the life of the airport and disposed off-site. • <i>Metals and metalloids</i> – Typical contaminants associated with Made Ground and fill materials. • <i>Hydrocarbons (Total Petroleum Hydrocarbons)</i> – From fuelling of aircraft, vehicles, plant and machinery, leaks and spills from on-site storage and transfer. • <i>PAHs (Polycyclic Aromatic Hydrocarbons)</i> – Products of burning and combustion. Boilers and bonfires, dispersal of ashes. • <i>Herbicides</i> – Used to remove and prevent the growth of vegetation in paved areas. • <i>Organic Solvents (toluene, SVOCs, fluorinated surfactants)</i> - From hydraulic and cleaning fluids, cleaning chemicals and organic solvent use in ancillary works. • <i>Anti-freeze and de-icing agents (glycerol, urea and acetate-based formulations)</i> – Applied to runways and aircraft to prevent and remove ice.

4.0 SITE INVESTIGATION AND TESTING

Methodology

- 4.1 An intrusive environmental investigation was undertaken by AAe at the site on 1st and 3rd November 2016. The site investigation locations are presented on Figure 3. The investigation comprised the following:
- 7 no. Trial Pits (TP01-TP07) to provide good coverage across the site.
 - 30 no. Verification Pits (TP08-TP37) to delineate pipework and hydrocarbon impacted soils.
- 4.2 The Trial Pits were constructed using an excavator. Upon completion of the Trial Pits the excavations were backfilled in sequence.
- 4.3 The Trial Pits were logged by AAe to record the depth and types of strata, any groundwater ingress, and any visual or olfactory evidence of contamination.
- 4.4 Representative soil samples were collected from the Trial Pits in accordance with quality control requirements and submitted to Chemtest, a UKAS accredited laboratory, for chemical analysis. The samples were tested for a full environmental suite, including speciated Total Petroleum Hydrocarbons (TPH), Polycyclic Aromatic Hydrocarbons (PAH), metals, other inorganics and an asbestos screen. Selected samples were tested for TPH only.
- 4.5 Headspace tests were undertaken using a Photo-Ionisation Detector (PID) to measure VOC concentrations within soil samples.

Geology

- 4.6 The Site Investigation Logs are presented in Appendix E. The geology encountered in the Trial Pits was generally consistent, comprising Made Ground, over sandy gravelly clay (weathered Limestone), over fractured Limestone bedrock.

Visual and Olfactory Contamination

- 4.7 No visual or olfactory evidence was recorded in Trial Pits TP01 and TP03-TP07.
- 4.8 Within Trial Pit TP02 visual staining and a hydrocarbon odour (PID 4.4 ppm) was observed within the limestone at 1.80-2.00 m BGL. Following the identification of the suspected hydrocarbons, additional verification Trial Pits (TP08-TP37) were then excavated to attempt to identify potential sources (pipework) and determine the extent of impacted soils. The investigation locations and observations are presented on Figure 3.
- 4.9 Table 4.1 sets out the visual evidence of contamination and PID results observed during the verification investigation to identify pipework and impacted soils

Location	PID Result (Depth – m BGL))	Observations
TP08	0.6 ppm (2.00 m)	Minor hydrocarbon odour.
TP09	31.1 ppm (1.10 m)	Hydrocarbon odour.
TP10	52.5 ppm (0.60 m)	Oil pipes at 0.5 m, surrounded by staining and odour.
TP11	0.3 ppm (1.80 m)	Minor hydrocarbon odour.
TP12	91.4 ppm (1.00 m)	Stained gravels 0.8-1.2 m.
TP13	4.6 ppm (1.00 m)	Minor hydrocarbon odour.
TP14	0.2 ppm (1.00 m)	No visual or olfactory evidence of hydrocarbons.
TP15	0.0 ppm (1.00 m)	No visual or olfactory evidence of hydrocarbons.
TP16	0.2 ppm (1.80 m)	No visual or olfactory evidence of hydrocarbons.
TP17	0.0 ppm (1.50 m)	No visual or olfactory evidence of hydrocarbons.
TP18	71.4 ppm (0-0.10 m) 132.3 ppm (0.90 m)	Staining at surface. Oil pipes at 0.9 m, surrounded by staining and odour.

Location	PID Result (Depth – m BGL))	Observations
TP19	6.2 ppm (0.90 m)	Oil pipes at 0.9 m, surrounded by staining and odour.
TP20	2.4 ppm (0.90 m)	Oil pipes at 0.9 m, surrounded by staining and odour.
TP21	3.3 ppm (0.80 m)	Excavation through old manhole. Perched water with free-phase oils – PID reading ambient level immediately above water surface.
TP22	69.5 ppm (0.90 m)	Oil pipes at 0.9 m, surrounded by staining and odour.
TP23	28.4 ppm (1.10 m)	Hydrocarbon odour.
TP24	n/t	Perched water encountered at 0.90 m surrounding pipes, with some free-phase hydrocarbons.
TP25	24.7 ppm (0.90 m)	Oil pipes at 0.9 m, surrounded by staining and odour.
TP26	1.7 ppm (1.60 m)	No visual or olfactory evidence of hydrocarbons.
TP27	0.2 ppm (1.50 m)	No visual or olfactory evidence of hydrocarbons.
TP28	n/t	Pipes and perched water encountered at 1.10 m, some free-phase hydrocarbons on water.
TP29	232.4 ppm (1.30 m)	Pipes at 0.90 m. Stained soils next to manhole.
TP30	n/t	Pipes at 1.20 m
TP31	n/t	Pipes at 1.20 m
TP32	12.6 ppm (1.50 m)	Pipes at 1.20 m
TP33	40.2 ppm (1.30 m)	Pipes at 1.30 m
TP34	4.1 ppm (1.30 m)	Pipes at 1.30 m
TP35	n/t	Pipes at 1.30 m
TP36	n/t	Pipes at 1.30 m
TP37	0.0 ppm (0.60 m)	Adjacent to former tank base. No visual or olfactory contamination.

- 4.10 The investigation identified a buried fuel line (comprising 2 metal pipes) located to the rear of the former properties at approximately 0.50 to 1.30 m BGL. The fuel lines pass along the northern and western areas perimeter of the site, connecting to the former properties via feeder lines and the manholes. The approximate position of the fuel lines is shown on Figure 3. Hydrocarbon staining and odour was observed around the pipes and manholes.

Hydrogeology

- 4.11 Groundwater ingress was encountered at approximately 1.80 m in TP02 on the north of the site. The water was observed to have a hydrocarbon odour and sheen. What appeared to be perched groundwater was encountered around the pipes and manholes to the rear of the former properties. Some free-phase oils were observed on the perched water surrounding these features. It is not known whether the groundwater encountered in TP02 was perched or in connectivity with the aquifer in the limestone strata.

Chemical Analysis

- 4.12 Table 4.2 sets out the chemical analysis and laboratory testing which has been undertaken.

Location	Number	Chemical Analysis
TP01-TP07	10	Full Environmental Solids Suite (including Asbestos Screen, Inorganics, Metals, TOC, Speciated TPH Ali/Aro, Speciated PAH 16 and Phenols)
TP02	1	Full Environmental Water Suite (pH, Inorganics incl. Metals, TPH CWG, PAH USEPA, BTEX, Total Phenols)
TP08-TP18, TP29 and TP37	14	Speciated TPH Ali/Aro (solids)
TP21	1	Speciated TPH Ali/Aro (waters)

- 4.13 The Certificates of Analysis are presented in Appendix F. The soil results have been consolidated as presented in Appendix G.

Assessment of Results – Soils (Human Health)

- 4.14 It is proposed that the site will be redeveloped for residential use including private gardens. Therefore, the proposed land use scenario is 'Residential with Homegrown Produce' and the respective Tier 1 Soil Guidance Values will be adopted.
- 4.15 The results have been compared against the Tier 1 SGVs for 'Residential with Homegrown Produce' land use scenario (as presented in Appendix H). These guidance values have been sourced from industry-accepted models and standards, including the latest 2014 LQM/CIEH S4UL Generic Assessment Criteria (GAC) and the DEFRA C4SL threshold values. Where available, the most stringent LQM/CIEH GAC by organic matter content has been used. The use of guidance values is considered a conservative level of assessment to determine whether further work is required.
- 4.16 The investigation has identified two distinct datasets at the site:
- Soils representative of wider site – TP01-07; and
 - Soils representative of hydrocarbon impacted soils around pipework – TP08-TP37.

Tier 1 Assessment – General Site

- 4.17 The results show that there are no exceedances recorded within the general Trial Pits (TP01-TP07) across the site. Outwith the known areas of hydrocarbon contamination, the recorded shallow soils and natural strata are not considered to pose a risk to future site users. No specific remediation or mitigation is required.

Tier 1 Assessment – Hydrocarbon impacted soils around pipework

- 4.18 The results show that there are exceedances of the Tier 1 SGVs for TPHs in the soils surrounding the oil pipes and connecting manholes. Table 4.3 present the Tier 1 SGV exceedances.

Determinant	Tier 1 SGV (mg/kg)	No. of Exceedances	Max Concentration (mg/kg)	Locations (m BGL)
Aliphatic TPH >C6-C8	100	1	390	TP18 (0-0.1)
Aliphatic TPH >C8-C10	27	4	2100	TP10 (0.6) TP18 (0-0.1) TP18 (0.9) TP29 (1.3)
Aliphatic TPH >C10-12	130	3	8600	TP10 (0.6) TP18 (0-0.1) TP29 (1.3)
Aliphatic TPH >C12-C16	1100	3	47000	TP10 (0.6) TP18 (0-0.1) TP29 (1.3)
Aromatic TPH >C8-C10	34	2	77	TP18 (0-0.1) TP29 (1.3)
Aromatic TPH >C10-C12	74	3	2100	TP10 (0.6) TP18 (0-0.1) TP29 (1.3)
Aromatic TPH >C12-C16	140	3	15000	TP10 (0.6) TP18 (0-0.1) TP29 (1.3)
Aromatic TPH >C16-C21	260	3	11000	TP10 (0.6) TP18 (0-0.1) TP29 (1.3)
Aromatic TPH >C21-C35	1100	1	3700	TP18 (0-0.1)

- 4.19 The Tier 1 SGV TPH exceedances are recorded at TP10 (0.6 m BGL), TP18 (0-0.1 m BGL), TP18 (0.9 m BGL) and TP29 (1.3 m BGL). These samples are considered to be representative of impacted soils around the pipework and manholes that remain at the site.

Contaminants of Potential Concern – Human Health – Hydrocarbon impacted soils around pipework

- 4.20 The chemical analysis and Tier 1 screen has identified the following Contaminants of Potential Concern (COPCs) within the impacted soils surrounding oil pipes and manholes:
- Aliphatic TPH >C6-C8
 - Aliphatic TPH > C8-C10
 - Aliphatic TPH >C10-C12
 - Aliphatic TPH >C12-C16
 - Aromatic TPH >C8-C10
 - Aromatic TPH >C10-C12
 - Aromatic TPH >C12-C16
 - Aromatic TPH >C16-C21
 - Aromatic TPH >C21-C35
- 4.21 As these COPCs are recorded within defined areas of the site ('hotspots') it was not considered appropriate to undertake statistical analysis (95th Percentile and Outlier Test) with the entire dataset (results from TP01-TP07) as this would not have been representative of the wider site condition.

Assessment of Results – Controlled Waters

- 4.22 Groundwater was encountered within the Trial Pits on the north of the site. Whilst some of the water was considered to be perched surrounding the pipes and manholes, it cannot be fully determined whether groundwater encountered within limestone at TP02 was part of the underlying bedrock aquifer. Representative groundwater samples were collected from TP02 and TP21 and submitted to the laboratory for chemical analysis. The Certified of Analysis are presented in Appendix F.
- 4.23 The results have been compared against the World Health Organization (WHO) Guidelines for Drinking Water Quality (1984) and the UK Drinking Water Standards (UKDWS) for Water Supply Regulations (SI 2000/3184) 2000. Aliphatic TPH band fractions between EC12-35 are considered below the solubility for assessment under the WHO guidance values and are therefore not assessed as it is unlikely for them to dissolve into the groundwater. The use of guidance values is considered a conservative level of assessment to determine whether further work is required. Table 4.4 presents the assessment of groundwater results.

Table 4.4 Controlled Waters Assessment						
Determinant	Units	LOD	Guidance Values		Results	
			UKDWS	WHO	TP02 (2.00 m)	TP21 (0.80 m)
pH		N/A	-	-	8.2	-
Sulphate	mg/l	1.0	250	-	42	-
Cyanide (Total)	mg/l	0.050	0.05	-	< 0.050	-
Magnesium	mg/l	0.50	50	-	48	-
Arsenic (Dissolved)	µg/l	1.0	10	-	1.3	-
Boron (Dissolved)	µg/l	20	1000	-	49	-
Cadmium (Dissolved)	µg/l	0.080	5	-	< 0.080	-
Copper (Dissolved)	µg/l	1.0	2000	-	< 1.0	-
Mercury (Dissolved)	µg/l	0.50	1	-	< 0.50	-
Nickel (Dissolved)	µg/l	1.0	20	-	1.9	-
Lead (Dissolved)	µg/l	1.0	10	-	< 1.0	-
Selenium (Dissolved)	µg/l	1.0	10	-	< 1.0	-
Vanadium (Dissolved)	µg/l	1.0	-	-	< 1.0	-
Zinc (Dissolved)	µg/l	1.0	5000	-	1.1	-
Chromium (Total)	µg/l	1.0	50	-	1.4	-
Chromium (Hexavalent)	µg/l	20	-	-	< 20	-
Aliphatic TPH >C5-C6	µg/l	0.10	-	-	< 0.10	< 0.10
Aliphatic TPH >C6-C8	µg/l	0.10	-	1500	< 0.10	< 0.10
Aliphatic TPH >C8-C10	µg/l	0.10	-	300	1200	410000
Aliphatic TPH >C10-C12	µg/l	0.10	-	300	9700	1200000
Aliphatic TPH >C12-C16	µg/l	0.10	-	-	49000	3600000
Aliphatic TPH >C16-C21	µg/l	0.10	-	-	59000	2200000
Aliphatic TPH >C21-C35	µg/l	0.10	-	-	3200	1400000
Aliphatic TPH >C35-C44	µg/l	0.10	-	-	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	µg/l	5.0	-	-	120000	8800000
Aromatic TPH >C5-C7	µg/l	0.10	-	-	< 0.10	< 0.10
Aromatic TPH >C7-C8	µg/l	0.10	-	-	< 0.10	< 0.10
Aromatic TPH >C8-C10	µg/l	0.10	-	300	190	150000
Aromatic TPH >C10-C12	µg/l	0.10	-	100	1300	400000
Aromatic TPH >C12-C16	µg/l	0.10	-	100	15000	1500000
Aromatic TPH >C16-C21	µg/l	0.10	-	90	11000	1500000
Aromatic TPH >C21-C35	µg/l	0.10	-	90	860	190000
Aromatic TPH >C35-C44	µg/l	0.10	-	-	73	3200
Total Aromatic Hydrocarbons	µg/l	5.0	-	-	28000	3700000
Total Petroleum Hydrocarbons	µg/l	10	10	-	150000	13000000
Naphthalene	µg/l	0.10	-	-	< 0.10	-
Acenaphthylene	µg/l	0.10	-	-	< 0.10	-
Acenaphthene	µg/l	0.10	-	-	< 0.10	-
Fluorene	µg/l	0.10	-	-	< 0.10	-
Phenanthrene	µg/l	0.10	-	-	< 0.10	-
Anthracene	µg/l	0.10	-	-	< 0.10	-
Fluoranthene	µg/l	0.10	-	-	< 0.10	-
Pyrene	µg/l	0.10	-	-	< 0.10	-
Benzo[a]anthracene	µg/l	0.10	-	-	< 0.10	-
Chrysene	µg/l	0.10	-	-	< 0.10	-
Benzo[b]fluoranthene	µg/l	0.10	-	-	< 0.10	-
Benzo[k]fluoranthene	µg/l	0.10	-	-	< 0.10	-
Benzo[a]pyrene	µg/l	0.10	-	0.07	< 0.10	-
Indeno(1,2,3-c,d)Pyrene	µg/l	0.10	-	-	< 0.10	-
Dibenz(a,h)Anthracene	µg/l	0.10	-	-	< 0.10	-
Benzo[g,h,i]perylene	µg/l	0.10	-	-	< 0.10	-
Total Of 16 PAH's	µg/l	2.0	0.1	-	< 2.0	-
Benzene	µg/l	1.0	1	10	< 1.0	-
Toluene	µg/l	1.0	-	700	< 1.0	-
Ethylbenzene	µg/l	1.0	-	300	< 1.0	-
m & p-Xylene	µg/l	1.0	-	500	< 1.0	-
o-Xylene	µg/l	1.0	-	500	< 1.0	-
Total Phenols	mg/l	0.030	0.0005	-	< 0.030	-
Exceedance of DWS/WHO Guidance Values						

- 4.24 The chemical results for the groundwater from TP02 and TP21 record significant elevations of TPH in exceedance of UK DWS and WHO guidance values for groundwater. It is considered likely that this is representative of the groundwater quality at the site where leaks from the underground fuel pipes have contaminated perched groundwater. The sample from TP02 indicates that there may have been downward migration to the bedrock aquifer; however, the exact depth of groundwater within the underlying aquifer is not known. It is considered that further assessment and investigation is required to determine the impact on groundwater and assess the risk to controlled waters.

Phytotoxic Assessment – Risk to Plants

- 4.25 The results for the shallow soils (TP01-TP07) have been screened against published industry-accepted assessment criteria and natural background concentrations for phytotoxic elements (MAFF Code of Good Agricultural Practice for the Protection of Soil [1998] and BS3882:2007). Table 4.5 presents the phytotoxic assessment.

Determinant	SGV (mg/kg)	Source	No. of Exceedances	Concentration (mg/kg)	Location
Nickel	110	BS3882:2007	0	N/A	N/A
Arsenic	250	MAFF: 1998	0	N/A	N/A
Chromium	400	MAFF: 1998	0	N/A	N/A
Copper	200	BS3882:2007	0	N/A	N/A
Zinc	300	BS3882:2007	0	N/A	N/A

- 4.26 The recorded soil concentrations within the shallow soils at the site are unlikely to pose a risk to planting schemes and introduced plants. The chemical analysis for the site should be provided to the Landscape Designer.

Services Assessment – Risk to Potable Supply Pipes

- 4.27 The results have been screened against the specification for ‘non-barrier’ polyethylene water supply pipes presented in UKWIR Guidance for the Selection of Water Supply Pipes to be Used in Brownfield Sites. Table 4.6 presents the assessment.

Determinant	Threshold Standard PE Pipe (mg/kg)	Maximum Recorded Site Level (mg/kg)
SVOC (includes PAH)	2	2 (PAH total)
Phenols	2	<0.03
TPH C11-C20	10	47000
TPH C21-C40	500	3700

- 4.28 Based on the above assessment it is considered that a polyethylene barrier pipe (with aluminium barrier layer) will be required for potable water supply pipes to the new properties due to elevations of TPHs recorded within the ground. This should be confirmed with the Designer and Statutory Undertakers.

5.0 CONCEPTUAL SITE MODEL AND SIGNIFICANT POLLUTION LINKAGES

Introduction

- 5.1 The risks that potential contamination within the underlying strata pose to the current and futures uses of the site and the wider environment are assessed within this section of the report.
- 5.2 The assessment is undertaken in accordance with the standard methodology set out in Appendix A.
- 5.3 Table 5.1 sets out the potential receptors at, and surrounding, the site from the information from Section 2 'Baseline Setting' and the available pathways. These are subsequently evaluated as the potential Significant Pollutant Linkages (SPL).

Table 5.1. Summary of receptors and available pathways	
Receptor	Pathways
A. Human health	
<ul style="list-style-type: none"> On-site usage (Proposed Residential) 	Dermal contact Ingestion of soil Inhalation of fugitive dusts and gases Puncture Dermal contact with ground water
<ul style="list-style-type: none"> Off-site land uses (Residential) 	Inhalation of vapours and gases. Dermal contact (following migration) Ingestion of soil (following migration)
<ul style="list-style-type: none"> Construction worker – in the event of excavation and groundworks 	Dermal contact Ingestion of soil Inhalation of fugitive dusts and gases Puncture Dermal contact of ground water
B. Ecology	
<ul style="list-style-type: none"> On site planting 	Direct absorption of phytotoxic compounds from soils
C. Controlled waters	
<ul style="list-style-type: none"> Groundwater Surface Water 	Leaching of contaminants from the soil matrix
D. Buildings and Services	
<ul style="list-style-type: none"> Concrete Services Potable pipes 	Contact with aggressive soil conditions

- 5.4 Table 5.2 sets out the potential SPL and assesses the consequences on the receptor of the pollution linkages. The table provides the Conceptual Model for the site.

Table 5.2. Conceptual Site Model					
Hazard source (Chemical of concern where known)	Pathway	Receptor	Effect	Risk Classification	Discussion, remediation or mitigation solution
Contaminants present in underlying soils (TPHs).	Dermal contact, ingestion of contaminated soils, puncture and inhalation of fugitive dusts via air.	Humans (future users of the site).	Toxic, carcinogenic or hazardous to human health.	Significance: Severe Likelihood: Possible Risk: High	<p>Contamination can give rise to human health concerns if users of the site come into direct contact with affected soil, ingest contaminated particles or inhale fugitive dusts which include contaminated particles.</p> <p>Whilst the majority of existing soils are not assessed to pose a risk to future users, the site investigation and chemical analysis has identified hotspots of elevated TPHs in soils surrounding pipework which exceed the Tier 1 SGVs for the proposed land use scenario.</p> <p>The proposed redevelopment to residential properties with private gardens creates a potential risk pathway between contaminants and humans through the ingestion of soil particles, inhalation of dusts and/or dermal contact. Without relevant controls, there is a risk to residents of the site from the residual contaminants and the risk is considered to be High.</p> <p>Controls & Mitigation</p> <ol style="list-style-type: none"> 1. Removal of pipework and remedial excavation or treatment of impacted soils (including free-phase hydrocarbons) to acceptable standards to remove/treat the primary source of residual contaminants. Validation testing to demonstrate quality of residual soils. 2. It is recommended that a clean-cover system is incorporated into the proposed design to protect future users from any residual contaminants. All residual soils to be capped by buildings, hardstanding or acceptable clean imported soils over a geotextile demarcation layer. 3. In areas of soft landscaping the capping thickness should be 250 mm within shared amenity areas or 600 mm in private garden areas. 4. Imported soils to comply with specification set out in Appendix H. <p>Residual Risk</p> <p>Low – Subject to remedial excavation works and implementation of mitigation controls.</p>

Table 5.2. Conceptual Site Model					
Hazard source (Chemical of concern where known)	Pathway	Receptor	Effect	Risk Classification	Discussion, remediation or mitigation solution
Ground Gas and VOC present in underlying soils and groundwater (TPH)	Inhalation of vapours and ground gases via contaminated soils and air.	Humans (users of the site).	Toxic, carcinogenic, hazardous to human health.	Significance: Severe Likelihood: Possible Risk: High	<p>Re-worked ground (Made Ground), soils with high organic matter, hydrocarbon contamination, landfills, brownfield sites and those sites that are underlain by naturally occurring alluvial strata can pose a risk from ground gases (including carbon dioxide). If these accumulate in enclosed spaces, there is a risk to future site users.</p> <p>The site investigation and chemical analysis has recorded a shallow layer of variable Made Ground (typically less than 1.0 m BGL), overlying weathered Limestone. Chemical analysis has recorded TOC in the underlying soils to a maximum of 5.1%. The investigation has identified hotspots of hydrocarbon contamination surrounding former oil pipes, with maximum recorded PID value of 232.4 ppm and maximum TPH Total concentration of 140,000 mg/kg.</p> <p>It is possible that ground gases and vapours could pose a risk to future site users and the overall risk is assessed to be High without further assessment and control.</p> <p>Controls & Mitigation</p> <ol style="list-style-type: none"> 1. Removal of pipework and remedial excavation or treatment of impacted soils (including free-phase hydrocarbons) to acceptable standards to remove/treat the primary source of residual contaminants and vapours. 2. Validation testing and monitoring of residual soils as part of a Ground Gas Risk Assessment to determine if a VOC-resistant membrane and/or ground gas protection measures are required in the floorslabs of proposed properties. <p>Residual Risk</p> <p>Low – Subject to further assessment and mitigation.</p>

Table 5.2. Conceptual Site Model					
Hazard source (Chemical of concern where known)	Pathway	Receptor	Effect	Risk Classification	Discussion, remediation or mitigation solution
Contaminants present in underlying soils and groundwater (TPHs).	Dermal contact with soils/groundwater, ingestion of contaminated soils, puncture and inhalation of fugitive dusts or vapours via air.	Humans (construction workers).	Toxic, carcinogenic or hazardous to human health.	Significance: Severe Likelihood: Possible Risk: High	<p>Contamination can give rise to human health concerns if construction workers come into direct contact with affected soil, ingest contaminated particles or inhale fugitive dusts which include contaminated particles.</p> <p>The site investigation and chemical analysis has identified elevations of TPH surrounding former pipework.</p> <p>During the construction phase, excavation of the underlying strata for groundworks and to create foundations for the proposed development could create a potential linkage between construction workers and any residual contamination; therefore, the risk is deemed High without control and mitigation.</p> <p>Controls & Mitigation</p> <ol style="list-style-type: none"> 1. Removal of pipework and remedial excavation or treatment of impacted soils (including free-phase hydrocarbons) to acceptable standards to remove/treat the primary source of residual contaminants. 2. All contractors associated with remedial works should ensure suitable Personal Protective Equipment (PPE) and Respiratory Protective Equipment (RPE) is worn by operatives to prevent against skin puncture, inhalation of dusts and vapours, ingestion of contaminants and dermal contact. 3. Test results to be provided to all follow-on contractors to ensure suitable PPE and RPE controls are applied for working in residual soils. 4. It should be noted that the presence of unexpected contaminants cannot be fully discounted, and further assessment may be necessary if suspected contamination is recorded during the redevelopment. <p>Residual Risk</p> <p>Low – Subject to use suitable PPE and RPE.</p>

Table 5.2. Conceptual Site Model					
Hazard source (Chemical of concern where known)	Pathway	Receptor	Effect	Risk Classification	Discussion, remediation or mitigation solution
Contaminants present in underlying soils and groundwater (TPHs).	<p>Dermal contact and ingestion (following migration in soil or by contaminants in groundwater).</p> <p>Inhalation of vapours, fugitive dusts and ground gases via contaminated soils and air.</p>	Humans (users of adjacent land).	Toxic, carcinogenic, hazardous to human health.	Significance: Moderate Likelihood: Possible Risk: Medium	<p>Contaminants can pose a risk to adjacent land users if they migrate through soils or be transported by groundwater.</p> <p>The site investigation and chemical analysis has identified some elevations of TPH surrounding former pipework. The Trial Pitting indicates that the areas of hydrocarbon contamination are localised to soils and perched water surrounding the pipework and connections into the former properties; however, the extent and magnitude of impact on groundwater in the underlying aquifer on the north of the site is not fully known.</p> <p>The nearest residential properties are located immediately east and west of the site. The site is unsurfaced which does not restrict infiltration and the investigation has recorded some shallow groundwater which could potentially mobilise residual contaminants. The risk to adjacent land users is assessed to be Medium without control.</p> <p>Controls & Mitigation</p> <ol style="list-style-type: none"> 1. Removal of pipework and remedial excavation or treatment of impacted soils and groundwater (including free-phase hydrocarbons) to acceptable standards to remove/treat the primary source of residual contaminants and vapours. Validation testing to demonstrate quality of residual soils. 2. Installation of groundwater monitoring boreholes to determine the quality, depth and flow-direction of groundwater within the underlying limestone aquifer. 3. Suitable controls to be applied during the construction and groundworks phase to minimise potential low-level fugitive emissions of asbestos fibres from soils. <p>Residual Risk Low – Subject to further assessment and implementation of suitable controls.</p>

Table 5.2. Conceptual Site Model					
Hazard source (Chemical of concern where known)	Pathway	Receptor	Effect	Risk Classification	Discussion, remediation or mitigation solution
Contaminants present in underlying soils and groundwater (TPHs).	Leaching and migration through soil to groundwater and surface water.	Controlled waters – Surface water and groundwater.	Contamination of a controlled water.	Significance: Severe Likelihood: Possible Risk: High	<p>Contaminants can pose a risk to controlled waters if they migrate through soils, enter surface watercourses or are transported by groundwater.</p> <p>The site is underlain by shallow Made Ground, over weathered cohesive limestone, which overlies a bedrock geology of Limestone (Principal Aquifer). Although there are no main rivers or groundwater abstractions within 1 km of the site, there are a series of drainage ditches and surface water features to the north and east.</p> <p>The site investigation and chemical analysis has identified some significant elevations of TPH in soils and groundwater surrounding oil pipework and connections into former properties. Some free-phase hydrocarbons were observed in perched water surrounding manhole structures. Chemical analysis of water samples recorded elevations of TPH above DWS and WHO guidance values. It cannot be fully determined whether contaminated groundwater encountered within limestone at TP02 was part of the underlying bedrock aquifer and the extent and magnitude of impact on groundwater in the underlying aquifer on the north of the site is not fully known.</p> <p>The risk to controlled waters is assessed to be High without further assessment and control.</p> <p>Controls & Mitigation.</p> <ol style="list-style-type: none"> 1. Removal of pipework and remedial excavation or treatment of impacted soils and groundwater (including free-phase hydrocarbons) to acceptable standards to remove/treat the primary source of residual contaminants. Validation testing to demonstrate quality of residual soils and groundwater. 2. Installation of groundwater monitoring boreholes to determine the quality, depth and flow-direction of groundwater within the underlying limestone aquifer, including Detailed Hydrogeological Risk Assessment to evaluate risk to controlled waters and derive acceptable remedial target values for soils and groundwater. <p>Residual Risk</p> <p>Low – subject to further assessment and implementation of remedial controls.</p>

Table 5.2. Conceptual Site Model					
Hazard source (Chemical of concern where known)	Pathway	Receptor	Effect	Risk Classification	Discussion, remediation or mitigation solution
Contaminants present in underlying soils and groundwater (TPHs).	Uptake by roots from soil and groundwater.	Ecology (introduced planting and landscaping)	Damage and restrictive growth.	Significance: Moderate Likelihood: Unlikely Risk: Low	<p>The site investigation and chemical analysis have not recorded any known phytotoxic contaminants within the Made Ground or Natural Strata underlying the site; therefore, the risk to planting and landscaping is assessed to be Low without control and mitigation. Some hotspots of residual hydrocarbon contamination have been recorded however it is recommended that these are excavated for the protection of human health and surrounding receptors.</p> <p>Controls & Mitigation</p> <ol style="list-style-type: none"> Existing test results to be provided to Designer to ensure suitable design controls for introduced planting and landscaping. <p>Residual Risk</p> <p>Low – Subject to suitable design controls.</p>
Contaminants present in underlying soils and groundwater (TPHs).	Contact with contaminated soil.	Services and structures in the underlying ground.	Damage to services and structures.	Significance: Severe Likelihood: Possible Risk: High	<p>Site investigation and chemical analysis has recorded some significant elevations of TPH in residual soils which may necessitate the use of a barrier pipe for potable water supply to the proposed properties. In addition, the recorded ground conditions could potentially pose aggressive ground conditions to structures and foundations. The risk to structures and services is assessed to be High without control and mitigation.</p> <p>Controls & Mitigation</p> <ol style="list-style-type: none"> Test results to be provided to Designer and Statutory Undertakers to ensure structures and services are suitably protected from ground conditions. Removal of pipework and remedial excavation or treatment of impacted soils and groundwater (including free-phase hydrocarbons) to acceptable standards to remove/treat the primary source of residual contaminants. Validation testing to demonstrate quality of residual soils. <p>Residual Risk</p> <p>Low – Subject to suitable design controls.</p>

6.0 CONCLUSIONS AND RECOMMENDATIONS

- 6.1 AA Environmental Limited (AAe) has been commissioned by Conlon Limited to carry out a Phase 2 Environmental Risk Assessment (ERA) and ground investigation for the proposed redevelopment of land at Trenchard Circle, Upper Heyford.
- 6.2 The site currently comprises a vacant plot of land, with a pumping station in the north-western corner. The site was formerly occupied by 7 pairs of semi-detached residential properties with gardens, which have recently been demolished. Planning permission (16/00196/F) was granted by Cherwell District Council on the 9th March 2016 for the demolition of the former residential units, and construction of 13 new dwellings with private gardens and associated car parking.
- 6.3 The site has been subject to a desktop study and an intrusive ground investigation to review the site history and uses, inspect the underlying strata, check for evidence of residual contamination and collect soil samples for laboratory chemical analysis. The investigation comprised the construction of 7 no. Trial Pits and 30 no. Verification Pits across the site on 1st and 3rd November 2016.
- 6.4 Although the investigation has not recorded any residual contaminants across much of the site, the investigation and chemical analysis has recorded some hotspots of significantly elevated Total Petroleum Hydrocarbons (TPH) in soils and groundwater surround oil pipes and connections into the former properties. A series of Verification Pits (TP08-TP37) were excavated to trace the route of pipework and delineate the impacted soils, with a focus on the north of the site. The proposed redevelopment of the land for residential purposes creates a potential risk pathway between any residual contamination and future site users. The site is underlain by limestone (Principal Aquifer) and shallow groundwater has been recorded. The extent and magnitude of impact on the underlying aquifer in the north of the site could not be fully determined by the current investigation and assessment. The risk assessment identified a potential high risk to future site users and surrounding receptors (including controlled waters) without further assessment, remediation and/or mitigation.
- 6.5 Table 6.1 presents a summary of the recommended further works, remediation and/or mitigation controls during the redevelopment. This should be read in conjunction with the Remedial Plan (Figure 4).

Table 6.1. Summary of remediation and mitigation controls		
Ref	Item	Description/Requirements
1	Installation of Boreholes and Hydrogeological Risk Assessment	Installation of groundwater monitoring boreholes to determine the quality, depth and flow-direction of groundwater within the underlying limestone aquifer, including Detailed Hydrogeological Risk Assessment to evaluate risk to controlled waters and derive acceptable remedial target values for soils and groundwater.
2	Remedial Plan	Development of a Remedial Plan based on the findings of the Detailed Hydrogeological Risk Assessment to determine strategy for the removal or treatment of impacted soils and groundwater to acceptable target values.
3	Pipe Removal and Excavation or Treatment of Impacted Soils/Perched Groundwater	Removal of pipework and remedial excavation or treatment of impacted soils and groundwater (including free-phase hydrocarbons) to acceptable standards to remove/treat the primary source of residual contaminants and vapours. Soils to be transferred off-site (for recovery, treatment or disposal) in accordance with waste regulatory regime. Perched groundwater impacted by hydrocarbons to be treated in-situ or pumped to a holding tank and transferred off-site in accordance with waste regulatory regime. Subject to the Remedial Plan, validation testing to demonstrate the quality of residual soils.

Table 6.1. Summary of remediation and mitigation controls

Ref	Item	Description/Requirements
4	Ground Gas Risk Assessment	In conjunction with groundwater monitoring it is recommended that ground gas monitoring is undertaken on boreholes to inform a Ground Gas Risk Assessment to determine the requirements for ground-gas protection measures in floorslabs of the properties. Post-remedial excavation testing and VOC monitoring to determine requirement for a hydrocarbon-resistant membrane in the floorslabs of the properties.
5	Capping of Site	Subject to the Remedial Plan, a clean-cover system may need to be incorporated into the proposed design to protect future users from any residual contaminants following the remedial works. All residual soils to be capped by buildings, hardstanding or acceptable clean imported soils over a geotextile demarcation layer. In areas of soft landscaping the capping thickness should be 250 mm within shared amenity areas or 600 mm in private garden areas. Imported soils to comply with specification set out in Appendix H.
6	Protection of Landscaping, Scheme and Plants	Test results to be provided to Designer to ensure suitable design controls for introduced planting and landscaping
7	Protection of Structures and Services	Test results to be provided to Designer and Statutory Undertakers to ensure structures and services are suitably protected from ground conditions. Installation of barrier pipe for potable water supply to all new properties.
8	Unexpected Contamination	If any unexpected contamination is encountered during the development of the site, then further testing and/or assessment should be completed.
9	Waste Disposal	All soils and groundwater transferred off-site as part of the remedial and/or construction phase should be suitably characterised in accordance with the waste regulatory regime and Duty of Care requirements. Transfer Notes for all wastes transferred off-site should be maintained.

Summary

- 6.7 The Environmental Risk Assessment undertaken by AAe has identified sources of residual contamination which could pose a risk to future site users and surrounding receptors without control. It is recommended that the further works, remediation, mitigation and design controls specified within this report are adopted for the protection of human health and surrounding receptors. Through these controls it is anticipated that all environmental risks can be suitably managed without adversely affecting the proposed development. A Remedial Strategy should be developed and the proposed remedial and mitigation solutions agreed with the Local Authority and Regulators.




163408/JNT

AA ENVIRONMENTAL LIMITED


December 2016

Figures




KEY	
Site Location: 	UK Location: 
	
© Crown Copyright. All Rights Reserved. Licence Number 100038323.	

Rev.	Details	Drawn Chkd.	Date
------	---------	-------------	------

 <p>AA Environmental Ltd Units 4-8 Cholswell Court Shippon, Abingdon Oxon OX13 6HX T: 01235 536042 F: 01235 523849 info@aae-llp.com www.aae-llp.com</p>	Project 163408 Trenchard Circle Upper Heyford OX25 5TB	Title Site Location Plan			
	Scale NTS	Date November '16	Drawn SM	Chkd. JNT	Drg. No. Figure 1



KEY

 Site Boundary

Rev.	Details	Drawn	Date
		Chkd.	

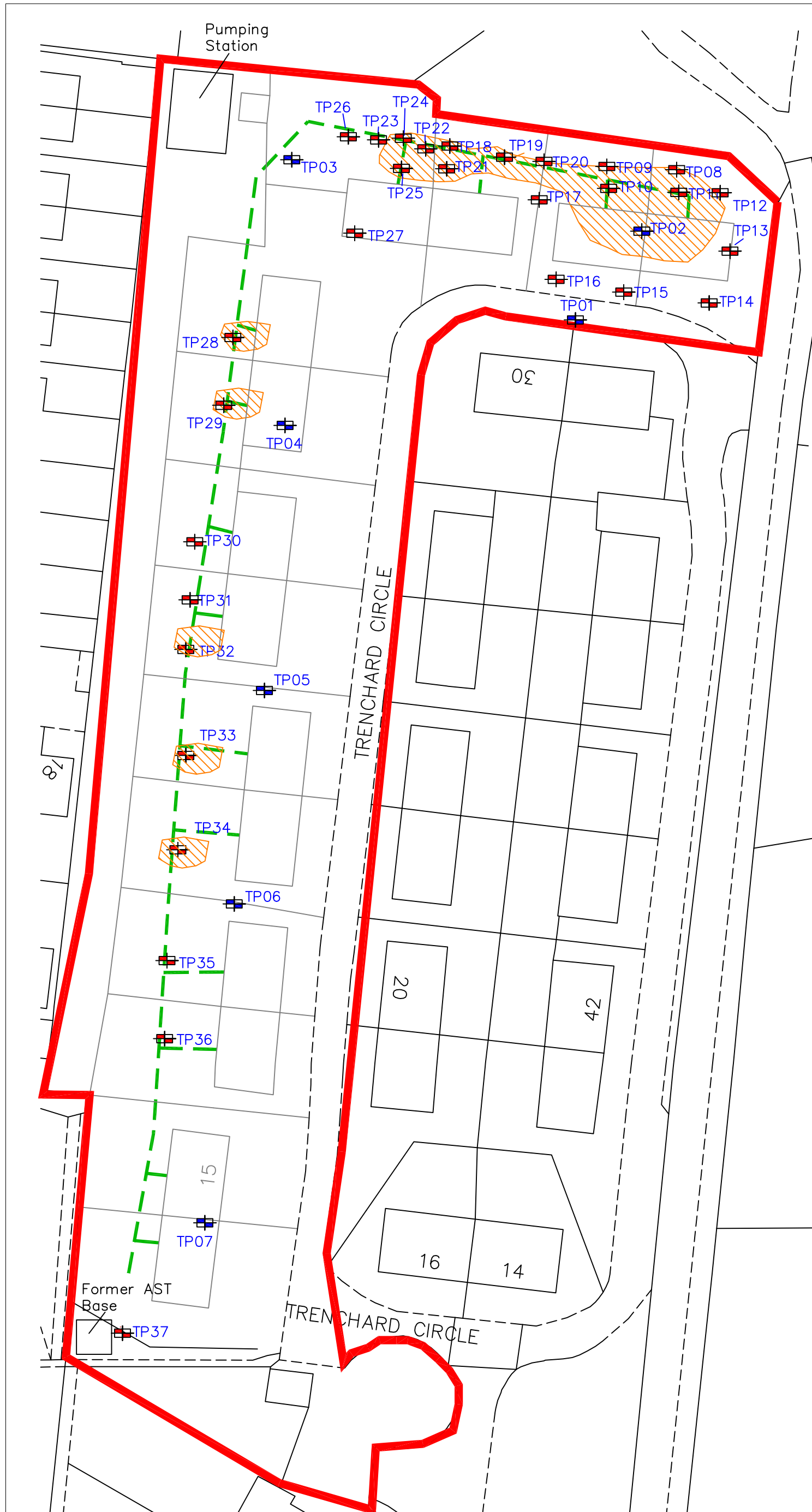
PROJECT
 163408
 Trenchard Circle
 Upper Heyford

TITLE
 Former Site Layout








AA Environmental Ltd
 Units 4-8
 Cholswell Court
 Shippon Abingdon
 Oxon OX13 6HX
 T: 01235 536042
 F: 01235 523849
 info@aae-lp.com
 www.aae-lp.com

Scale	Date	Nov'16	Drg No.	Rev.
NTS	Drawn	SM	Chkd.	
			JNT	



KEY


-  Site Boundary
-  Trial Pits (TP01-07)
-  Verification Pits (TP08-37)
-  Indicative areas of recorded hydrocarbon contamination
-  Indicative position of below-ground oil pipes

Rev.	Details	Drawn	Date
		Chkd.	
Project 163408 Techard Circle Upper Heyford			
Title Site Investigation Plan			
		AA Environmental Ltd Units 4 to 8 Cholswell Court Shippon Abingdon Oxon. OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com	
Scale	Date	Nov'16	Drng. No.
NTS	Drawn	SM	Chkd.
		JNT	Figure 3
			Rev.



KEY

- Site Boundary
- - - Indicative position of below-ground oil pipes to be removed.
- - - Impacted soils around pipework to be segregated and treated/excavated. Validation testing of residual soils.

Rev.	Details	Drawn	Date
		Chkd.	
Project 163408 Trenchard Circle Upper Heyford			
Title Remedial Plan			
		AA Environmental Ltd Units 4 to 8 Cholswell Court Shippon Abingdon Oxon. OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com	
Scale	Date	Nov'16	Drng. No.
NTS	Drawn	SM	Chkd.
		JNT	Figure 4
			Rev.

APPENDIX A
Conceptual Site Model Methodology

APPENDIX A - Conceptual Site Model Methodology

Introduction

- A.1 To determine the Significant Pollution Linkages (SPL) at a site requires the review of potential contaminants, the associated available pathways and the characteristics of the associated receptors. The review of all the SPL is determined is termed as the development of a Conceptual Site Model (CSM).
- A.2 The CSM for the site is presented in Chapter 5. The method for its development has been undertaken in accordance with this Appendix. Chapter 5 also determines the potential for any remediation/mitigation works required to make the site suitable for the proposed use.

Methodology

- A.3 A series of potential receptors are assessed, together with linking pathways and suspected contaminant sources. Table A1 sets out the potential consequences of the pollution linkage and the associated classification of the effect. Typical receptors evaluated are as follows:
- Human health
 - Proposed/current usage:
 - Open spaces;
 - Residential with gardens;
 - Residential without gardens;
 - Commercial;
 - Industrial;
 - Off-site human health (linked to the typical land uses as defined above);
 - Construction workers;
 - Ecological resource:
 - Current habitats and species;
 - proposed habitats and species;
 - Controlled waters:
 - Surface waters;
 - Groundwater;
 - Buildings and structures:
 - Aggressive ground conditions creating corrosion or impairment to building/structure.

Table A1. Potential Consequence of Pollution Linkage

Classification	Human Health	Controlled water	Built Environment	Ecosystems
Severe	Irreversible damage to human health.	Significant pollution to a sensitive or important controlled water.	Damage to a building or structure that would require repair or remedial measures in excess of £20,000.	Irreversible change to an existing ecological species, habitat or ecosystem. Prohibit proposed growth of species, ecosystem or habitat.
Moderate	Reversible long-term damage to human health.	Pollution to a controlled water.	Damage to a building or structure that would require repair or remedial measures below £20,000.	Will impair the development of an existing species, ecosystem or habitat. Permit limited growth of a proposed species, ecosystem or habitat.
Mild	Reversible but short-term damage to human health.	Minor pollution to a non-sensitive controlled water.	Repairable damage to building or structures which would not require excessive cost.	Minor change or effects of development on species or habitat but does create long term effects on ecosystem.

Classification	Human Health	Controlled water	Built Environment	Ecosystems
Negligible	No discernible damage to human health.	No discernible pollution likely to a non-sensitive controlled water.	Insubstantial damage not requiring repair.	No significant effects on existing or proposed species, habitats or ecosystems.

A.4 The risk assessment examines impact of a contaminant on a receptor against the likelihood of its occurrence. The likelihood is rated accordingly:

Certain: > 90% of contaminant receptor linkage
Likely: 60-90% of contaminant receptor linkage
Possible: 30-60% of contaminant receptor linkage
Unlikely: 15-30% of contaminant receptor linkage
Very unlikely 2.5-15% of a contaminant receptor linkage
Negligible: <2.5% of contaminant receptor linkage

A.5 The available pathways are considered as follows:

- Human health
 - Dermal contact
 - Ingestion
 - Inhalation
 - Explosion
 - Puncture
- Ecology
 - Absorption of contaminants through roots and leaves;
- Controlled waters
 - Direct ingress of contaminants;
 - Leaching of contaminants from soils;
- Buildings
 - Direct contact with contaminated water or soils

A.6 Using the information derived about the availability of a contaminant to a receptor, a risk classification is then undertaken in accordance with Table A2.

Table A2. Risk Classification

		Potential consequence of contaminant linkage			
		Severe	Moderate	Mild	Negligible
Likelihood of contaminant receptor linkage	Certain	High	High	Medium	Very low
	Likely	High	High	Low	Negligible
	Possible	High	Medium	Low	Negligible
	Unlikely	Medium	Low	Very low	Negligible
	Very Unlikely	Low	Very low	Very low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

A.7 The assessed risk classification definitions are:

High: it is likely that the contaminant source could cause harm to a designated receptor and harm would be significant.
Medium: it is possible that the contaminant source could cause harm to a designated receptor, but it is unlikely that the harm would be significant.
Low: it is possible that the contaminant source could cause significant harm to a designated receptor, however it is likely to be mild.
Very low: it is considered unlikely that significant harm could be caused and any impact would be mild.
Negligible: the potential contaminant source cannot cause significant harm to the receptor.

**Appendix B
Planning Documents**



NOTICE OF DECISION
TOWN AND COUNTRY PLANNING ACT
1990
(AS AMENDED)

Name and Address of Agent/Applicant:

Heyford Residential Ltd
c/o Pegasus Group
Mr Paul Burrell
Pegasus House
Querns Business Centre
Whitworth Road
Cirencester
Gloucestershire
GL7 1RT

Date Registered: 9th March 2016

Proposal: Demolition of existing bungalows and erection of 13 dwellings with associated car parking and landscaping

Location: 13 - 39 (Odds Numbers Only), Trenchard Circle, Upper Heyford,

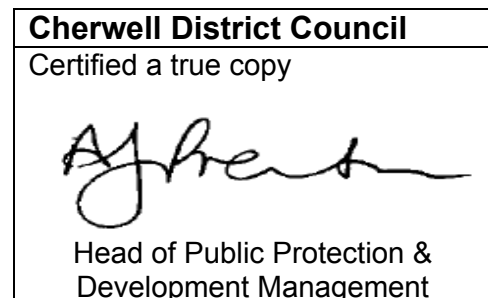
Parish(es): Upper Heyford

PERMISSION FOR DEVELOPMENT SUBJECT TO CONDITIONS

The Cherwell District Council, as Local Planning Authority, hereby **GRANTS** planning permission for the development described in the above-mentioned application, the accompanying plans and drawings and any clarifying or amending information **SUBJECT TO THE CONDITIONS SET OUT IN THE ATTACHED SCHEDULE.**

The reason for the imposition of each of the conditions is also set out in the schedule.

Cherwell District Council
Bodicote House
Bodicote
Banbury
Oxon
OX15 4AA



Date of Decision: 17 August 2016

**Head of Public Protection
& Development Management**

SCHEDULE OF CONDITIONS

- 1 Except where otherwise stipulated by condition, the application shall be carried out strictly in accordance with the following documents: Application forms , Planning, Heritage and Design Statement, Aboricultural Impact assessment and Protection Plan, Construction Specification, Parking Matrix, Habitat and Bat Survey and Flooding Risk and Drainage Assessment, and drawings numbered:
- Location Plan 0521 TR 101
 - External Works Layout 0521 TR 104-Rev G
 - Planning Layout 0521 TR Rev H
 - Adoption Plan 0521 TR 107 Rev G
 - Tracking Layout 1 of 2 0521 TR 105 RevF
 - Tracking Layout 2 of 2 0521 TR 105 Rev B
 - Materials Layout 0521 TR 108 Rev H
 - Refuse Plan 0521 TR 111 Ref F
 - Detailed Planting Proposals 1 of 2 1619 A4 13
 - Detailed Planting Proposals 2 of 2 1619 A4 21
 - Housetype booklet 0521 TR HTB Issue 8

Reason - For the avoidance of doubt, to ensure that the development is carried out only as approved by the Local Planning Authority and to comply with Government guidance contained within the National Planning Policy Framework.

- 2 The development to which this permission relates shall be begun not later than the expiration of three years beginning with the date of this permission.

Reason - To comply with the provisions of Section 91 of the Town and Country Planning Act 1990, as amended by Section 51 of the Planning and Compulsory Purchase Act 2004.

- 3 No materials other than those as shown on plan No. 0521 TR 108 Rev H are to be used in the new development. There shall be no variation of these materials without the prior written consent of the Local Planning Authority. The development shall be carried out in accordance with the approved schedule.

Reason - To ensure the satisfactory appearance of the completed development and to comply with Policy C28 of the adopted Cherwell Local Plan and Government guidance contained within the National Planning Policy Framework.

- 4 All planting, seeding or turfing comprised in the approved details of landscaping shall be carried out in accordance with BS 4428:1989 Code of Practice for general landscape operations (excluding hard surfaces), or the most up to date and current British Standard, in the first planting and seeding seasons following the occupation of the building(s) or on the completion of the development, whichever is the sooner. Any trees, herbaceous planting and shrubs which, within a period of five years from the completion of the development die, are removed or become seriously damaged or diseased shall be replaced in the current/next planting season with others of similar size and species.

Reason - In the interests of the visual amenities of the area, to ensure the creation of a pleasant environment for the development and to comply with Policy C28 of the adopted Cherwell Local Plan and Government guidance contained within the National Planning Policy Framework.

- 5 That all enclosures along all boundaries of the site shall be as shown on the approved plans and such means of enclosure shall be erected prior to the occupation of any dwelling.

Reason - To ensure the satisfactory appearance of the completed development, to safeguard the privacy of the occupants of the existing and proposed dwellings and to comply with Policies C28 and C30 of the adopted Cherwell Local Plan.

- 6 Prior to the first occupation of any of the dwellings hereby approved, all of the estate roads, footpaths (except for the final surfacing thereof) and parking shall be laid out, constructed, lit and drained in accordance with Oxfordshire County Council's 'Conditions and Specifications for the Construction of Roads' and its subsequent amendments.

Reason: In the interests of highway safety, to ensure a satisfactory standard of construction and layout for the development and to comply with Government guidance contained within the National Planning Policy Framework.

- 7 Prior to first occupation of any dwelling hereby approved, a Travel Information Pack shall be submitted to and approved by the Local Planning Authority. The first residents of each dwelling shall be provided with a copy of the approved Travel Information Pack.

Reason - In the interests of sustainability, to ensure a satisfactory form of development and to comply with Government guidance contained within the National Planning Policy Framework.

- 8 Prior to the commencement of the development hereby approved, and notwithstanding the application details, full details of refuse, fire tender and pantechnicon turning within the site shall be submitted to and approved in writing by the Local Planning Authority. Thereafter, the development shall be carried out in accordance with the approved details.

Reason - In the interests of highway safety and to comply with Government guidance contained within the National Planning Policy Framework

- 9 The development permitted by this planning permission shall be carried out in accordance with the approved Flood Risk Assessment (Version 4. Woods Hardwick, April 2016), and the following mitigation measures detailed within the FRA.

- o Limiting the surface water run-off generated by the 1 in 100 year critical storm so that it will not exceed the run-off from the developed site and not increase the risk of flooding off-site.

- o Permeable Paving extent to be approved by LPA (para 2.5 of FRA).

- o The attenuation tanks and filter drains as shown on drawing No.HEYF-5-903 D.

The mitigation measures shall be fully implemented prior to occupation and subsequently in accordance with the timing / phasing arrangements embodied within the scheme, or within any other period as may subsequently be agreed, in writing, by the local planning authority.

The drainage scheme shall also include for the maintenance and management of SUDS features to be presented in the form of a Site SUDS Management Plan.

Reason - To protect the development and its occupants from the increased risk of flooding and in order to comply with Government guidance contained within the National Planning Policy Framework.

- 10 If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the local planning authority) shall be carried out until the developer has submitted a remediation strategy to the local planning authority detailing how this unsuspected contamination shall be dealt with and obtained written approval from the local planning authority. The remediation strategy shall be implemented as approved.

Reason National Planning Policy Framework (NPPF) paragraph 109 states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of water pollution. Government policy also states that planning policies and decisions should ensure that adequate site investigation information, prepared by a competent person, is presented (NPPF, paragraph 121).

- 11 Prior to the first occupation of the development hereby approved, a Landscape and Ecology Management Plan (LEMP) shall be submitted to and approved in writing by the Local Planning Authority. Thereafter, the LEMP shall be carried out in accordance with the approved details.

Reason -To protect habitats of importance to biodiversity conservation from any loss or damage in accordance with Policy C2 of the adopted Cherwell Local Plan and Government guidance contained within the National Planning Policy Framework.

PLANNING NOTES

- 1 The Advance Payments Code (APC), Sections 219 -225 of the Highways Act, is in force in the county to ensure financial security from the developer to off-set the frontage owners' liability for private street works, typically in the form of a cash deposit or bond. Should a developer wish for a street or estate to remain private then to secure exemption from the APC procedure a 'Private Road Agreement' must be entered into with the County Council to protect the interests of prospective frontage owners. Alternatively the developer may wish to consider adoption of the estate road under Section 38 of the Highways Act.

Prior to commencement of development, a separate consent must be obtained from OCC Road Agreements Team for any highway works under S278 of the Highway Act. Contact: 01865 815700; RoadAgreements@oxfordshire.gov.uk.

- 2 In accordance with the Town and Country Planning (Development Management Procedure) (England) (Amendment No 2) Order 2012 and paragraphs 186 and 187 of the National Planning Policy Framework (March 2012), this decision has been taken by the Council having worked with the applicant/agent in a positive and proactive way as set out in the application report. Since submission the details have been revised several times as part of a positive engagement between applicant and Local Planning Authority. Layouts have been modified to reflect character, comply with the design code and to create space for more trees and to create an opportunity for more street planting on the main tertiary road. The layout and design closely follows the Design Codes and advice has been given on the plans and house types following formal written pre application advice. On the back of these comments the design has evolved and a number of changes have been made.

STATEMENT OF ENGAGEMENT

In accordance with the Town and Country Planning (Development Management Procedure) (England) Order 2015 and paragraphs 186 and 187 of the National Planning Policy Framework (March 2012), the Council has worked positively and proactively to determine this application within the agreed timescales, having worked with the applicant/agent where necessary and possible within the scope of the application (as set on in the case officer's report) to resolve any concerns that have arisen, in the interests of achieving more appropriate and sustainable development proposals. Consent has been granted accordingly.

The case officer's report and recommendation in respect of this application provides a detailed assessment of the merits of the application when considered against current planning policy and guidance, including consideration of the issues raised by the comments received from consultees and members of the public. This report is available to view online at:

<http://www.cherwell.gov.uk/viewplanningapp>.

NOTICE OF DECISION

**TOWN AND COUNTRY PLANNING ACT 1990
(AS AMENDED)**

NOTES TO THE APPLICANT

TIME LIMITS FOR APPLICATIONS

By virtue of Sections 91-96 of the Town and Country Planning Act 1990, as amended by Section 51 of the Planning and Compulsory Purchase Act 2004, planning permissions are subject to time limits. If a condition imposing a time limit has been expressly included as part of the permission, then that condition must be observed. Otherwise, one or other of the following time limits will apply:

Where planning permission is given in outline subject to a condition reserving certain matters for subsequent approval, application for approval of such matters reserved must be made not later than the expiration of 3 years beginning with the date of the outline planning permission and further the development to which the permission relates must be begun not later than the expiration of 2 years from the final approval of the reserved matters or, in the case of approval on different dates, the final approval of the last reserved matters to be approved.

Where the planning permission is complete and is not in outline, the development must be begun not later than the expiration of 3 years from the date on which permission was granted.

OTHER NECESSARY CONSENTS

This document only conveys permission or approval for the proposed development under Part III of the Town and Country Planning Act 1990 and you must also comply with all the bye-laws, regulations and statutory provisions in force in the District and secure such other approvals and permissions as may be necessary under other parts of the Town and Country Planning Act 1990 or other legislation.

In particular you are reminded of the following matters:

- The need in appropriate cases to obtain approval under the Building Regulations. **The Building Regulations may be applicable to this proposal. You are therefore advised to contact the District Council's Building Control Manager before starting work on site.**
- The need to obtain an appropriate Order if the proposal involves the stopping up or diversion of a public footpath.
- Data supplied by the National Radiological Protection Board (NRPB) and the British Geological Survey (BGS) suggests that the site of this application falls within an area which is potentially at risk from radon. This may require protective measures in order to comply with the Building Regulations if your consent relates to a new dwelling or house extension. Further advice on whether protective measures are required under the Building Regulations can be obtained by contacting the Building Control Manager on 0300 003 0200, fax 0300 003 0201 or E-mail at building.control@cherwellandsouthnorthants.gov.uk
- The need to obtain a separate "Listed Building Consent" for the demolition, alteration or extension of any listed building of architectural or historic interest from the Local Planning Authority.
- The need to make any appropriate arrangements under the Highways Act in respect of any works within the limits of a public highway. The address of the Highway Authority is Oxfordshire County Council, Speedwell House, Speedwell Street, Oxford, OX1 1NE.
- It is the responsibility of the applicant to ascertain whether his/her development affects any public right of way, highway or listed building.

APPEALS TO THE SECRETARY OF STATE

If you are aggrieved by the decision of the Local Planning Authority to refuse to grant planning permission or grant planning permission subject to conditions, you can appeal to the Secretary of State in accordance with Section 78(1) of the Town and Country Planning Act 1990.

If you wish to appeal then;

- For **Householder** applications you must do so within **12 weeks** of the date of the decision
- For **Minor Commercial** applications you must do so within **12 weeks** of the date of the decision
- For **all other types** of planning applications you must do so within **6 Months** of the date of the decision

Unless;

- The decision on the application relates to the same or substantially the same land and the development is already the **subject of an enforcement notice** then you must appeal within **28 days** of the date of the Local Planning Authority's decision on the planning application.
- If an **enforcement notice is served** relating to the same or substantially the same land and development as in your application and if you want to appeal the decision, then you must do so within **28 days** of the service of the enforcement notice, or 6 months (12 weeks for householder and minor commercial) of the date of this decision which ever is the sooner

Forms can be obtained from the **Planning Inspectorate, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6PN. Tel (0303 444 5000. Or online at www.planningportal.gov.uk/pcs**. The Secretary of State can allow a longer period for giving notice of an appeal, but he will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

The Secretary of State need not consider an appeal if it seems to him that permission or approval for the proposed development could not have been so granted otherwise than subject to the conditions imposed by the Local Planning Authority, having regard to the statutory requirements, to the provisions of the development order and to any directions given under the order.

In practice, the Secretary of State does not refuse to consider appeals solely because the Local Planning Authority based its decision on a direction given by him.

PURCHASE NOTICES

If either the Local Planning Authority or the First Secretary of State grants permission or approval for the development of land subject to conditions, the owner may claim that he/she can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances the owner may serve a purchase notice on the District Council. This notice will require the Council to purchase his/her interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990.

COMPENSATION

In certain circumstances compensation may be claimed from the Local Planning Authority if permission is granted subject to conditions by the Secretary of State on appeal or on reference of the application to him.

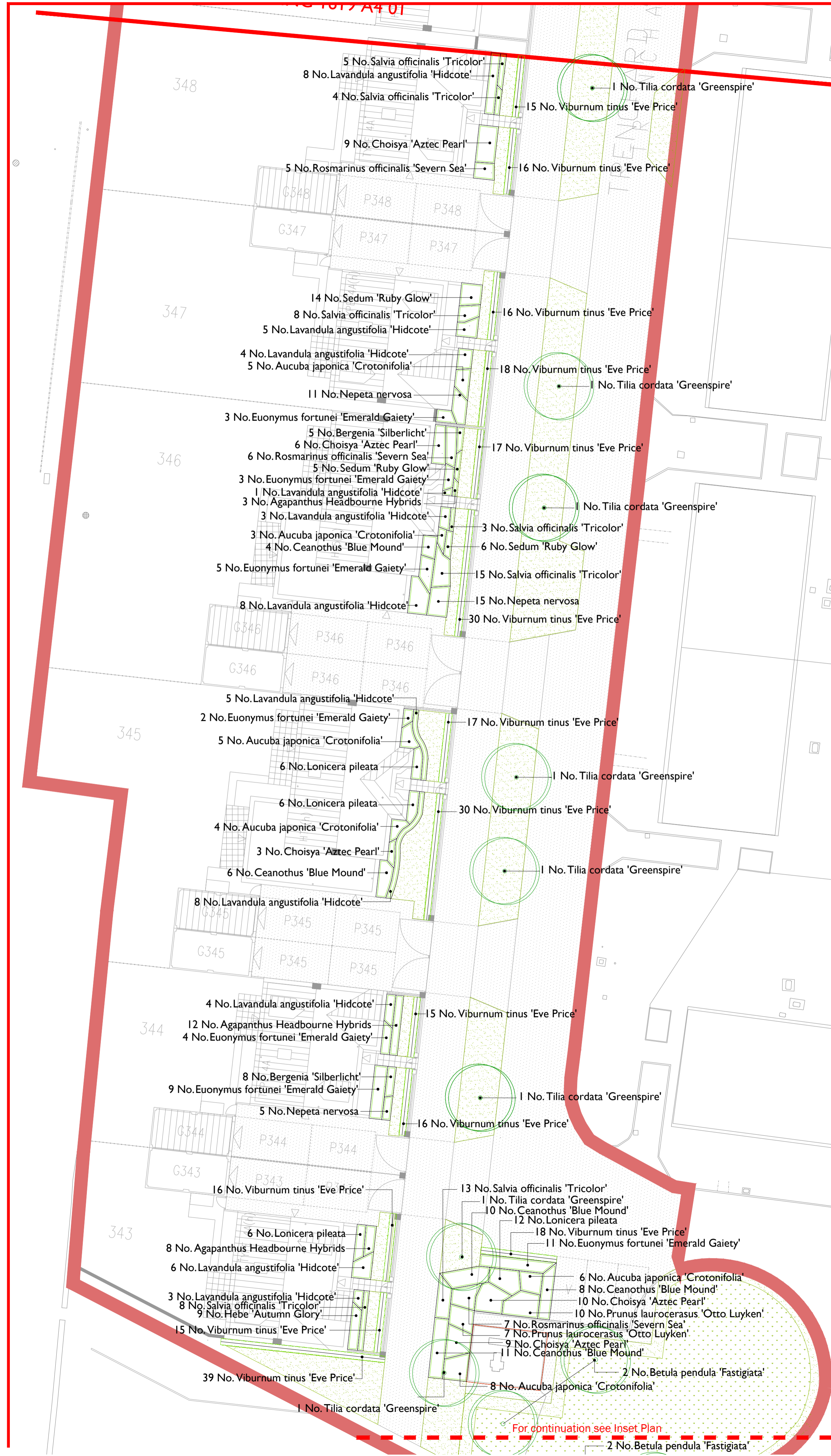
These circumstances are set out in the Town and Country Planning Act 1990 as amended by the Planning and Compensation Act 1991.

- REVISIONS:**
- A. 2015-12-08. Layout amended at client request. DW
 - B. 2016-01-12. Plot lengths updated for Type 2, HT6, Type 4A, HT5 house types as per client request. SD
 - C. 2016-01-18. Plots 343-350 repositioned at client request. Legend updated. DW
 - D. 2016-04-14. Plots 354-358 replanned. Railings on dwarf walls added on unit frontages. Plot 352 driveway to be permeable paving in line of grass verge. Close board fence added around fuel pump and electrical substations. All at local authority request. DJE
 - E. 2016-05-09. Additional fence added to the south of plot 343 at client request. MED
 - F. 2016-05-16. Pumping station and front boundary enclosures amended, additional landscaping indicated all in accordance with Urban Design comments. MED
 - G. 2016-06-27. Number of plots reduced to 13 as per Clients request. HT5 and HT6 house types amended to reflect W.D's. DW/MED



LEGEND		
EXISTING VEGETATION		
	EXISTING TREE TO BE RETAINED	
	EXISTING VEGETATION TO BE REMOVED	
EXTERNAL BOUNDARY TREATMENTS		
	1800mm HIGH SCREEN WALL WITH 600mm HIGH CHAIR RAIL	
	1800mm HIGH SCREEN WALL WITH 600mm HIGH CLOSE BOARD FENCE	
	1800mm HIGH CLOSE BOARD FENCE	
	CAT & DOG PROOF FENCING	
	1500mm HIGH METAL RAILING	
	1800mm HIGH TIMBER MACROCARPA ACCESS GATE	
	1800mm HIGH TIMBER MACROCARPA DOUBLE GATES	
NUMBERING		
	12 PLOT NUMBER	
	F12 PARKING NUMBER	
	IN PLOT NUMBER	
HYDROLOGICAL		
	CHANNEL	
	PERSONNEL ACCESS	
	200mm HIGH TIMBER MACROCARPA ACCESS GATE	
	ROTARY DRYER	
GROUND SURFACING		
	TARMAC	
	GRASSCRETE	
	MARSHALL PRECAST CONCRETE CONCRETE BRICKS	
LANDSCAPING		
	PROPOSED NEW TREE	
	PROPOSED PLANTING BEDS	





LANDSCAPE SPECIFICATION

SITE PREPARATION

Topsoil
Existing topsoil shall be stripped before building works begin. Imported topsoil shall be to BS3882: 2007 Specification for Topsoil and Requirements for Use. Topsoil shall be multi-purpose grade, of medium texture, with a high proportion of fertile loamy material. It shall be free from subsoil, rubbish, rubble, contamination, roots of perennial weeds and other materials injurious to plant growth. The maximum stone content of the soil shall be 20%, with the maximum size of stone 25mm in any one dimension. All topsoil shall be stacked in heaps, not exceeding 2m high. During storage, topsoil heaps shall be kept free from compaction, contamination and weeds.

Excavation
Excavation shall NOT be undertaken within the root protection area of any existing trees or shrubs to be retained. Unless otherwise indicated areas to be planted / seeded shall be cleared of all surface rubbish and excavated to the dimensions below finished level as follows, when the soil is not waterlogged or frozen. Ensure the location of all services is known before any excavation operations.

Tree pits: 1000 x 1000 x 800mm deep unless otherwise shown
Shrub and hedge pit / trench: 450mm deep
Grass areas: 300mm deep

The base of excavated areas shall be broken or otherwise cultivated to a depth of 150mm to facilitate drainage and all bricks, stones and other debris, etc. over 75mm in any one dimension shall be removed. Similarly, areas trafficked by construction vehicles shall be ripped to a depth of 150-300mm to relieve compaction.

Backfilling with Subsoil
Where excavated areas are lower than the required depths, excavations shall be backfilled with selected subsoil and lightly consolidated to make up levels. Selected subsoil shall be friable, second quality topsoil or similar and be free of rubbish, roots, stones over 75mm in any one dimension, perennial weeds or other materials injurious to plant growth.

Backfilling with Topsoil
Tree, shrub and hedge pit / trench excavations shall be backfilled, in layers, with clean topsoil (as specified above) thoroughly mixed with planting compost e.g. 'Melcourt Topgrow' compost at a rate of 20 litres/m². An approved tree and shrub fertilizer shall be added to topsoil, prior to backfilling tree-pits. Grass areas shall be backfilled with topsoil in layers of 150mm depth.

Cultivation
Prior to cultivation if planting / seeding areas are weed infested, weed growth to be trimmed, the arisings removed and re-growth treated with an approved herbicide ie Glyphosate. Treatment to be undertaken in the growing season preceding planting, at a minimum 4 weeks prior to works to allow for repeat treatment if necessary.

Cultivation shall not be undertaken within the root protection area of any trees / shrubs to be retained, without prior agreement from the Local Planning Authority. Topsoil shall be cultivated by hand or machine prior to planting, with minimal compaction by machine. Cultivate to the following depths and till, removing all rubbish, vegetation, perennial weeds, roots, stones over 25mm in any one dimension and rake to even levels.

Planting areas: 300mm deep cultivation to medium tilth
Grass seeding areas: 150mm deep cultivation to fine tilth raked to a smooth evenly firmed bed
Turf areas: 150mm deep cultivation to medium tilth raked to a smooth evenly firmed bed

Heyford Trenchard Planting Palette

TREES				
Number	Plant Name	Height	Girth	Specification
8 No.	Tilia cordata 'Greenspire'	400-450cm	16-18cm	Extra Heavy Standard: 3x: RB: Clear Stem min. 200cm
4 No.	Betula pendula 'Fastigiata'	400-450cm	14-16cm	Extra Heavy Standard: 5 brs: 3x: RB: Clear Stem 175-200cm

HEDGING				
Number	Plant Name	Height	Container	Specification
278 No.	Viburnum tinus 'Eve Price'	30-40cm	5L	Bushy: 5 brs: C: 3/m

SHRUBS				
Number	Plant Name	Height	Container	Specification
31 No.	Aucuba japonica 'Crotonifolia'	40-60cm	5L	Bushy: 3 brs: C: 2/m ²
39 No.	Ceanothus 'Blue Mound'		5L	Bushy: 6 brs: C: 2/m ²
37 No.	Choisya 'Aztec Pearl'	30-40cm	5L	Bushy: 6 brs: C: 2/m ²
37 No.	Euonymus fortunei 'Emerald Gaiety'	25-30cm	5-7.5L	Bushy: 9 brs: C: 2/m ²
9 No.	Hebe 'Autumn Glory'	30-40cm	5L	Bushy: 7 brs: C: 3/m ²
55 No.	Lavandula angustifolia 'Hidcote'	20-30cm	5L	Bushy: 7 brs: C: 2/m ²
30 No.	Lonicera pileata		5L	Bushy: 8 brs: C: 3/m ²
17 No.	Prunus laurocerasus 'Otto Luyken'	40-60cm	5-7.5L	Bushy: 5 brs: C: 2/m ²
18 No.	Rosmarinus officinalis 'Severn Sea'	40-60cm	5L	Bushy: 5 brs: C: 2/m ²

HERBACEOUS				
Number	Plant Name	Container	Specification	Density
23 No.	Agapanthus Headbourne Hybrids	3L	Full Poc: C	4/m ²
13 No.	Bergenia 'Silberlicht'	3L	Full Poc: C	5/m ²
31 No.	Nepeta nervosa	3L	Full Poc: C	4/m ²
56 No.	Salvia officinalis 'Tricolor'	3L	Full Poc: C	4/m ²
25 No.	Sedum 'Ruby Glow'	3L	Full Poc: C	5/m ²

PLANTING

Plant Stock and Timing
Plant material and operations shall conform to BS8545 : 2014, BS 3936 Nursery Stock (Parts 1-10), BS 4428 : 1989, BS 4043 : 1989 and BS 5837 : 2012. The planting season shall be from the 1st October to the 31st March. Container grown stock may be planted outside this season if accompanied by daily watering, or as necessary to ensure healthy establishment. Planting shall not be carried out during periods of frost, drought, cold drying winds or when the soil is waterlogged or frozen.

Planting
All planting that is within the root protection area of existing trees/shrubs to be retained, shall be undertaken by hand and positions altered should tree roots be encountered, in order to avoid damage to the root system.

All plants shall be set out evenly over the areas as indicated, to the density and quantities shown. All plants shall be planted upright at the same depth as the nursery soil level and evenly spaced, leaving room for growth. All restrictive containers shall be removed with roots not twisted. Immediately following planting, all plants shall be watered-in to field capacity.

Container grown and root balled plants shall be planted in a planting pit sufficient to accommodate the plant without causing root damage, with a minimum 50mm backfill beyond the root ball extent. Plants to be firmed, watered-in and dead, damaged or lopsided branches shall be removed after planting. Bare-root plants shall be silt planted, incorporating an approved high phosphate, slow-release fertilizer.

Tree Planting and Support
Trees planted in landscape areas shall be installed as specified. All trees to be firmed in after planting. All trees shall have irrigation / aeration system units fitted to fully surround the root ball.

Hedge Planting
Hedges shall be planted in a double staggered row as per detail. Dead, damaged or straggly branches shall be removed after planting. All transplants in hedge and native mixes shall be fitted with individual protection ie shrub shelters, spiral guards as specified, or alternatively the planting areas shall be protected with rabbit-proof fencing. All shrub shelters / spiral guards shall be black or green, adequately supported and installed to allow for expansion.

Mulching
Prior to the application of mulch the planting areas shall be completely weed free and watered sufficiently to achieve field capacity. The surface of the planting areas shall be mulched with a minimum 75mm depth layer of 15-65mm nominal particle size, dark, matured woodchip mulch, ensuring that the low branches of trees, shrubs and/or herbaceous plants are NOT smothered.

Mulch shall be an approved product and completely weed and weed seed free. The mulch shall be topped-up to maintain, after settlement, a depth of not less than 50mm. Trees in grass areas shall be planted centrally within a 1m diameter mulch bed, to be mulched to 75mm deep. The surface of mulch to be 10mm below the surface of adjacent lawn / hard surface.

GRASS AREAS

Turf
Turf shall accord with BS 3969: 1998, it shall be good quality meadow / cultivated, amenity turf free from weeds and be laid on even, prepared ground (as detailed above), during periods of suitable warm and moist weather conditions. Pre-turfing fertiliser shall be applied to manufacturer's recommendations and turf shall be laid in accordance with BS 4428: 1989.

Turf shall be laid with broken joints well-butted up, working from timber planks to avoid damaging turf when laying. Water as necessary to avoid shrinkage and achieve satisfactory establishment. Undertake good horticultural practice to ensure establishment of a healthy grass sward.

Grass Seeding
Areas of amenity grass shall be seeded with a general amenity grass mix as specified during the period March to May or September to October, during periods of moist, warm weather conditions without significant wind. Pre-seeding fertiliser shall be applied to manufacturer's recommendations. Seed shall be sown on even, prepared ground (as detailed above), at a rate of 35g/m² or as specified, in two transverse operations. Lightly roll seed bed after sowing. Water as necessary to avoid shrinkage and achieve satisfactory establishment. Undertake good horticultural practice to ensure establishment of a healthy grass sward.

AFTERCARE PERIOD

Regular Visits
During the specified Aftercare Period maintenance visits shall be carried out, at least monthly from April to September and twice during the dormant season to carry out the following operations to establish healthy growing plants / grass in weed free areas: watering, firming-up, removal of litter, pest and disease control, general pruning, checking guards, ties and stakes, weed control, grass cutting and autumn tidying. All arisings shall be carted away and the site shall be left clean and tidy at all times.

Watering
All planting and grass areas shall not be allowed to dry out and shall be kept well watered during the growing season, ensuring the soil is kept moist at all times but avoiding waterlogging.

Replacement Planting
During each August within the Aftercare Period an inspection shall be made and all plants that have died, are missing, damaged or have failed to thrive, shall be noted and replaced in the following planting season.

Grass Cutting
During the first and subsequent growing seasons amenity grass shall be kept at a height of 25mm to 50mm. Any bare patches are to be resown. Selective weed control shall be undertaken as necessary once the sward is sufficiently established.

LEGEND

- Proposed Tree
- Planting beds
- Grass
- Hedge planting
- Grass: Wildflower

GENERAL NOTES

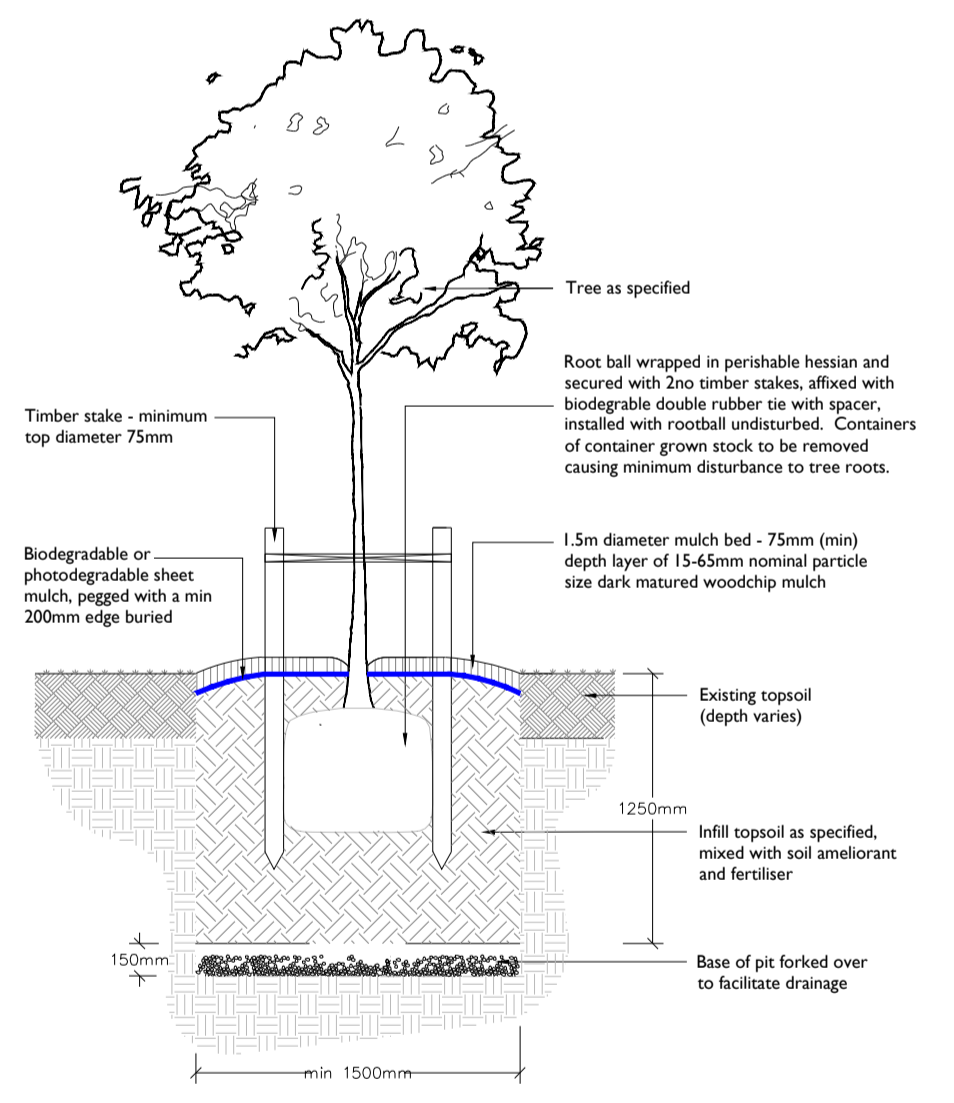
This drawing is to be used for planting information only, and is subject to alteration through changes to the site layout or until approved by the area designer.

Any species substitution by the contractor must be verified with the Landscape Architect through the Job Architect.

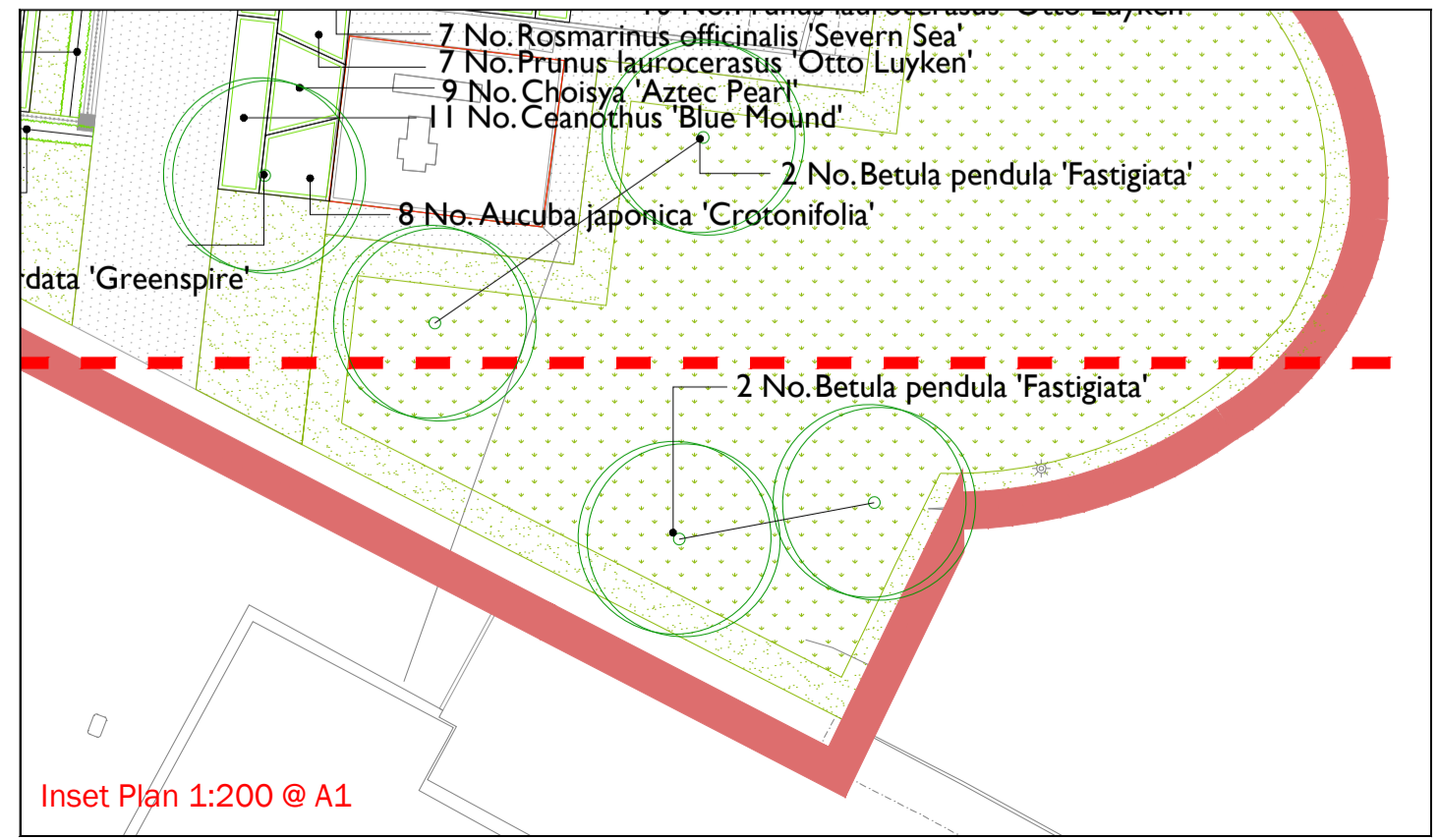
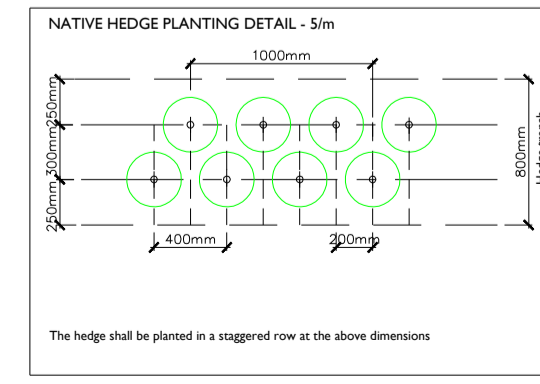
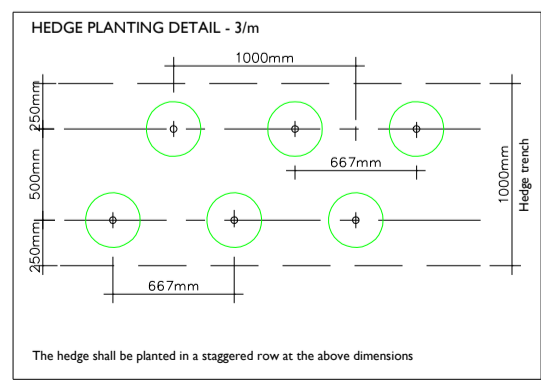
This layout must be checked in accordance with NHBC Standards 2013 (Chapter 4.2 - Building Near Trees & Chapter 9.2 Drives, Paths and Landscaping) by the Regional Engineer prior to implementation.

Excavations: Contractors must ensure that they have full information relating to service and drainage positions before undertaking any excavations.

Root barriers to be used in association with tree planting adjacent to kerbs / services / footpaths etc. (Greenleaf ReRoot products or similar application, in accordance with manufacturer's instructions).



TREE IN SOFT LANDSCAPE PLANTING DETAIL - Double stake fixing within existing soft landscape



Inset Plan 1:200 @ A1

For continuation see Inset Plan

Rev	Date	Description
A	25.09.15	Architectural base changed
B	14.12.15	Architectural base changed
C	19.01.16	Architectural base changed
D	08.02.16	Architectural base changed
E	18.04.16	Architectural base changed
F	20.04.16	Comments amended
G	22.04.16	Comments amended
H	22.04.16	Substation path addition
I	17.05.16	Architectural base changed

Title: Detailed Planting Proposals
2 of 2
Project: Heyford Trenchard
Client: Dorchester
Date: September 2015
Scale: 1:200 @ A1
Drawing No: 1619 A4 02 I
Rev:
T: +44 (0)1273 647044 E: office@lize.com www.lize.com

LIZ LAKE ASSOCIATES
LANDSCAPE ARCHITECTS

Appendix C

Historic Map Extracts

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

	Gravel Pit		Sand Pit		Other Pits
	Quarry		Shingle		Orchard
	Osiers		Reeds		Marsh
	Mixed Wood		Deciduous		Brushwood
	Fir		Furze		Rough Pasture
	Arrow denotes flow of water		Trigonometrical Station		
	Site of Antiquities		Bench Mark		
	Pump, Guide Post, Signal Post		Well, Spring, Boundary Post		
	-285 Surface Level				
	Sketched Contour		Instrumental Contour		
	Main Roads		Minor Roads		
	Sunken Road		Raised Road		
	Road over Railway		Railway over River		
	Railway over Road		Level Crossing		
	Road over River or Canal		Road over Stream		
	Road over Stream				
	County Boundary (Geographical)				
	County & Civil Parish Boundary				
	Administrative County & Civil Parish Boundary				
	County Borough Boundary (England)				
	County Burgh Boundary (Scotland)				
	Rural District Boundary				
	Civil Parish Boundary				

Ordnance Survey Plan 1:10,000

	Chalk Pit, Clay Pit or Quarry		Gravel Pit
	Sand Pit		Disused Pit or Quarry
	Refuse or Slag Heap		Lake, Loch or Pond
	Dunes		Boulders
	Coniferous Trees		Non-Coniferous Trees
	Orchard		Scrub
	Coppice		
	Bracken		Heath
	Rough Grassland		
	Marsh		Reeds
	Saltings		
	Building		Glasshouse
	Sloping Masonry		Pylon
	Electricity Transmission Line		Pole
	Cutting		Embankment
	Standard Gauge Multiple Track		
	Standard Gauge Single Track		
	Siding, Tramway or Mineral Line		
	Narrow Gauge		
	Geographical County		
	Administrative County, County Borough or County of City		
	Municipal Borough, Urban or Rural District, Burgh or District Council		
	Borough, Burgh or County Constituency Shown only when not coincident with other boundaries		
	Civil Parish Shown alternately when coincidence of boundaries occurs		
	BP, BS Boundary Post or Stone		Pol Sta Police Station
	Ch Church		PO Post Office
	CH Club House		PC Public Convenience
	F E Sta Fire Engine Station		PH Public House
	FB Foot Bridge		SB Signal Box
	Fn Fountain		Spr Spring
	GP Guide Post		TCB Telephone Call Box
	MP Mile Post		TCP Telephone Call Post
	MS Mile Stone		W Well

1:10,000 Raster Mapping

	Gravel Pit		Refuse tip or slag heap
	Rock		Rock (scattered)
	Boulders		Boulders (scattered)
	Shingle		Mud
	Sand		Sand Pit
	Slopes		Top of cliff
	General detail		Underground detail
	Overhead detail		Narrow gauge railway
	Multi-track railway		Single track railway
	County boundary (England only)		Civil, parish or community boundary
	District, Unitary, Metropolitan, London Borough boundary		Constituency boundary
	Area of wooded vegetation		Non-coniferous trees
	Non-coniferous trees (scattered)		Coniferous trees
	Coniferous trees (scattered)		Positioned tree
	Orchard		Coppice or Osiers
	Rough Grassland		Heath
	Scrub		Marsh, Salt Marsh or Reeds
	Water feature		Flow arrows
	MHW(S) Mean high water (springs)		MLW(S) Mean low water (springs)
	Telephone line (where shown)		Electricity transmission line (with poles)
	BM 123.45 m Bench mark (where shown)		Triangulation station
	Point feature (e.g. Guide Post or Mile Stone)		Pylon, flare stack or lighting tower
	Site of (antiquity)		Glasshouse
	General Building		Important Building

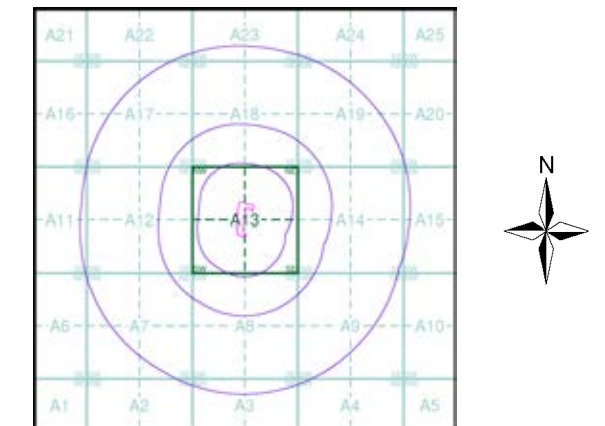
Envirocheck

LANDMARK INFORMATION GROUP

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Oxfordshire	1:10,560	1884 - 1885	2
Oxfordshire	1:10,560	1900	3
Oxfordshire	1:10,560	1923	4
Historical Aerial Photography	1:10,560	1947	5
Ordnance Survey Plan	1:10,000	1955	6
Ordnance Survey Plan	1:10,000	1966	7
Ordnance Survey Plan	1:10,000	1982	8
Ordnance Survey Plan	1:10,000	1993	9
10K Raster Mapping	1:10,000	1999	10
10K Raster Mapping	1:10,000	2006	11
VectorMap Local	1:10,000	2016	12

Historical Map - Slice A



Order Details

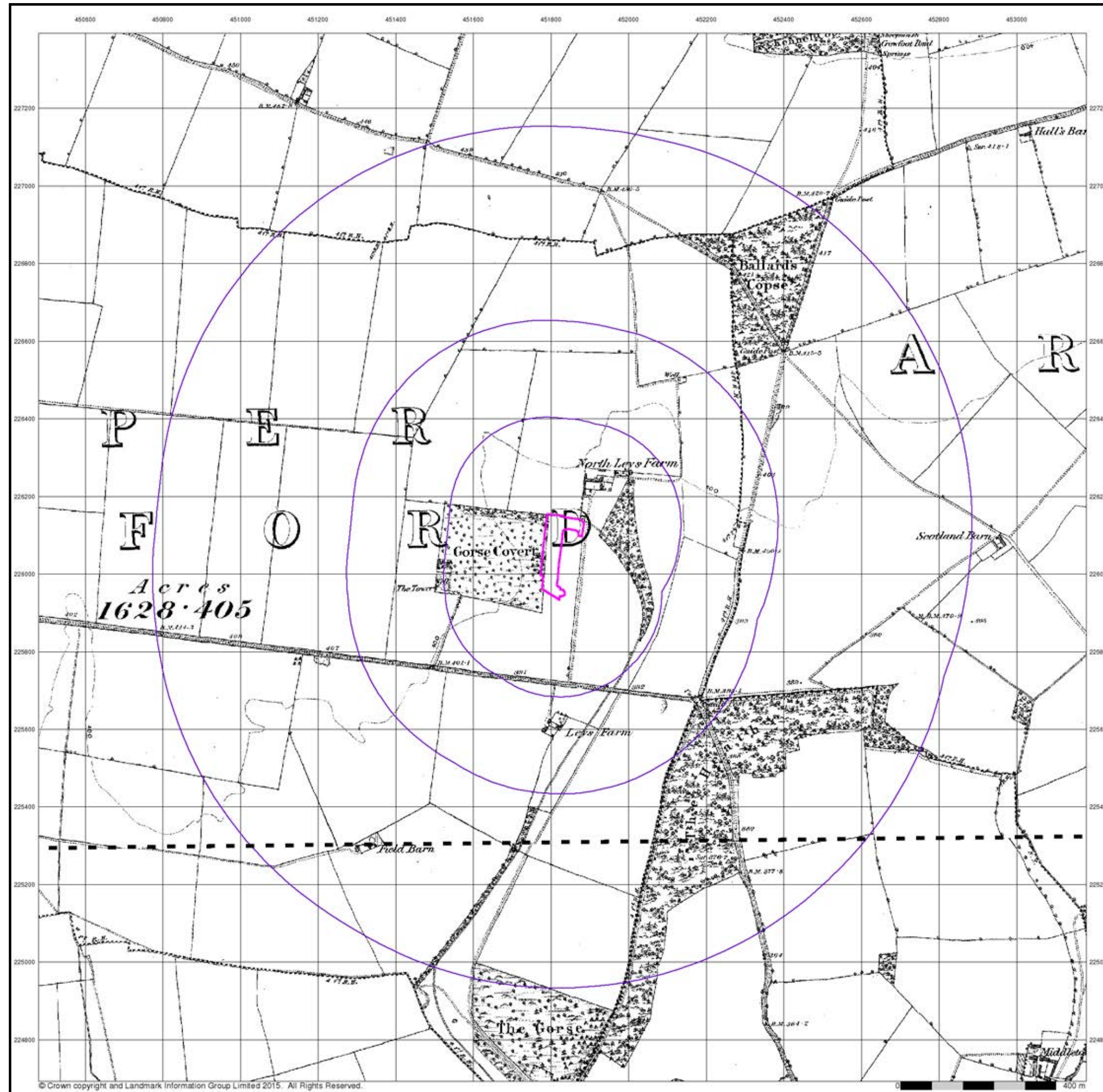
Order Number: 102671679_1_1
 Customer Ref: 163408
 National Grid Reference: 451820, 226050
 Slice: A
 Site Area (Ha): 1.1
 Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB

Landmark
 INFORMATION GROUP

Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirocheck.co.uk



© Crown copyright and Landmark Information Group Limited 2015. All Rights Reserved.

Oxfordshire

Published 1884 - 1885

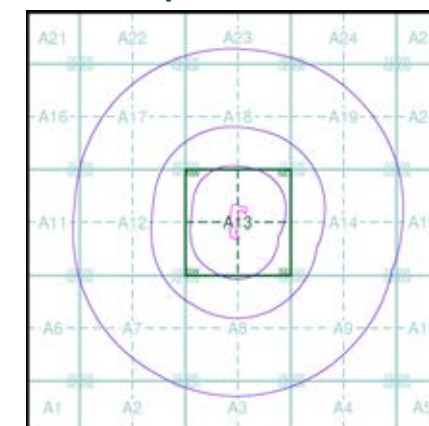
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

01600	1885	1:10,560
02200	1884	1:10,560

Historical Map - Slice A



Order Details

Order Number: 102671679_1_1
 Customer Ref: 163408
 National Grid Reference: 451820, 226050
 Slice: A
 Site Area (Ha): 1.1
 Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB

Oxfordshire

Published 1900

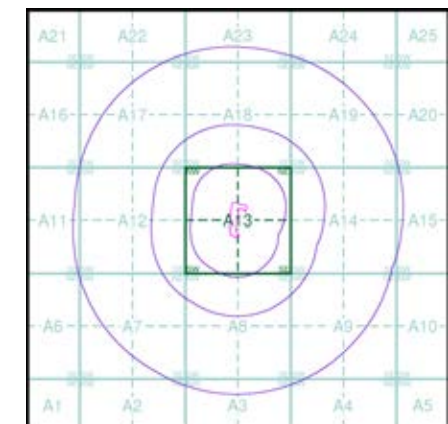
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

016SE	1900	1:10,560
022NE	1900	1:10,560

Historical Map - Slice A

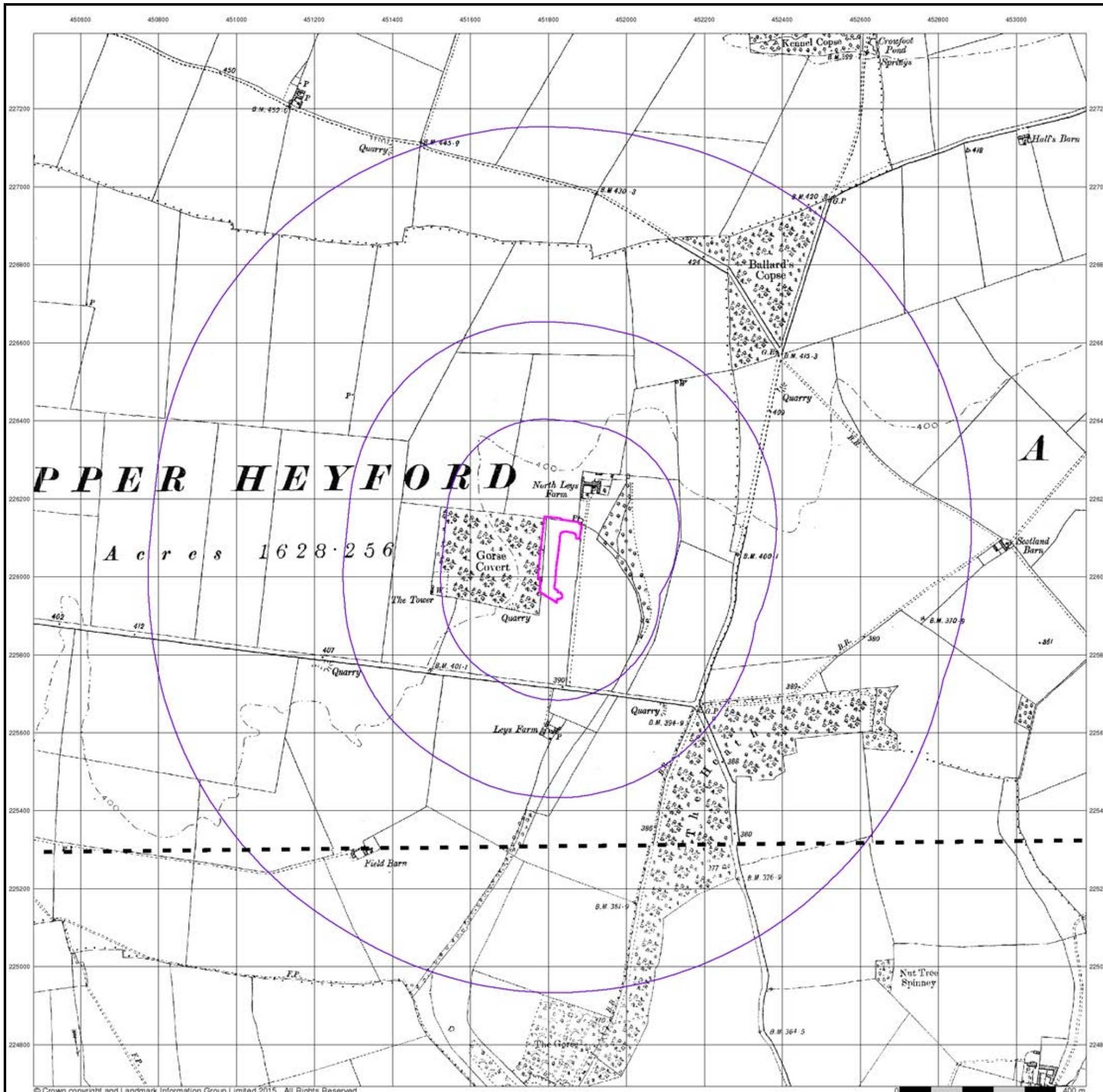


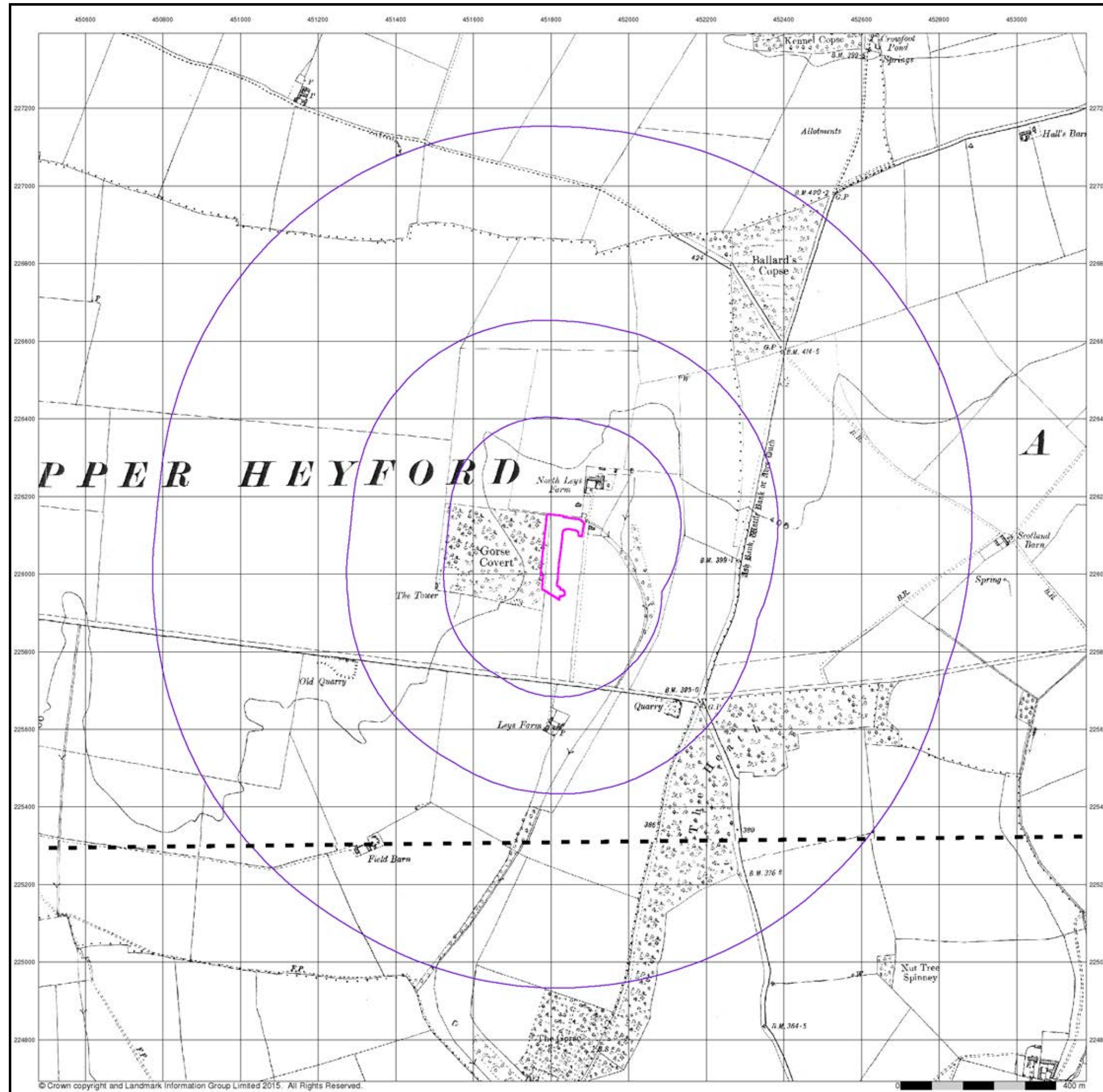
Order Details

Order Number: 102671679_1_1
 Customer Ref: 163408
 National Grid Reference: 451820, 226050
 Slice: A
 Site Area (Ha): 1.1
 Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB





Oxfordshire

Published 1923

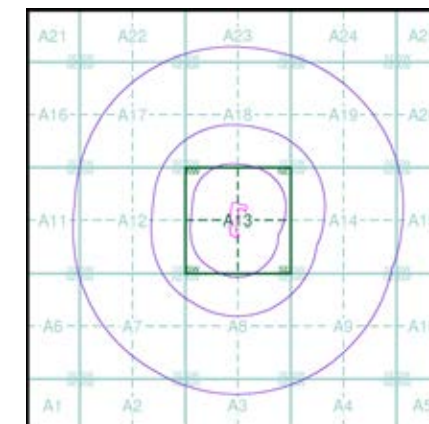
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

016SE	1923	1:10,560
022NE	1923	1:10,560

Historical Map - Slice A



Order Details

Order Number: 102671679_1_1
 Customer Ref: 163408
 National Grid Reference: 451820, 226050
 Slice: A
 Site Area (Ha): 1.1
 Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB

Historical Aerial Photography

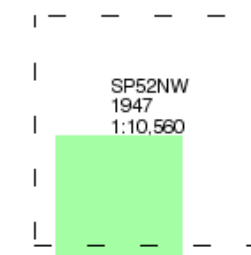
Published 1947

Source map scale - 1:10,560

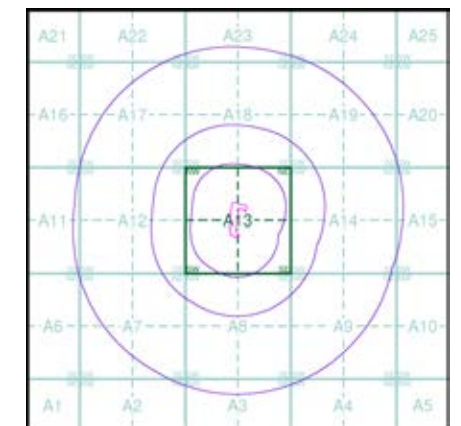
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where available Landmark have included both revisions.

© Landmark Information Group and/or Data Suppliers 2010.

Map Name(s) and Date(s)



Historical Aerial Photography - Slice A

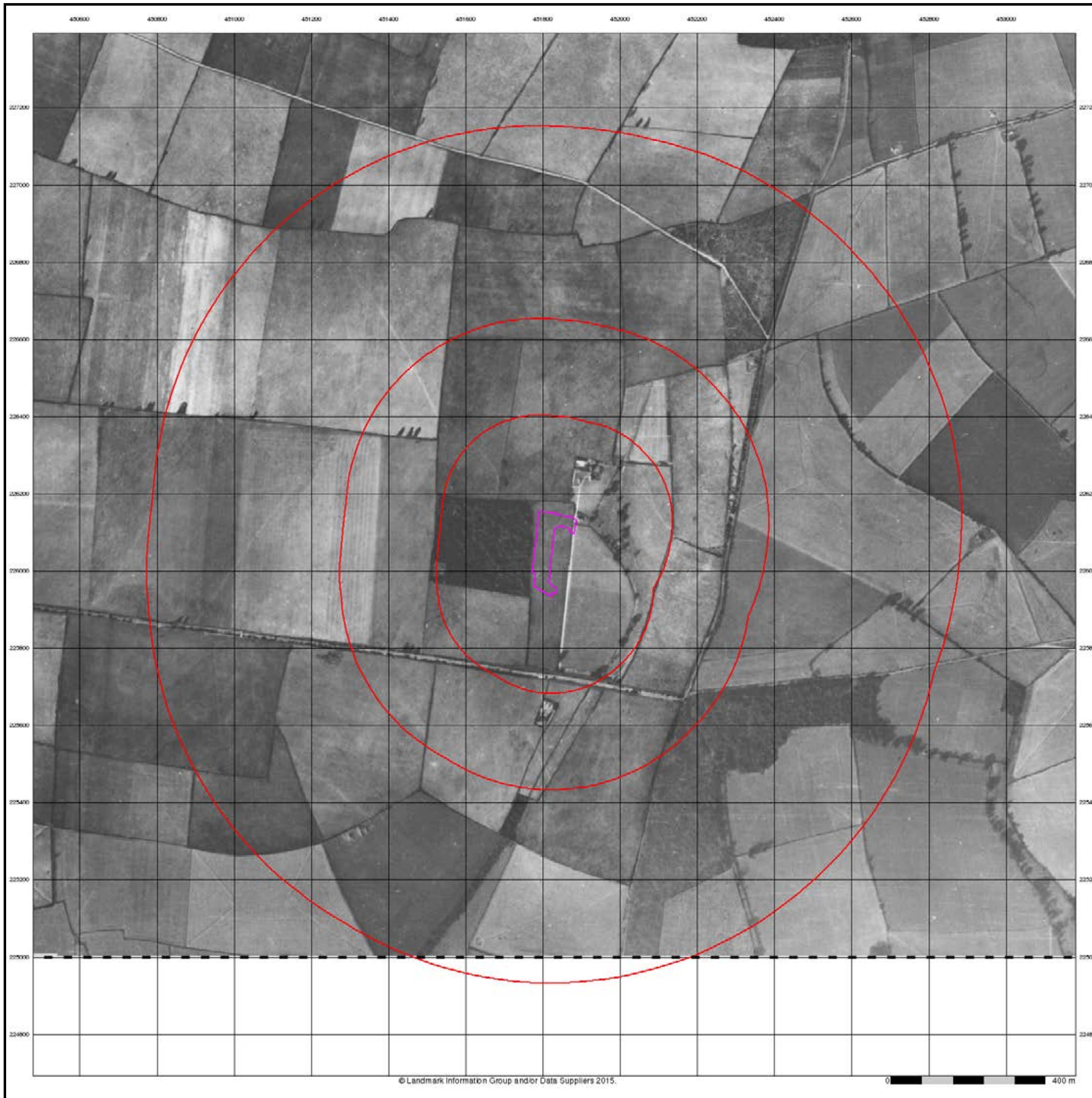


Order Details

Order Number: 102671679_1_1
Customer Ref: 163408
National Grid Reference: 451820, 226050
Slice: A
Site Area (Ha): 1.1
Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB



Ordnance Survey Plan

Published 1955

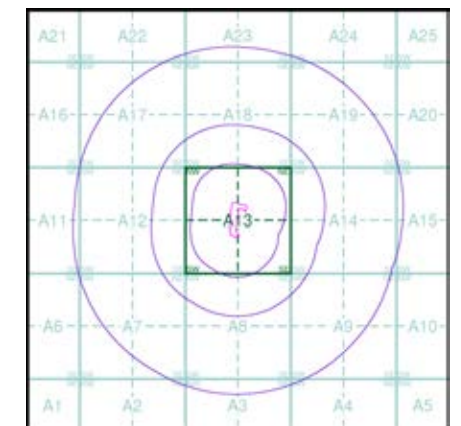
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SP52NW	1955
1:10,560	
SP52SW	1955
1:10,560	

Historical Map - Slice A



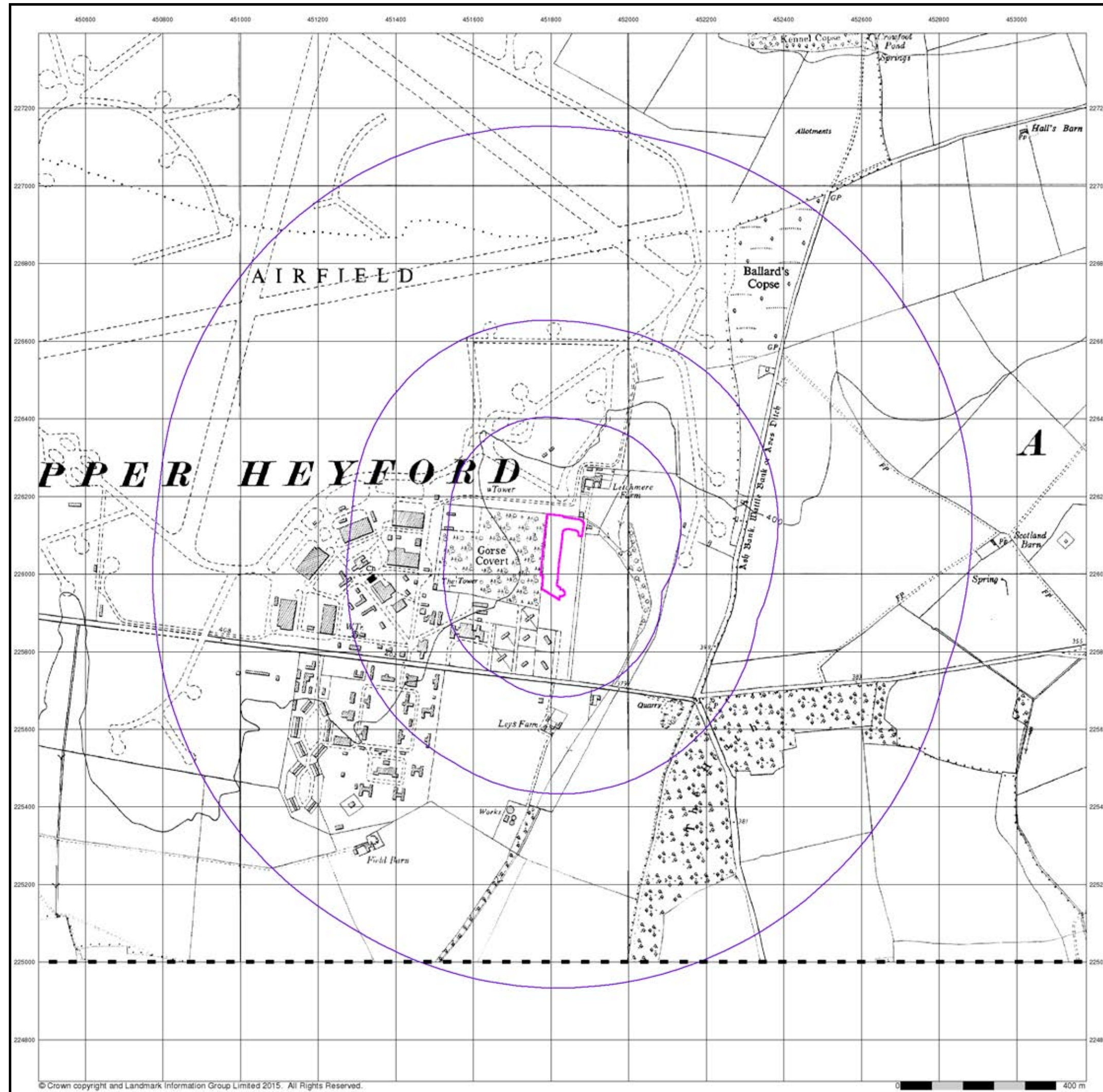
Order Details

Order Number: 102671679_1_1
 Customer Ref: 163408
 National Grid Reference: 451820, 226050
 Slice: A
 Site Area (Ha): 1.1
 Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB





© Crown copyright and Landmark Information Group Limited 2015. All Rights Reserved.

0 400 m

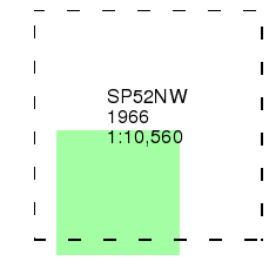
Ordnance Survey Plan

Published 1966

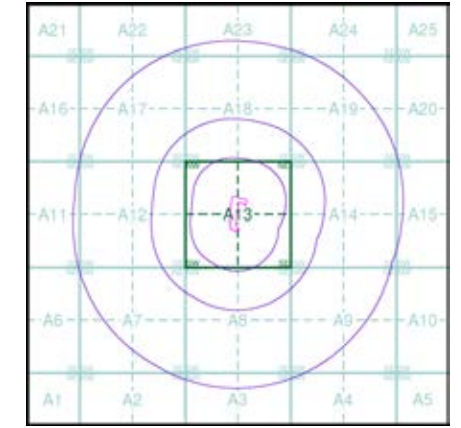
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A

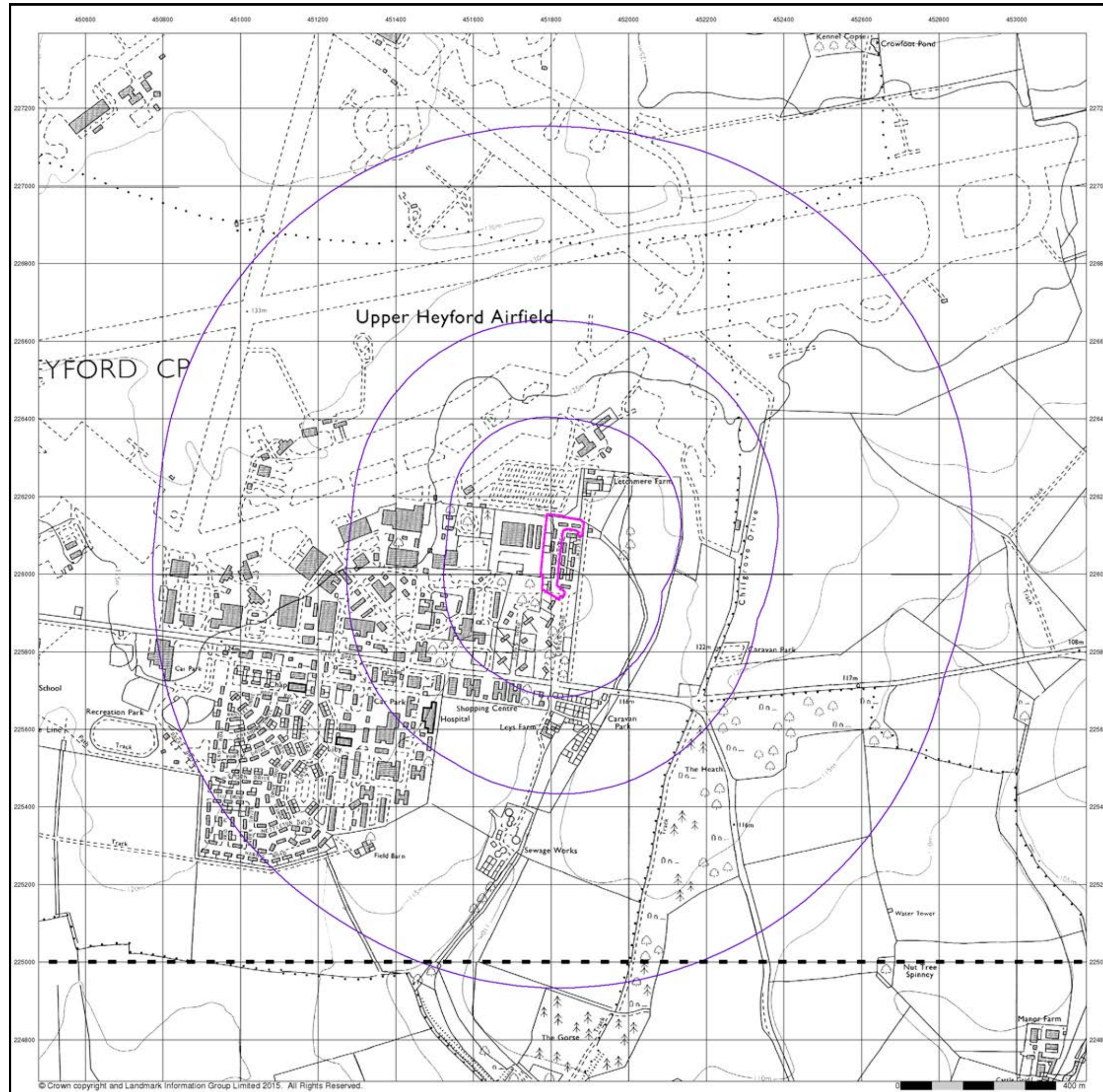


Order Details

Order Number: 102671679_1_1
 Customer Ref: 163408
 National Grid Reference: 451820, 226050
 Slice: A
 Site Area (Ha): 1.1
 Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB



© Crown copyright and Landmark Information Group Limited 2015. All Rights Reserved.

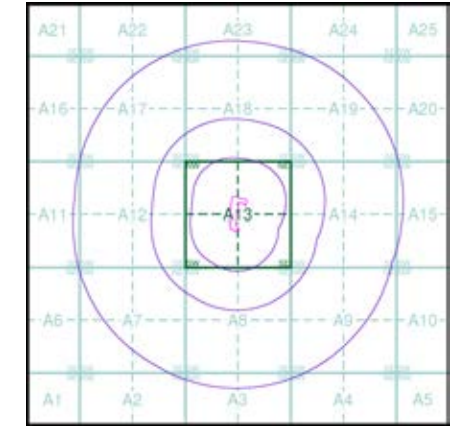
Ordnance Survey Plan Published 1982 Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SP52NW	1982
1:10,000	
SP52SW	1982
1:10,000	

Historical Map - Slice A

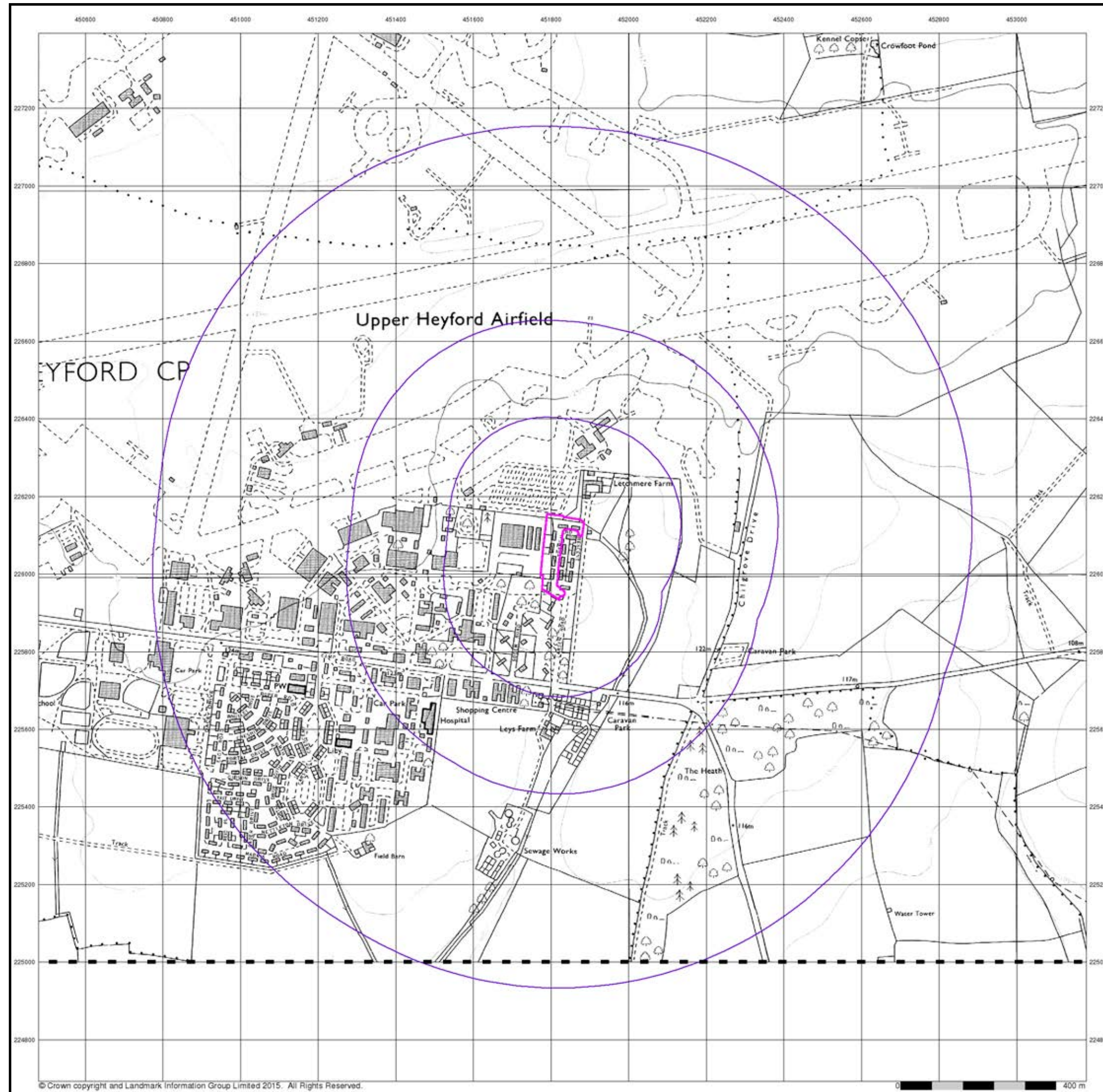


Order Details

Order Number: 102671679_1_1
 Customer Ref: 163408
 National Grid Reference: 451820, 226050
 Slice: A
 Site Area (Ha): 1.1
 Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB



© Crown copyright and Landmark Information Group Limited 2015. All Rights Reserved.



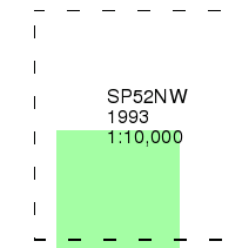
Ordnance Survey Plan

Published 1993

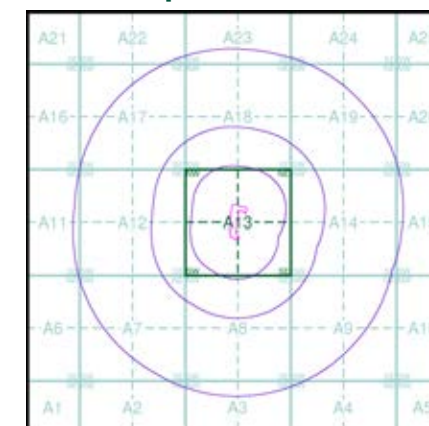
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A

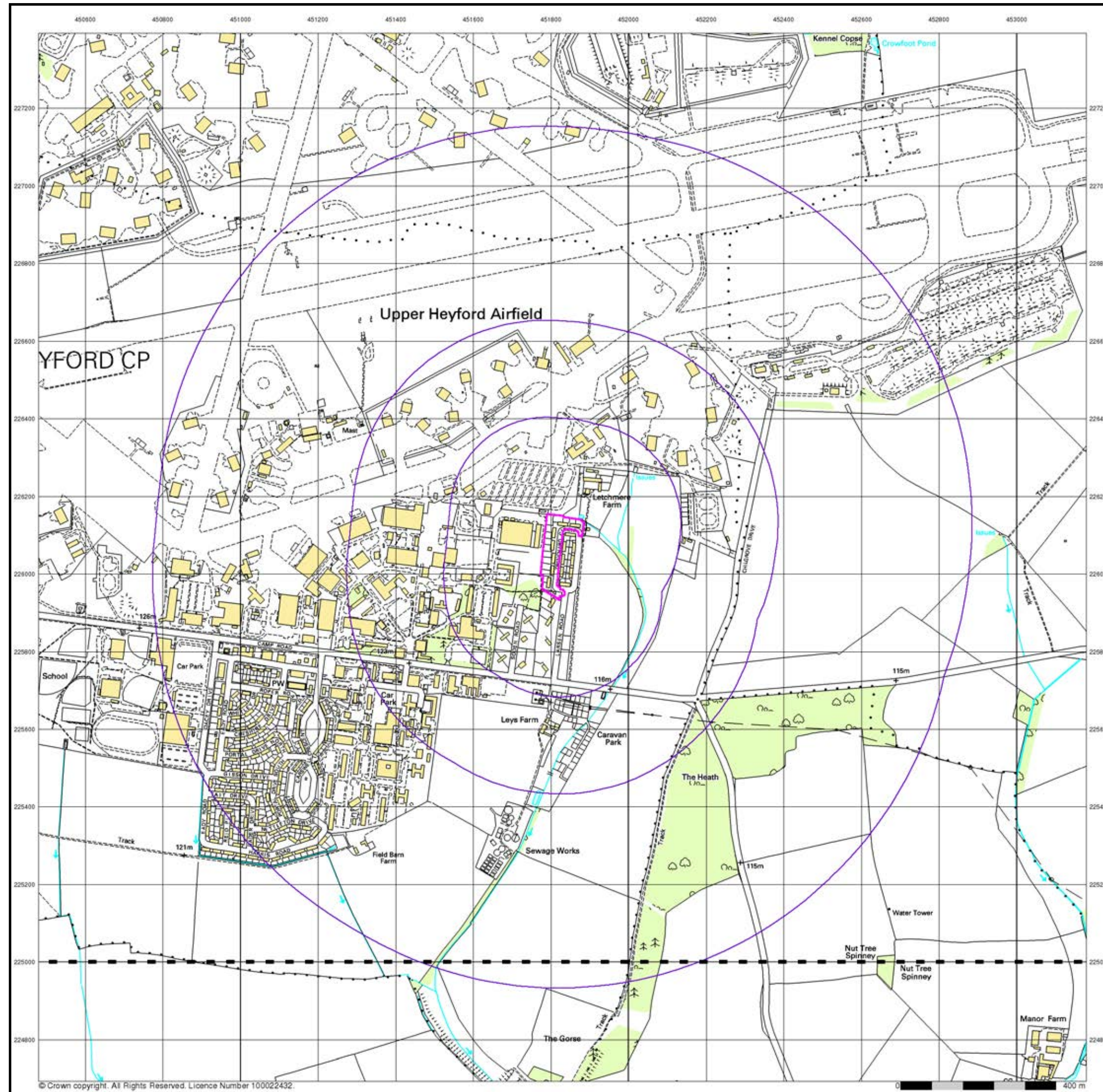


Order Details

Order Number: 102671679_1_1
 Customer Ref: 163408
 National Grid Reference: 451820, 226050
 Slice: A
 Site Area (Ha): 1.1
 Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB



10k Raster Mapping

Published 1999

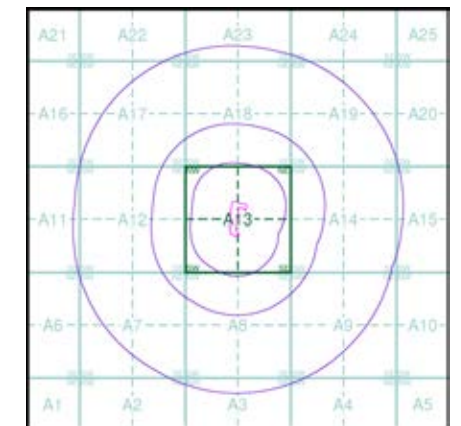
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SP52NW	1999	1:10,000
SP52SW	1999	1:10,000

Historical Map - Slice A



Order Details

Order Number: 102671679_1_1
 Customer Ref: 163408
 National Grid Reference: 451820, 226050
 Slice: A
 Site Area (Ha): 1.1
 Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB

10k Raster Mapping

Published 2006

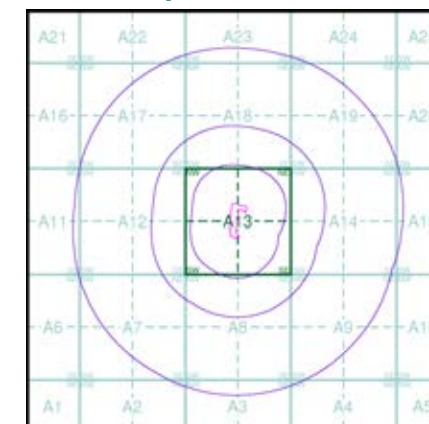
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SP52NW |
2006 |
1:10,000 |
SP52SW |
2006 |
1:10,000 |

Historical Map - Slice A

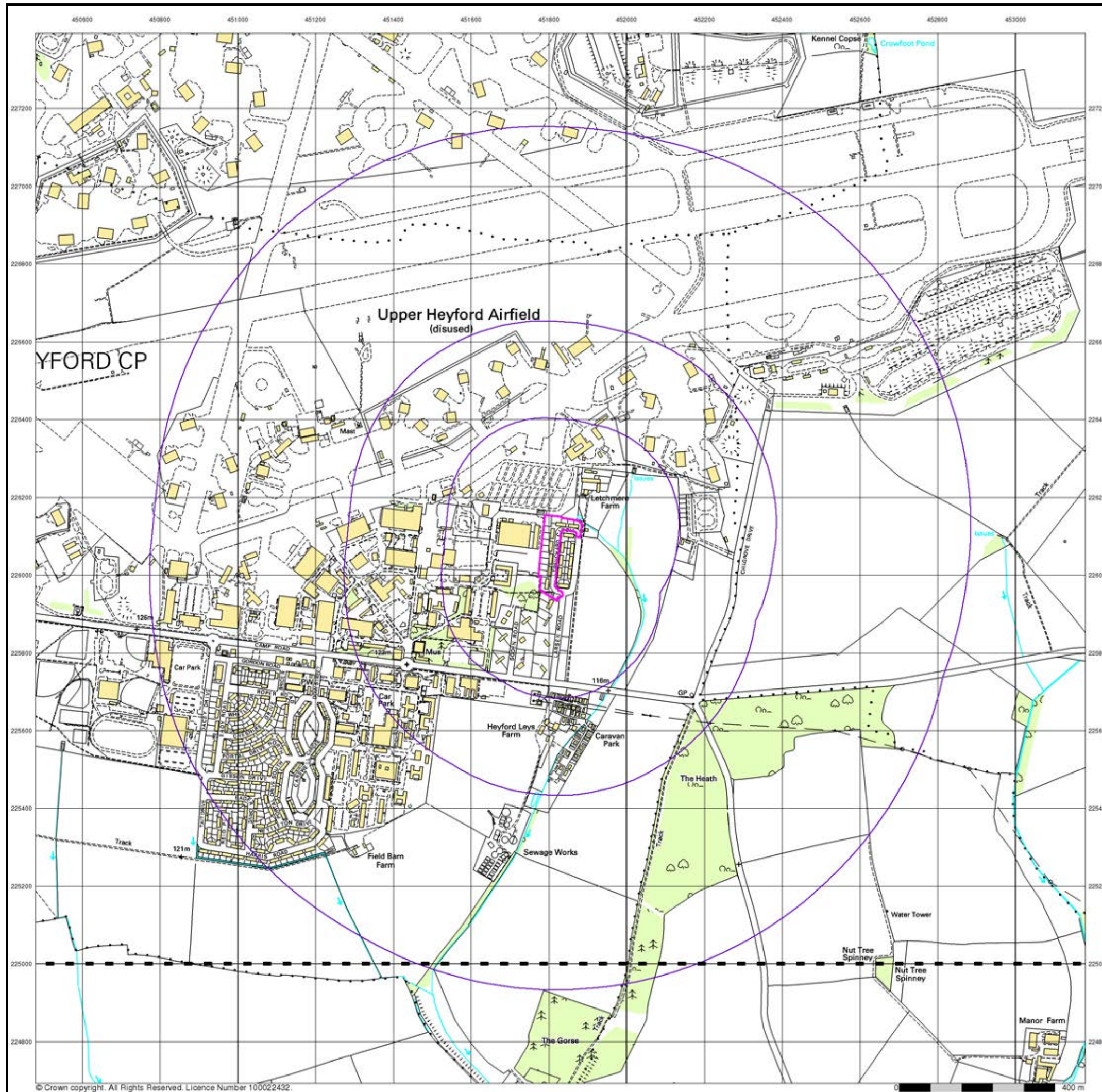


Order Details

Order Number: 102671679_1_1
Customer Ref: 163408
National Grid Reference: 451820, 226050
Slice: A
Site Area (Ha): 1.1
Search Buffer (m): 1000

Site Details

13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB



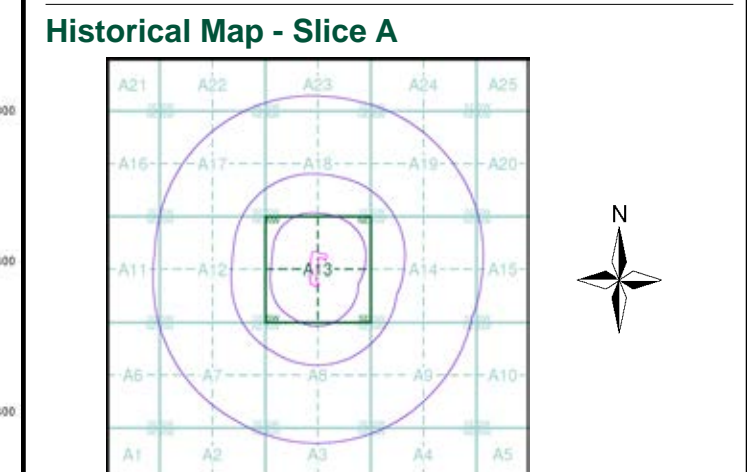


VectorMap Local
Published 2016
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities), 1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SP52NW	2016
Variable	Variable
SP52SW	2016
Variable	Variable



Order Details

Order Number: 102671679_1_1
 Customer Ref: 163408
 National Grid Reference: 451820, 226050
 Slice: A
 Site Area (Ha): 1.1
 Search Buffer (m): 1000

Site Details
 13 Trenchard Circle, Upper Heyford, BICESTER, Oxfordshire, OX25 5TB

Appendix D Council Correspondence

Community Services

Jackie Fitzsimons – Public Protection Manager



DISTRICT COUNCIL
NORTH OXFORDSHIRE

Samantha Muir
AA Environmental Limited
4 to 8 Cholswell Court
Shippon
Abingdon
OX13 6HX

*Bodicote House
Bodicote
Banbury
Oxfordshire
OX15 4AA*
www.cherwell.gov.uk

Please ask for: Sean Gregory
Email: sean.gregory@cherwell-dc.gov.uk

Direct Dial: 01295 221622
Our Ref: sg 11 TrchdCrcl ES CL

16 November 2016

Dear Samantha,

RE: 13 – 39 TRENCHARD CIRCLE, UPPER HEYFORD

Thank you for your enquiry. I have included information that we hold relating to this site in the report below.

There are contaminated land assessment works which relate to the nearby land which can be found on our planning portal at the Cherwell District Council website under the "associated documents" tab for planning application 10/01642/out.

I have searched our incident reporting system, UNIFORM, for recent contaminated land or pollution incidents (not referred to in the report below) relating to Trenchard Circle. There were none identified.

The information included here is gathered, in part, from the Councils access to data supplied by Landmark and the British Geological Survey and is current up to 01/04/07. All other information has been obtained from a search of records held within the Environmental Services Department.

I trust this information is sufficient for your purposes.

Yours sincerely

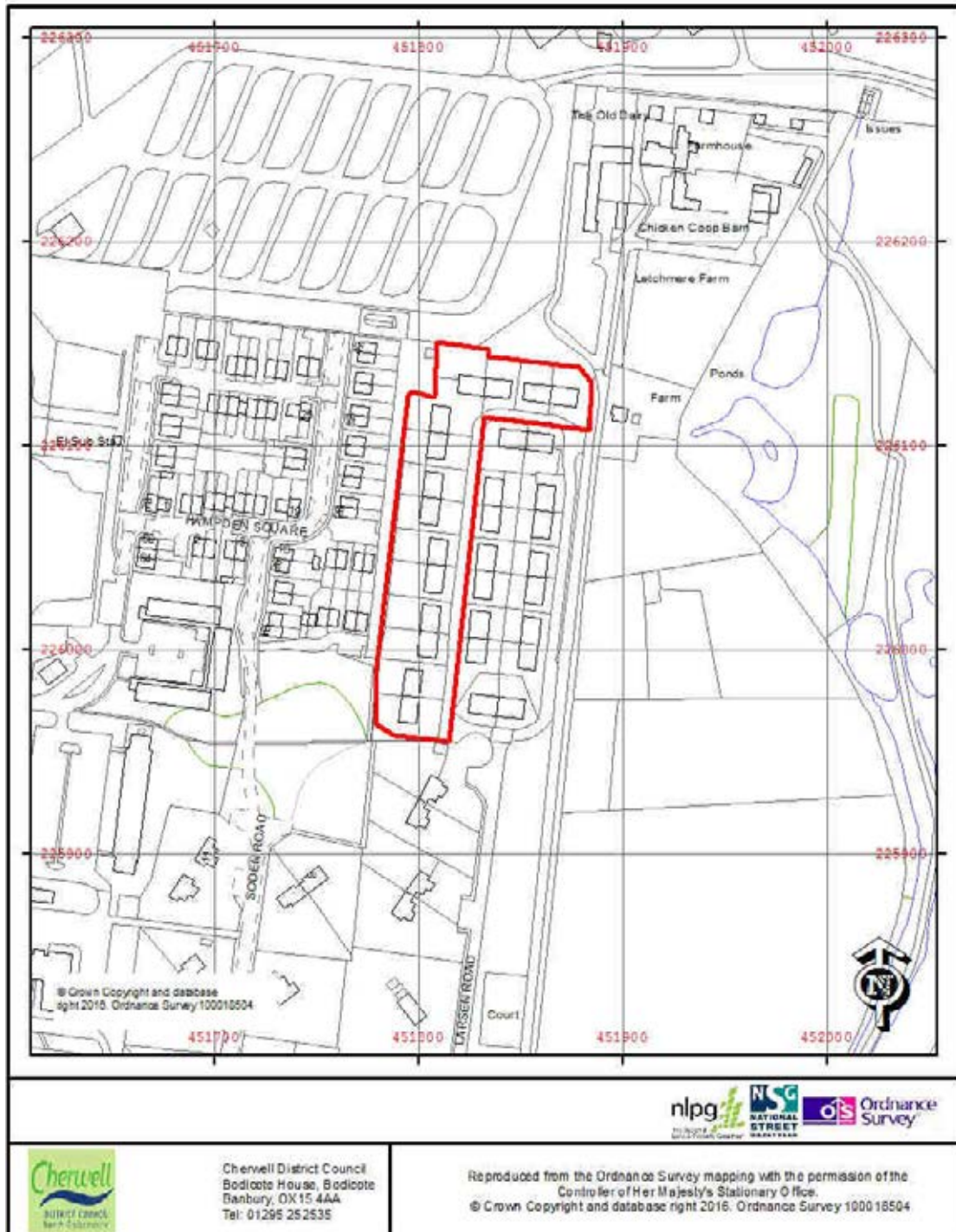
A handwritten signature in black ink, appearing to read "Sean Gregory".

Sean Gregory
Environmental Protection Officer

Site report

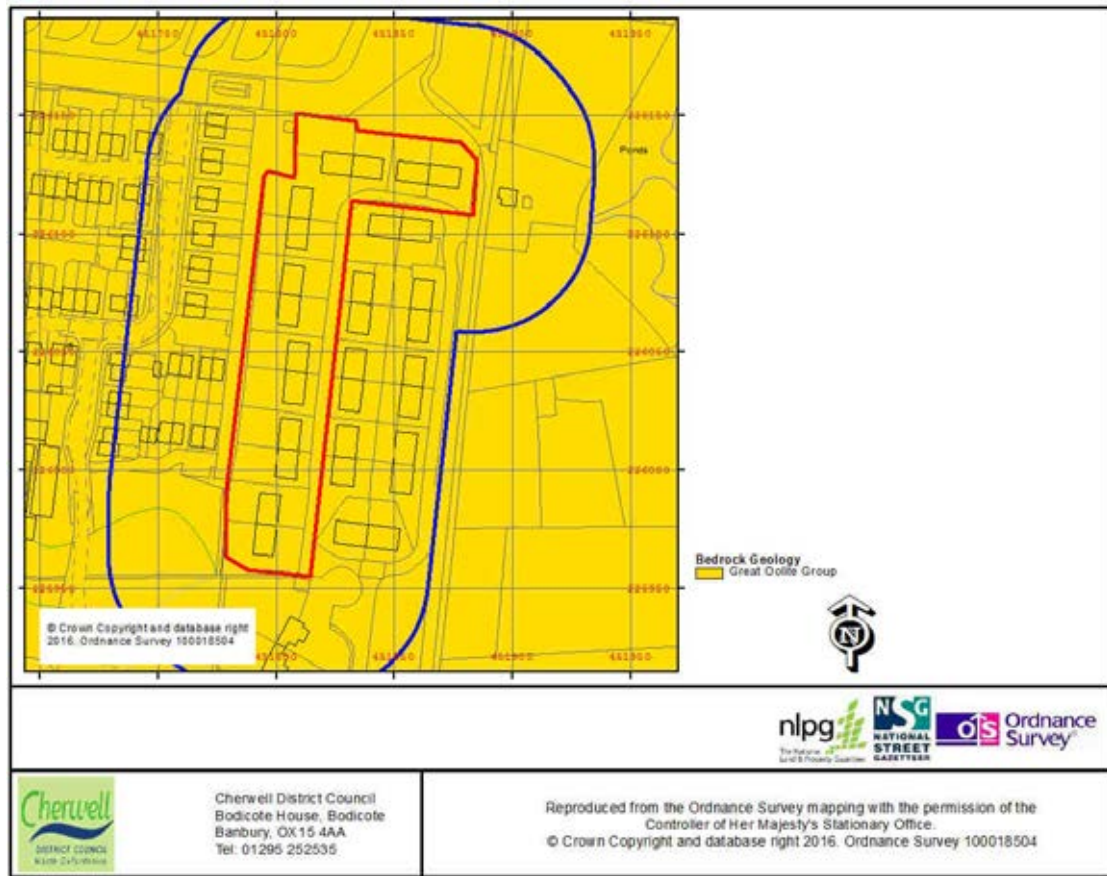
Report Name: Trenchard Circle Environmental Search (Centred at 451815, 226063)

Report Number: sg 11 TrchdCrcl ES CL



Geology

Bedrock Geology



Geological Map, British Geological Survey © NERC

The map shows the site (red) and a search radius of 50 meters (blue).

Geological maps have been extracted from the 1:50000 map series produced by the British Geological Survey.

Bedrock geology is a term used for the main mass of rocks forming the Earth's bedrock and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water. They have formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

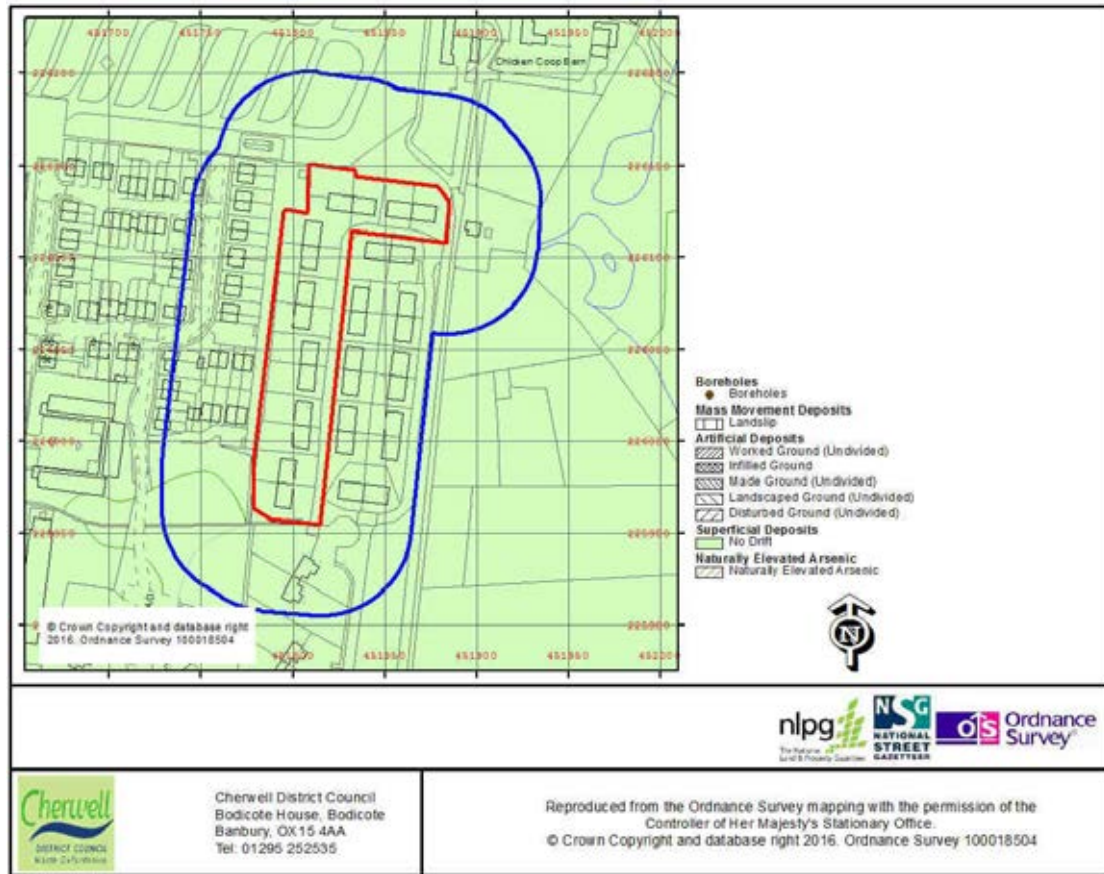
Site Results

Rock Type
GREAT OOLITE GROUP (LIMESTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED)

Search Radius Results

Rock Type
GREAT OOLITE GROUP (LIMESTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED)

Superficial, Artificial, Mass Movement Deposits, Boreholes and Naturally Occurring Arsenic



Geological Map, British Geological Survey © NERC

The map shows the site (red) and a search radius of 50 meters (blue).

Geological maps have been extracted from the 1:50000 map series produced by the British Geological Survey.

Superficial deposits is a term used by the BGS for natural deposits formed during the most recent period of geological time, the Quaternary, which extends 1.8 million years back from the present.

Artificial deposits is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Whilst artificial or man-made deposits are not part of the 'real geology' of solid and superficial deposits it does affect them and needs recording because the near surface ground conditions are important to human activities and economic development.

Borehole information has been extracted from the British Geological Survey register of boreholes.

Superficial Deposits

Site Results

Deposit Type
NO DRIFT

Search Radius Results

Deposit Type
NO DRIFT

Artificial Deposits

Site Results

No artificial deposits at the site

Search Radius Results

No artificial deposits in the search radius

Mass Movement Deposits

Site Results

No mass movement deposits at the site

Search Radius Results

No mass movement deposits in the search radius

Faults

Site Results

No faults at the site

Search Radius Results

No faults in the search radius

Boreholes

Site Results

No boreholes at the site

Search Radius Results

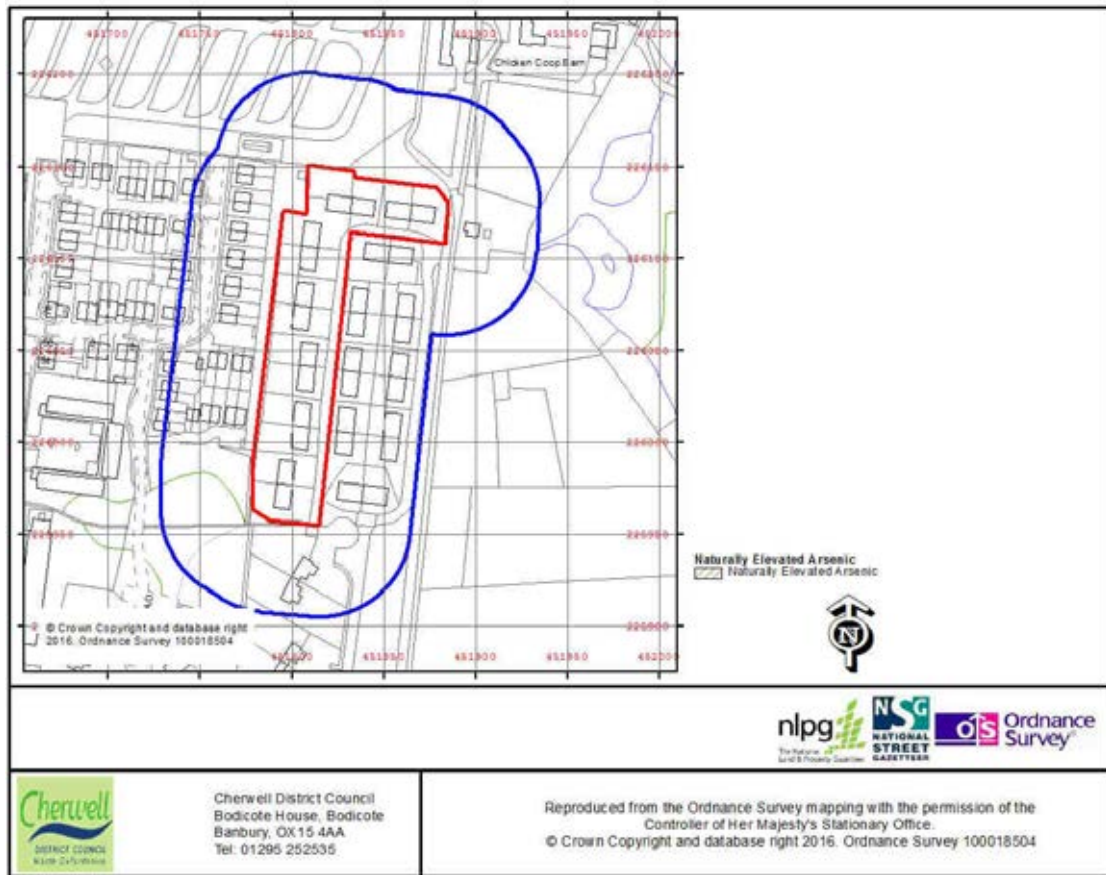
No boreholes in the search radius

For more information on a particular borehole contact:

Borehole Records Enquiries
British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Tel: 0115 9363109
<http://www.bgs.ac.uk/enquiries/bharch.html>

All depths are in metres. A depth of '-1' indicates that either the depth is unknown or that the borehole is confidential.

Naturally Occurring Arsenic



Geological Map, British Geological Survey © NERC

The map shows the site (red) and a search radius of 50 meters (blue).

The map showing areas of naturally elevated arsenic was derived from the BGS Bedrock Geology map.

Naturally Elevated Arsenic

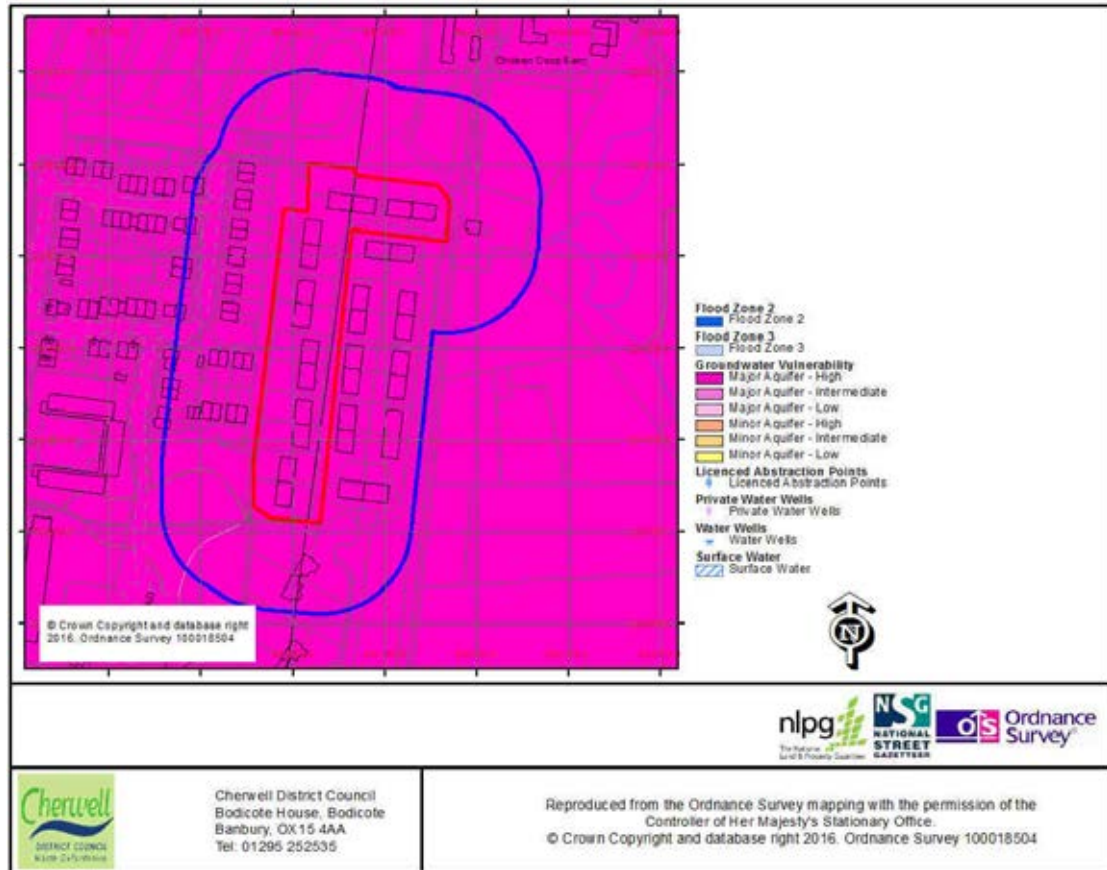
Site Results

No naturally elevated arsenic at the site

Search Radius Results

No naturally elevated arsenic in the search radius

Hydrology



Groundwater Vulnerability and Water Abstraction Licences © Environment Agency

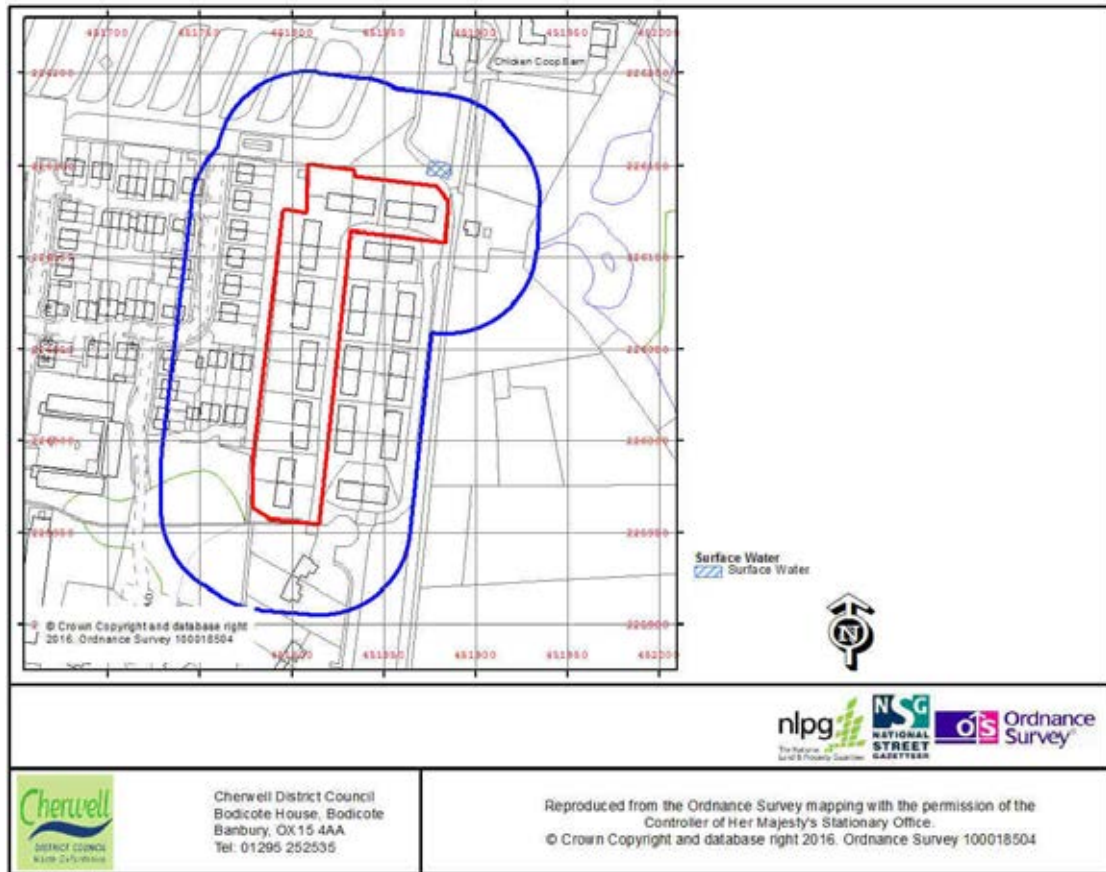
The map shows the site (red) and a search radius of 50 meters (blue).

The British Geological Survey holds a register of both used and disused water wells at its office in Wallingford, Oxfordshire which date back over 150 years. This register has been interrogated to produce the water well information. Depth information recorded for water wells is measured in metres.

Surface water information was derived from Os MasterMap.

Groundwater vulnerability and Water Abstractions Licences information comes from the Environment Agency.

Surface Water



Surface Water data © Environment Agency

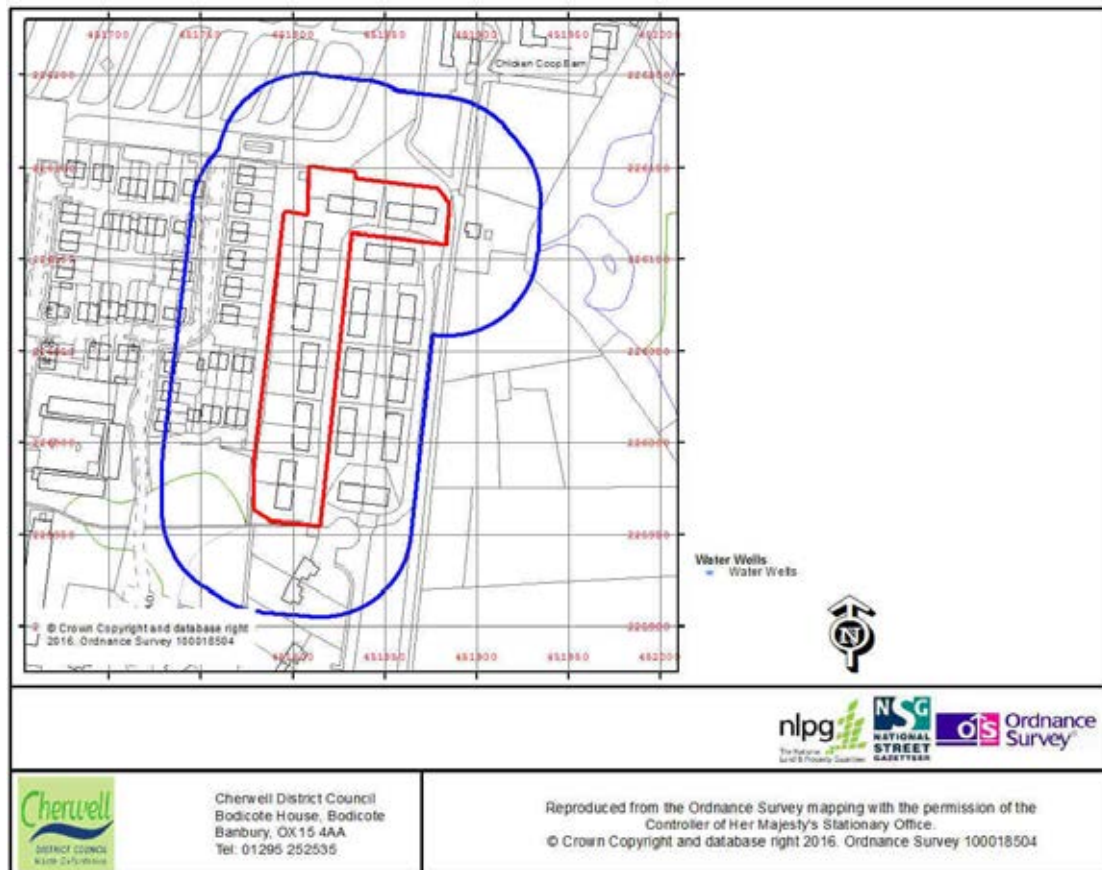
Site Results

No surface water present at the site

Search Radius Results

Description
Inland Water

Water Wells



Water Well data © Environment Agency

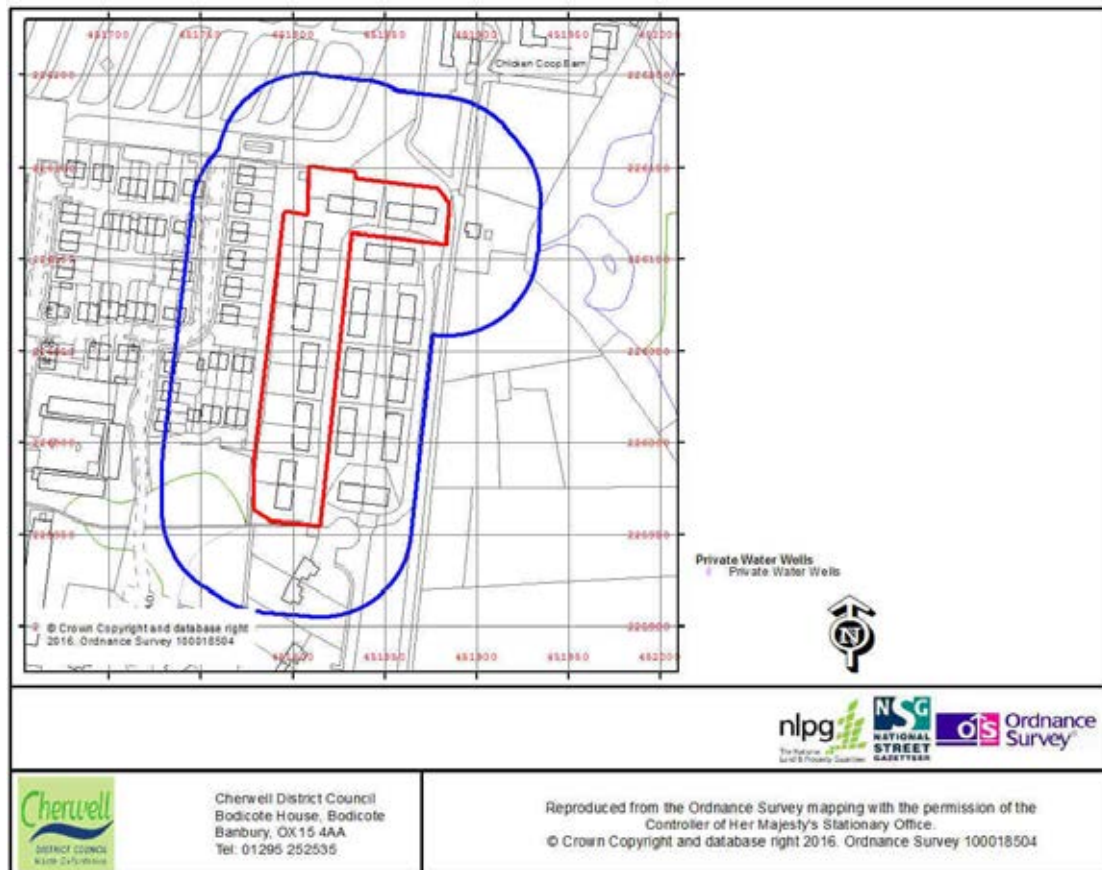
Site Results

No water wells present at the site

Search Radius Results

No water wells present in the search radius

Private Water Wells



Site Results

No private water wells present at the site

Search Radius Results

No private water wells present in the search radius

Licensed Abstraction Points

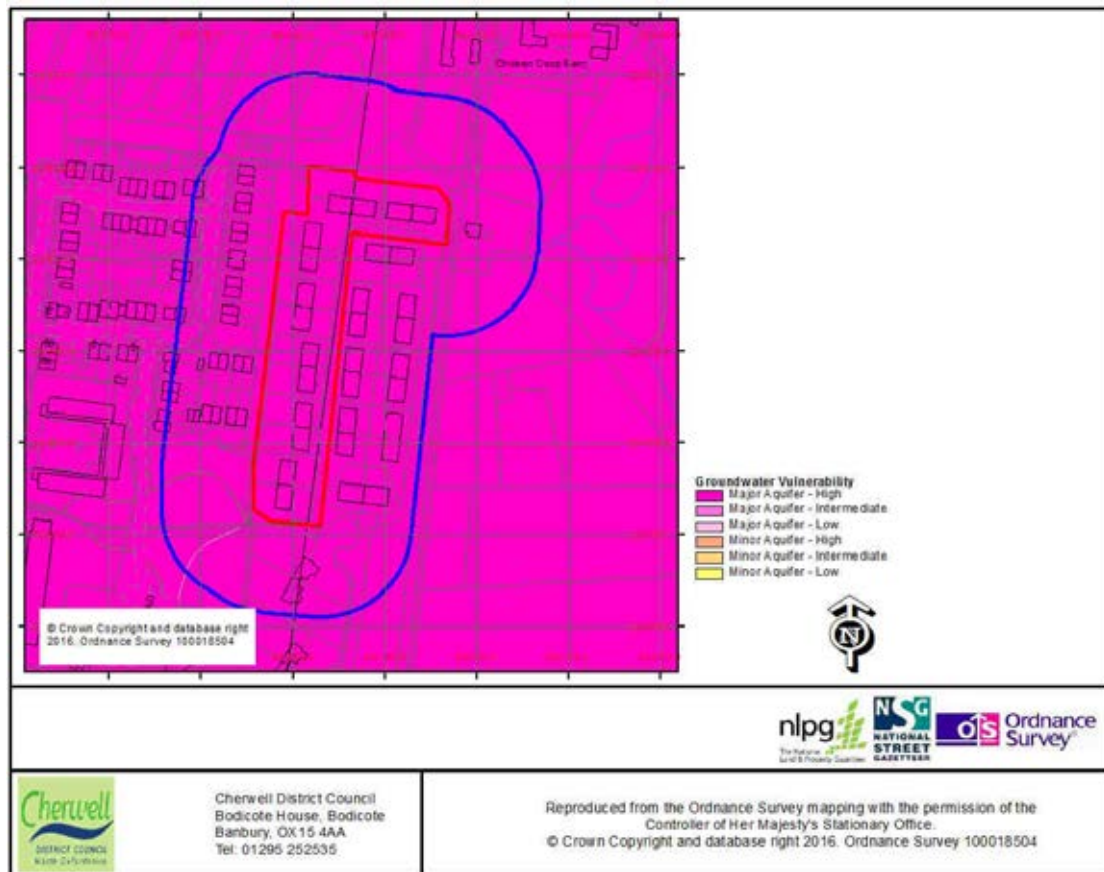
Site Results

No EA licensed water abstraction sites at the site

Search Radius Results

No EA licensed water abstraction sites in the search radius

Groundwater Vulnerability



Groundwater Vulnerability data © Environment Agency

The map shows the site (red) and a search radius of 50 meters (blue).

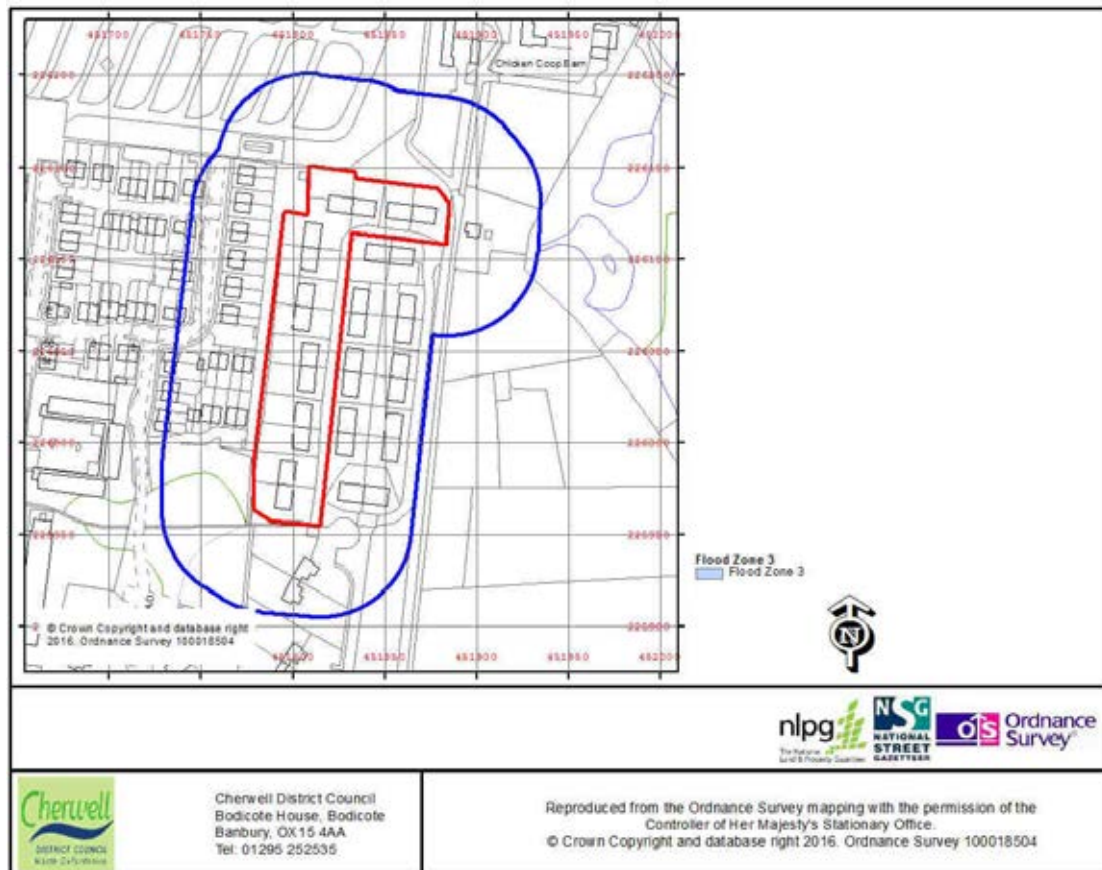
Site Results

Classification
Major Aquifer - High Urban
Major Aquifer - High 3

Search Radius Results

Classification
Major Aquifer - High Urban
Major Aquifer - High 3

Flood Zone 3



Flood Zone data © Environment Agency

The map shows the site (red) and a search radius of 50 meters (blue).

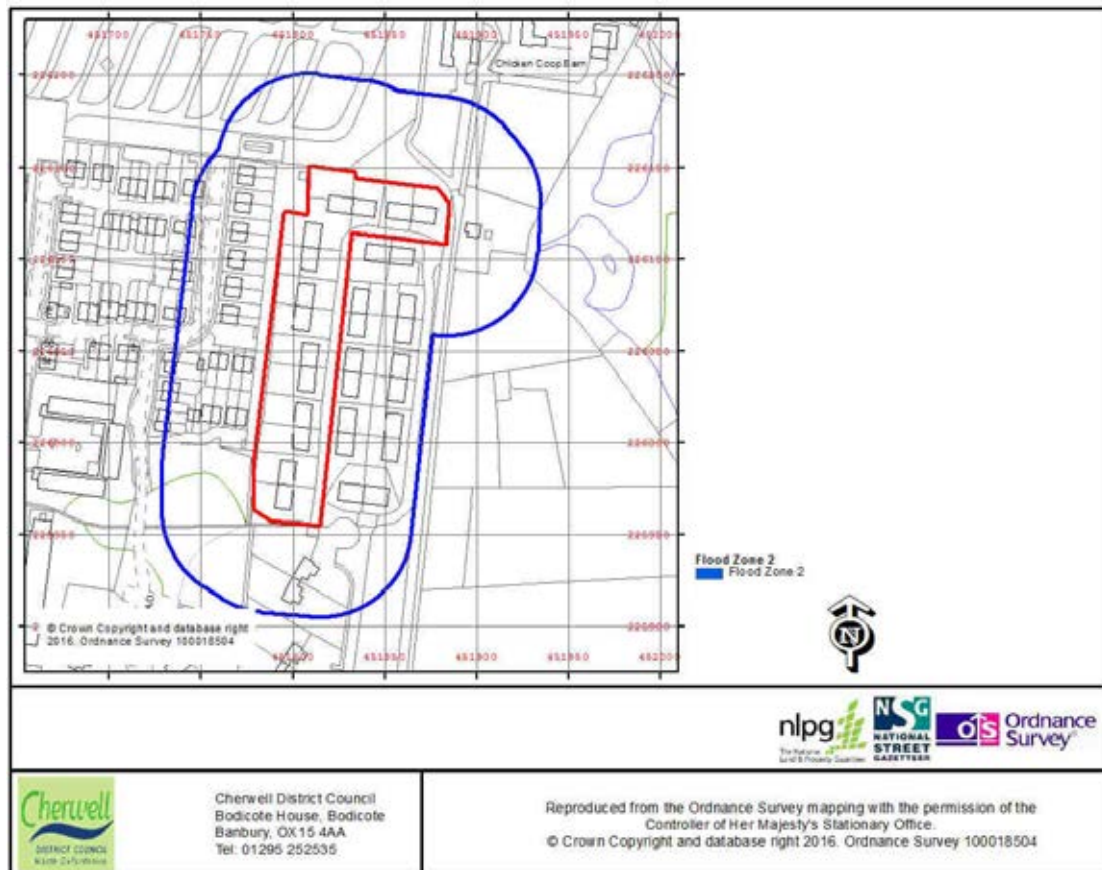
Site Results

No Flood Zone map at this location

Search Radius Results

No Flood Zone map at this location

Flood Zone 2



Flood Zone data © Environment Agency

The map shows the site (red) and a search radius of 50 meters (blue).

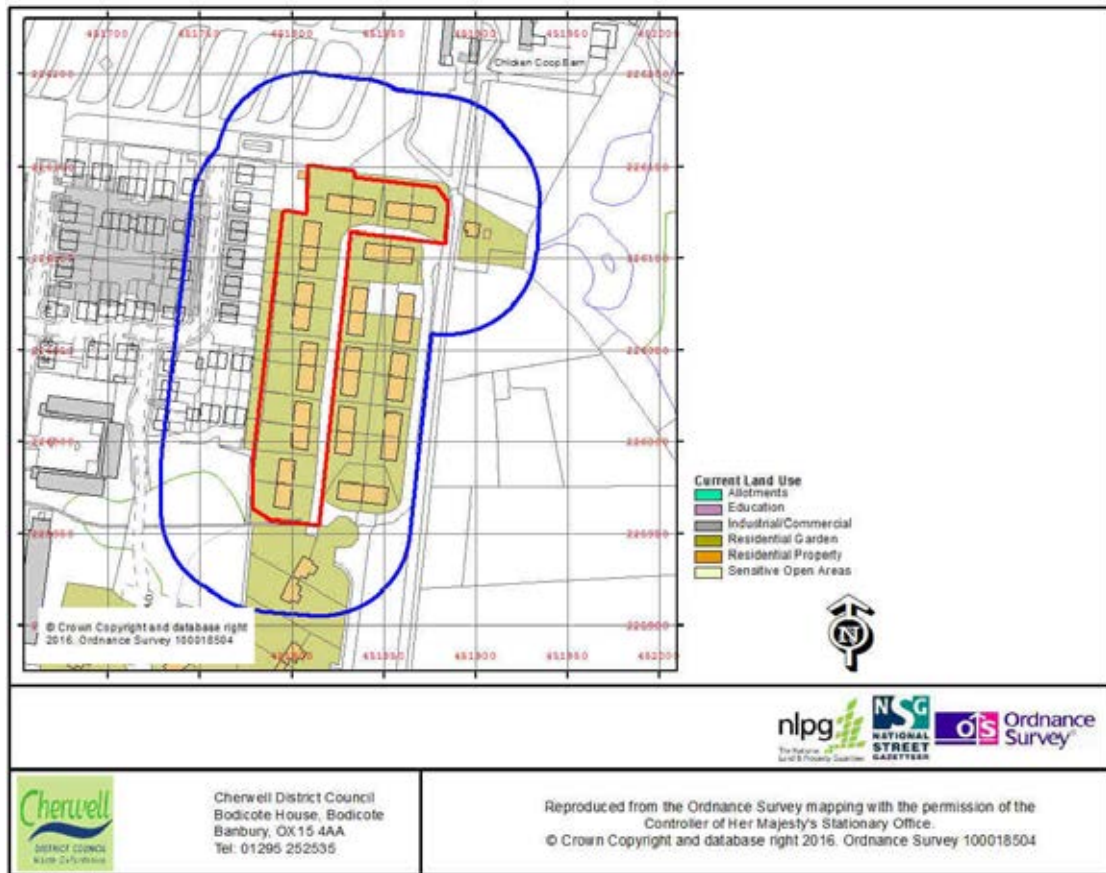
Site Results

No Flood Zone map at this location

Search Radius Results

No Flood Zone map at this location

Current Land Use



The map shows the site (red) and a search radius of 50 meters (blue).

The current land use (c.2005) information is based on information from OS MasterMap, OS Address Point and Aerial photographs.

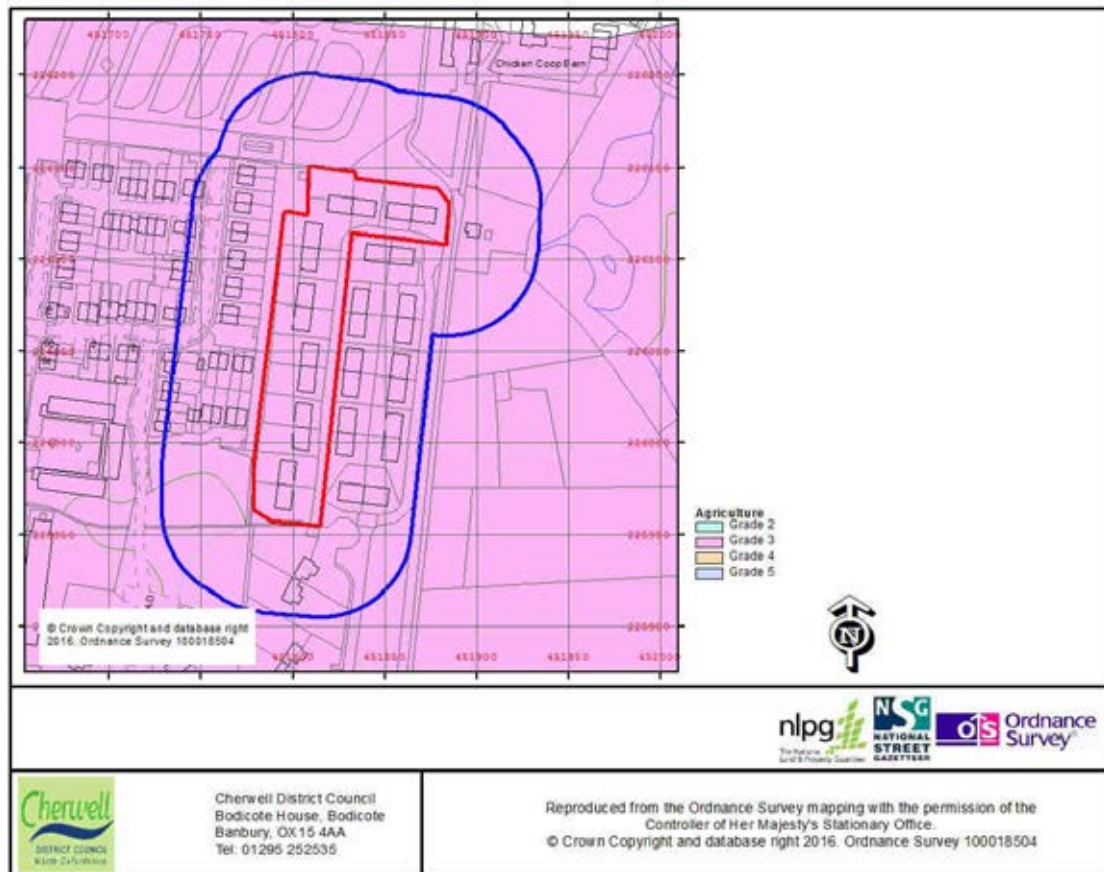
Site Results

Land use
Residential Garden
Residential Property

Search Radius Results

Land use
Industrial/Commercial
Residential Garden
Residential Property

Agriculture



The map shows the site (red) and a search radius of 50 meters (blue).

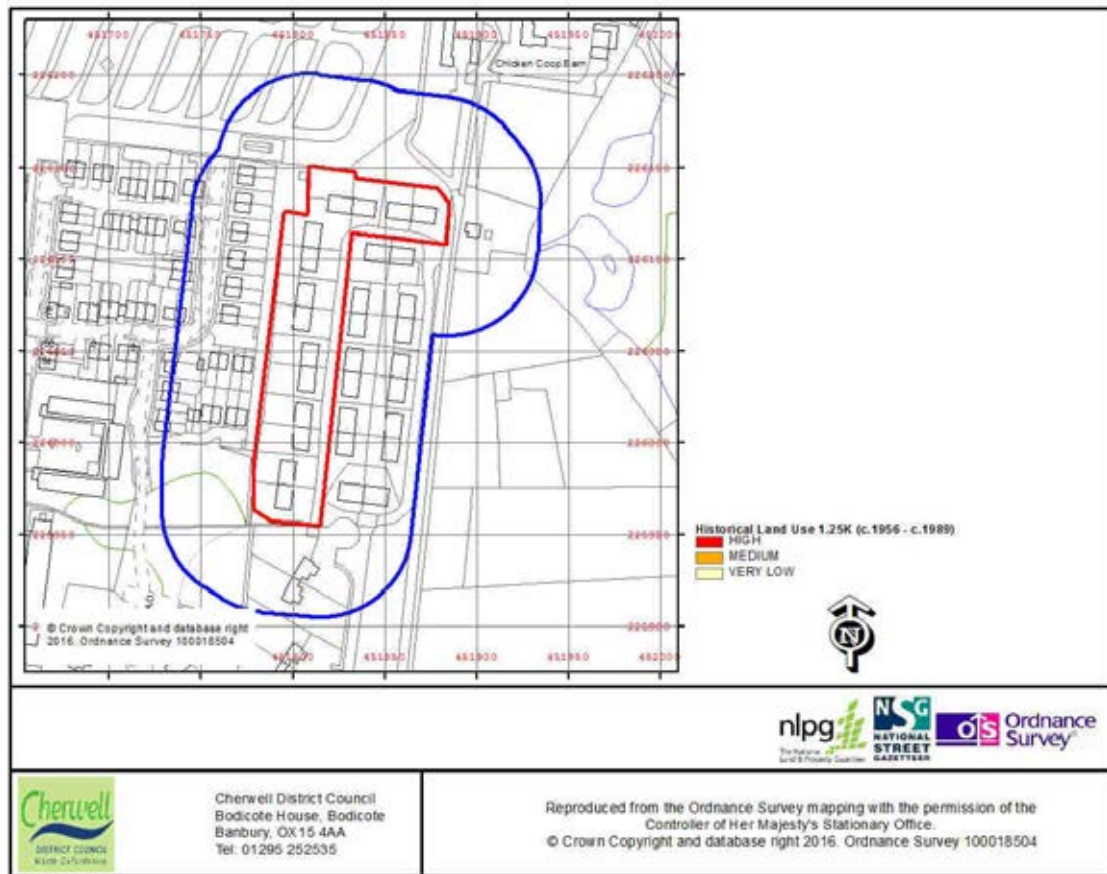
Site Results

Description
GRADE 3

Search Radius Results

Description
GRADE 3

Historical Land Use 1.25K (c.1956 - c.1989)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use 1.25K (c.1956 - c.1989) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1956 - 1989.

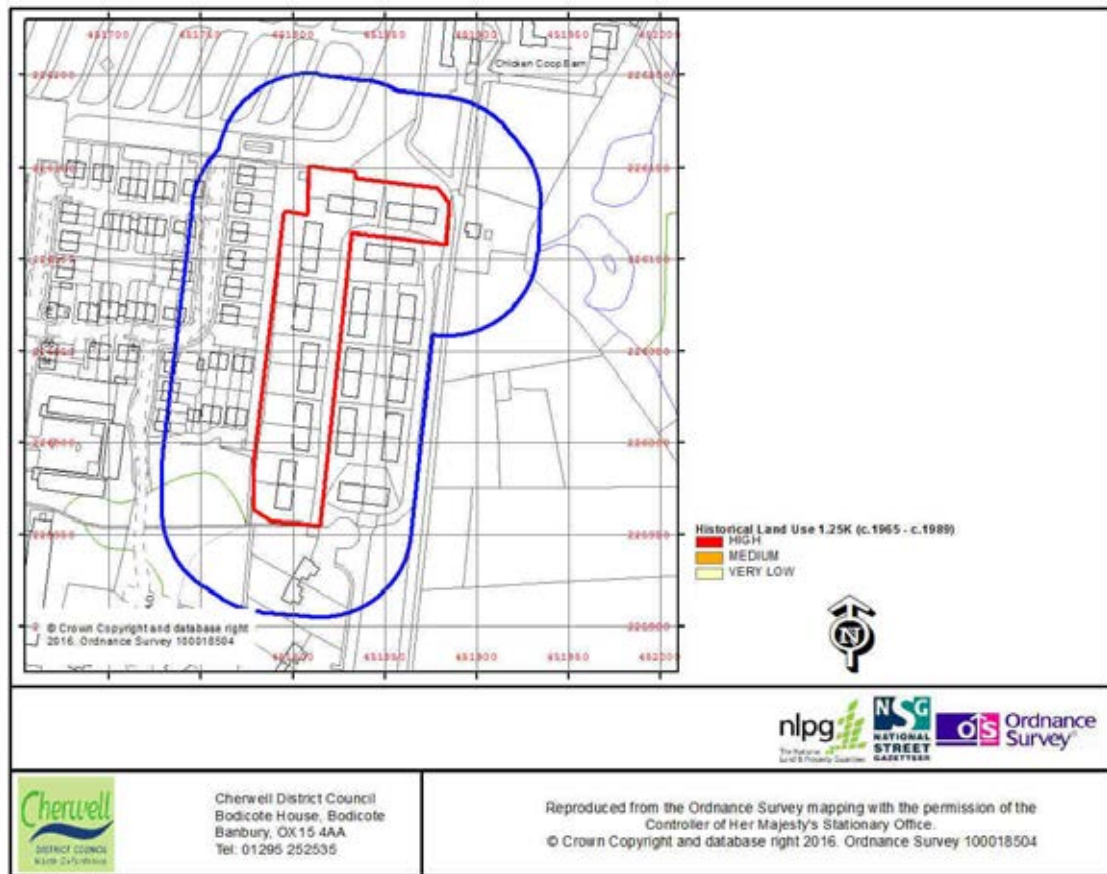
Site Results

No historical land use 1.25K (c.1956 - c.1989) mapped at the site

Search Radius Results

No historical land use 1.25K (c.1956 - c.1989) mapped in the search radius

Historical Land Use 1.25K (c.1965 - c.1989)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use 1.25K (c.1965 - c.1989) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1965 - 1989.

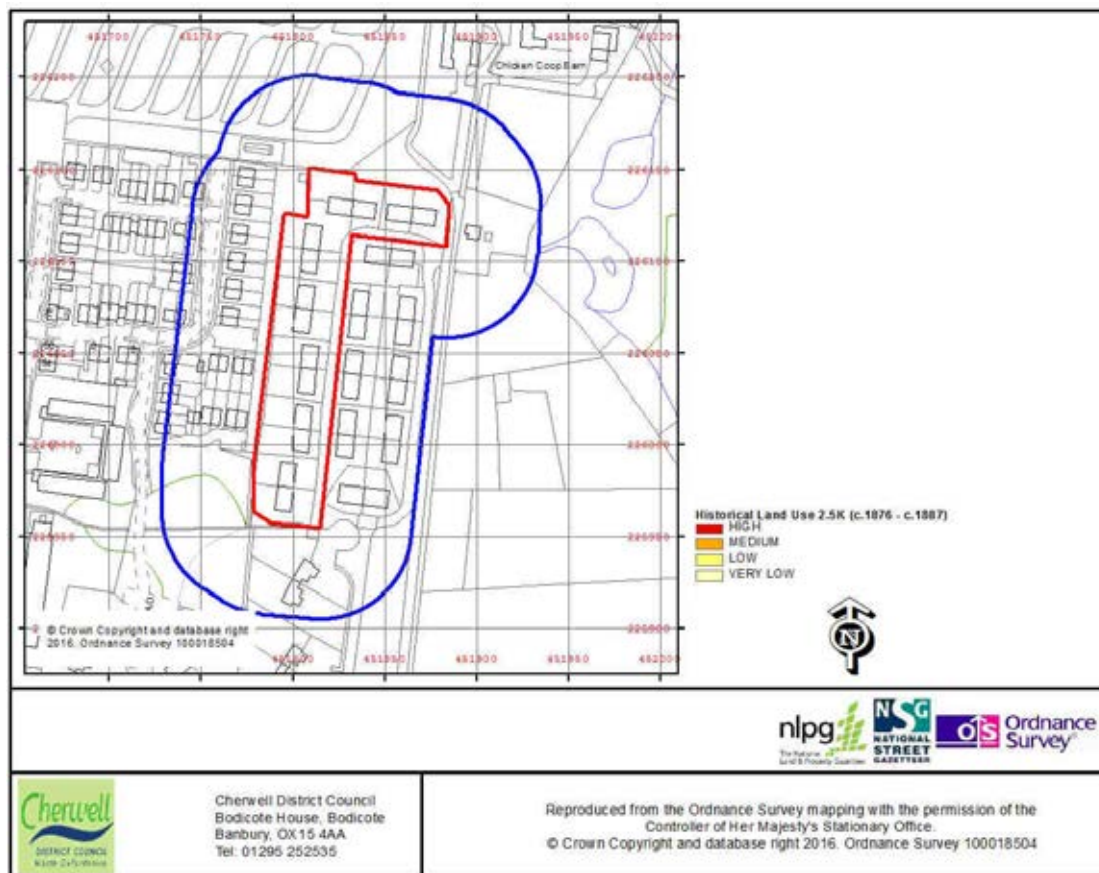
Site Results

No historical land use 1.25K (c.1965 - c.1989) mapped at the site

Search Radius Results

No historical land use 1.25K (c.1965 - c.1989) mapped in the search radius

Historical Land Use 2.5K (c.1876 - c.1887)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use 2.5K (c.1876 - c.1887) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1876 -1887.

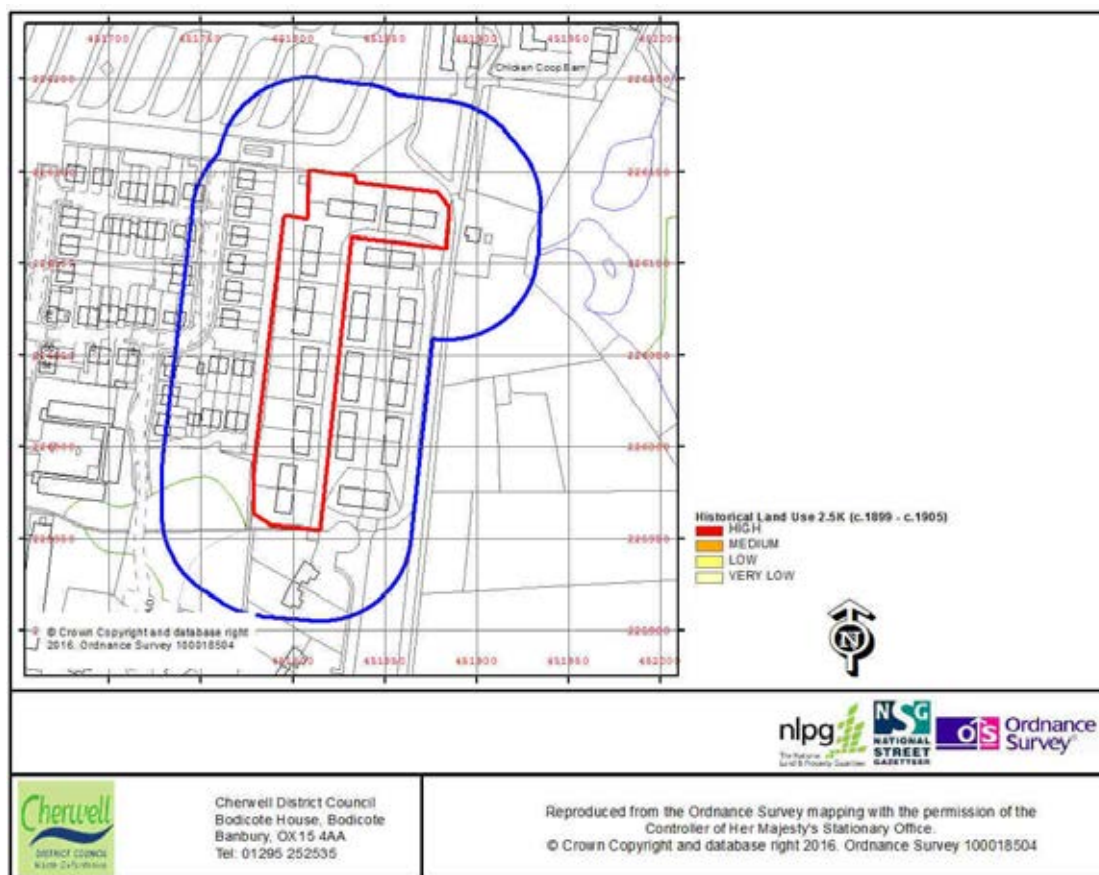
Site Results

No historical land use 2.5K (c.1876 - c.1887) mapped at the site

Search Radius Results

No historical land use 2.5K (c.1876 - c.1887) mapped in the search radius

Historical Land Use 2.5K (c.1899 - c.1905)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use 2.5K (c.1899 - c.1905) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1899 -1905.

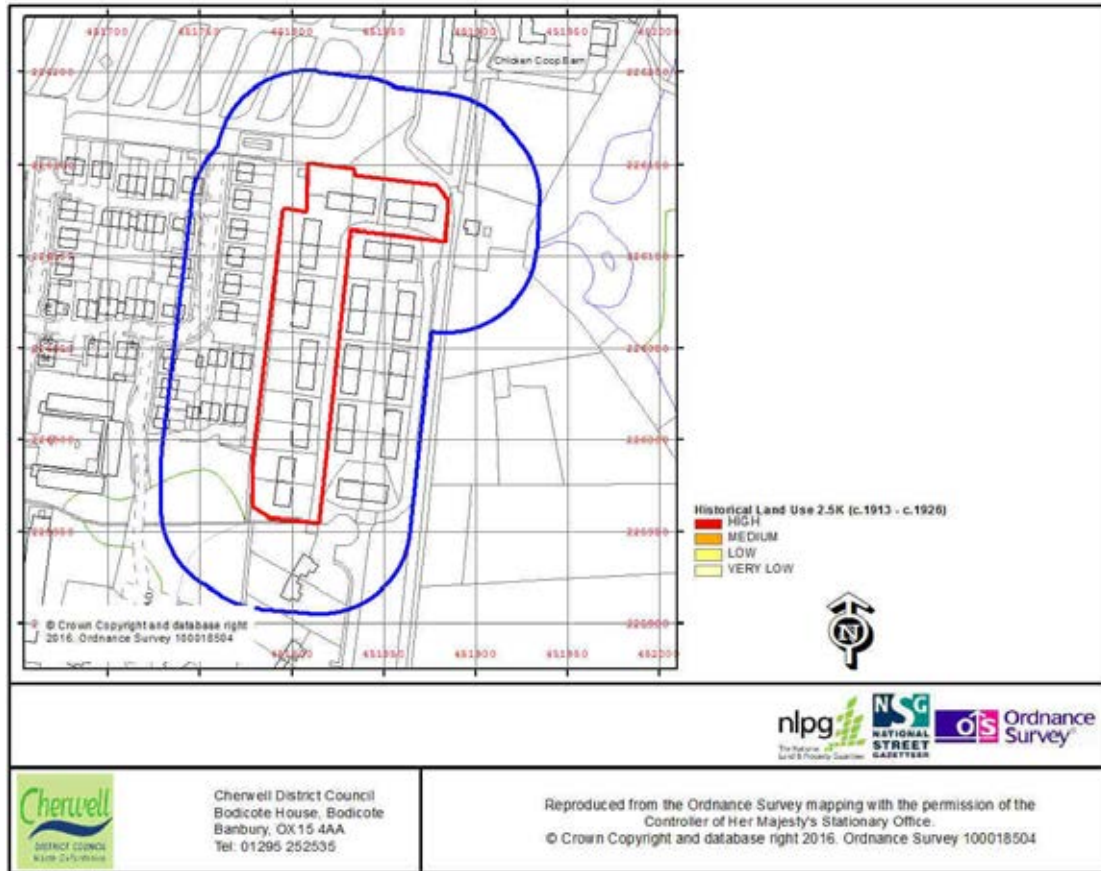
Site Results

No historical land use 2.5K (c.1899 - c.1905) mapped at the site

Search Radius Results

No historical land use 2.5K (c.1899 - c.1905) mapped in the search radius

Historical Land Use 2.5K (c.1913 - c.1926)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use 2.5K (c.1913 - c.1926) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1913 -1926.

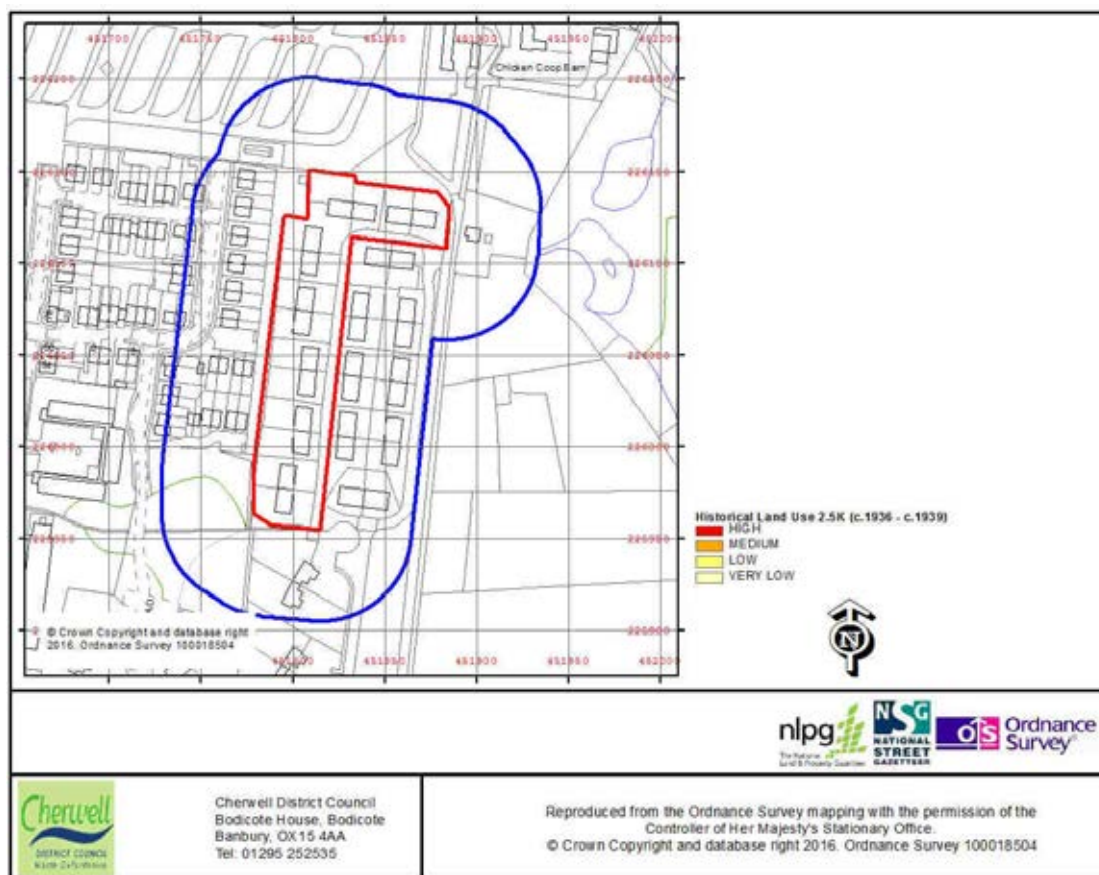
Site Results

No historical land use 2.5K (c.1913 - c.1926) mapped at the site

Search Radius Results

No historical land use 2.5K (c.1913 - c.1926) mapped in the search radius

Historical Land Use 2.5K (c.1936 - c.1939)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use 2.5K (c.1936 - c.1939) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1936 -1939.

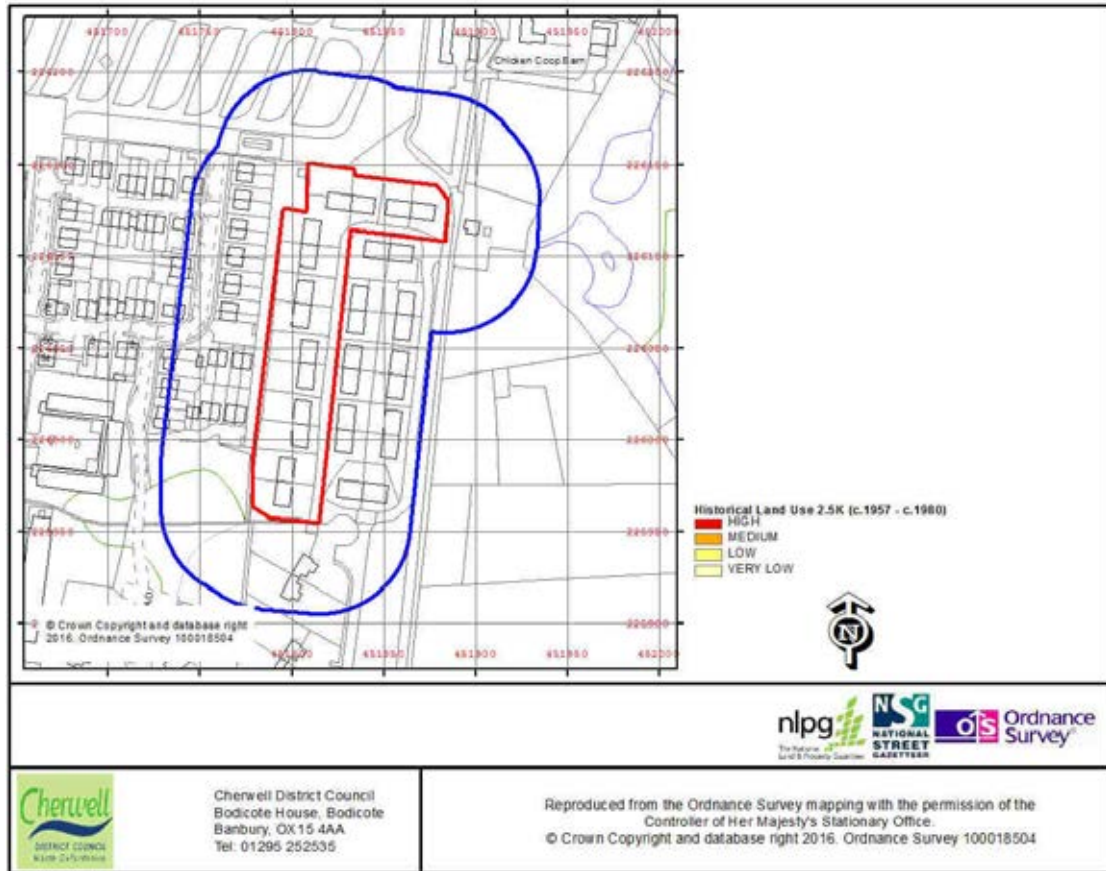
Site Results

No historical land use 2.5K (c.1936 - c.1939) mapped at the site

Search Radius Results

No historical land use 2.5K (c.1936 - c.1939) mapped in the search radius

Historical Land Use 2.5K (c.1957 - c.1980)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use 2.5K (c.1957 - c.1980) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1957 -1980.

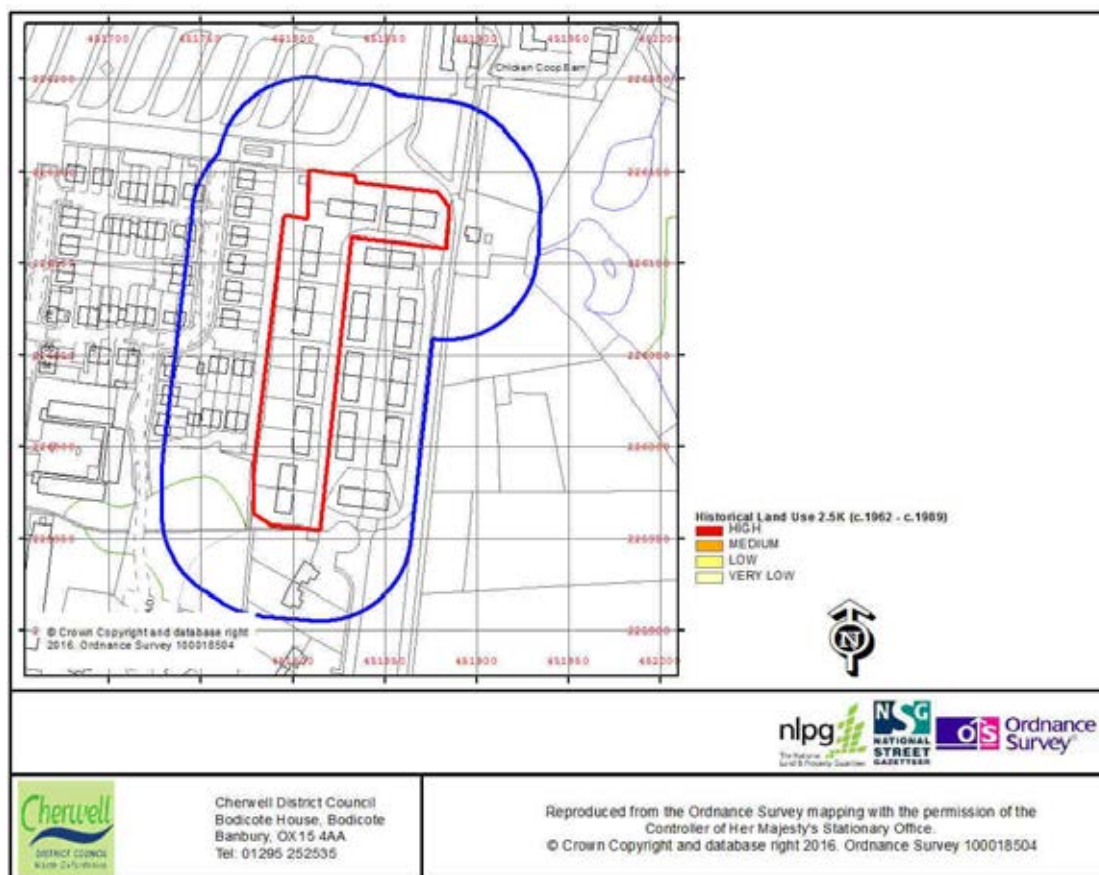
Site Results

No historical land use 2.5K (c.1957 - c.1980) mapped at the site

Search Radius Results

No historical land use 2.5K (c.1957 - c.1980) mapped in the search radius

Historical Land Use 2.5K (c.1962 - c.1989)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use 2.5K (c.1962 - c.1989) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1962 -1989.

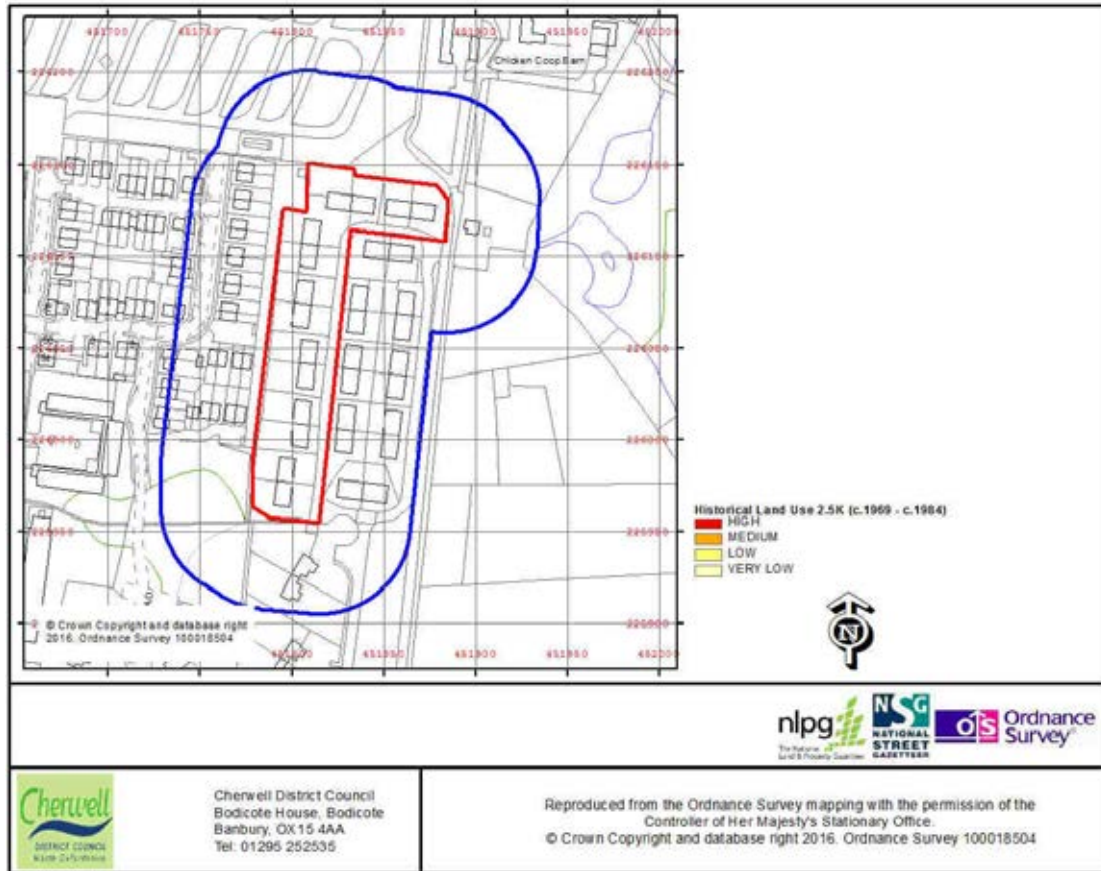
Site Results

No historical land use 2.5K (c.1962 - c.1989) mapped at the site

Search Radius Results

No historical land use 2.5K (c.1962 - c.1989) mapped in the search radius

Historical Land Use 2.5K (c.1969 - c.1984)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use 2.5K (c.1969 - c.1984) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1969 -1984.

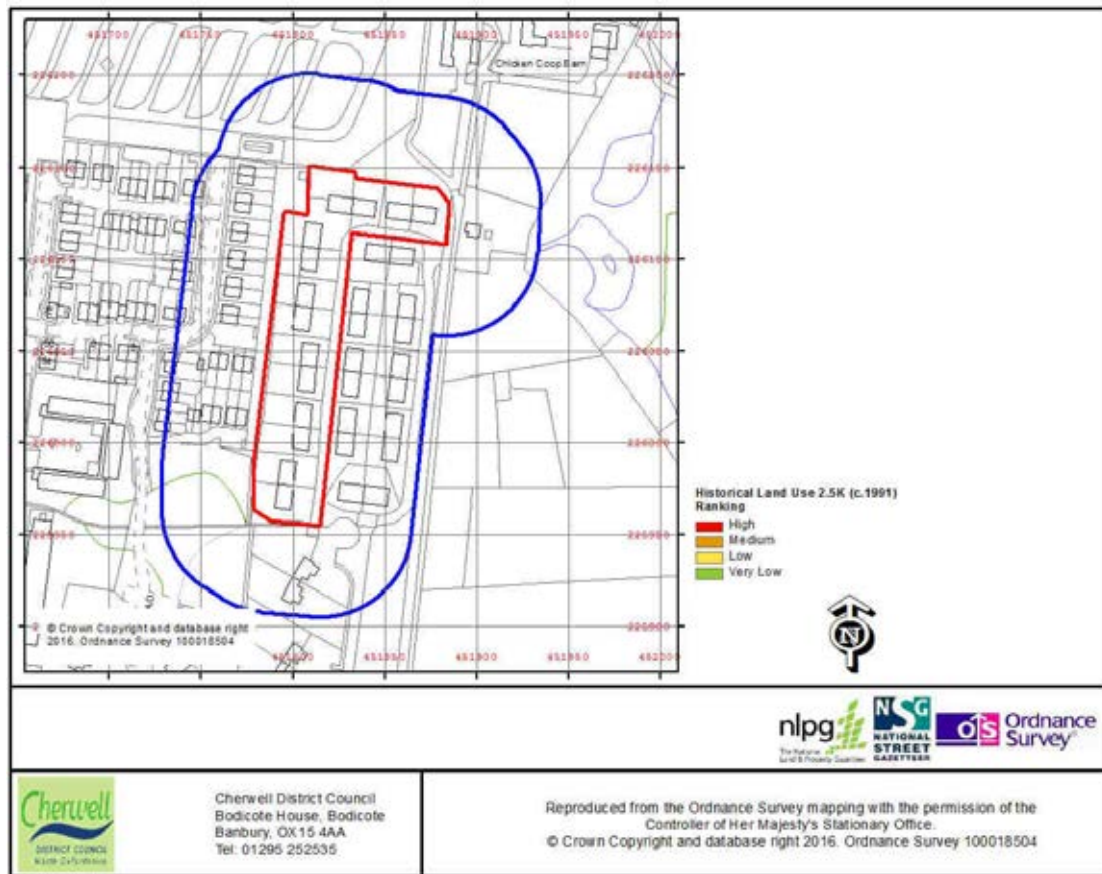
Site Results

No historical land use 2.5K (c.1969 - c.1984) mapped at the site

Search Radius Results

No historical land use 2.5K (c.1969 - c.1984) mapped in the search radius

Historical Land Use 2.5K (c.1991)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use 2.5K (c.1991) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1991.

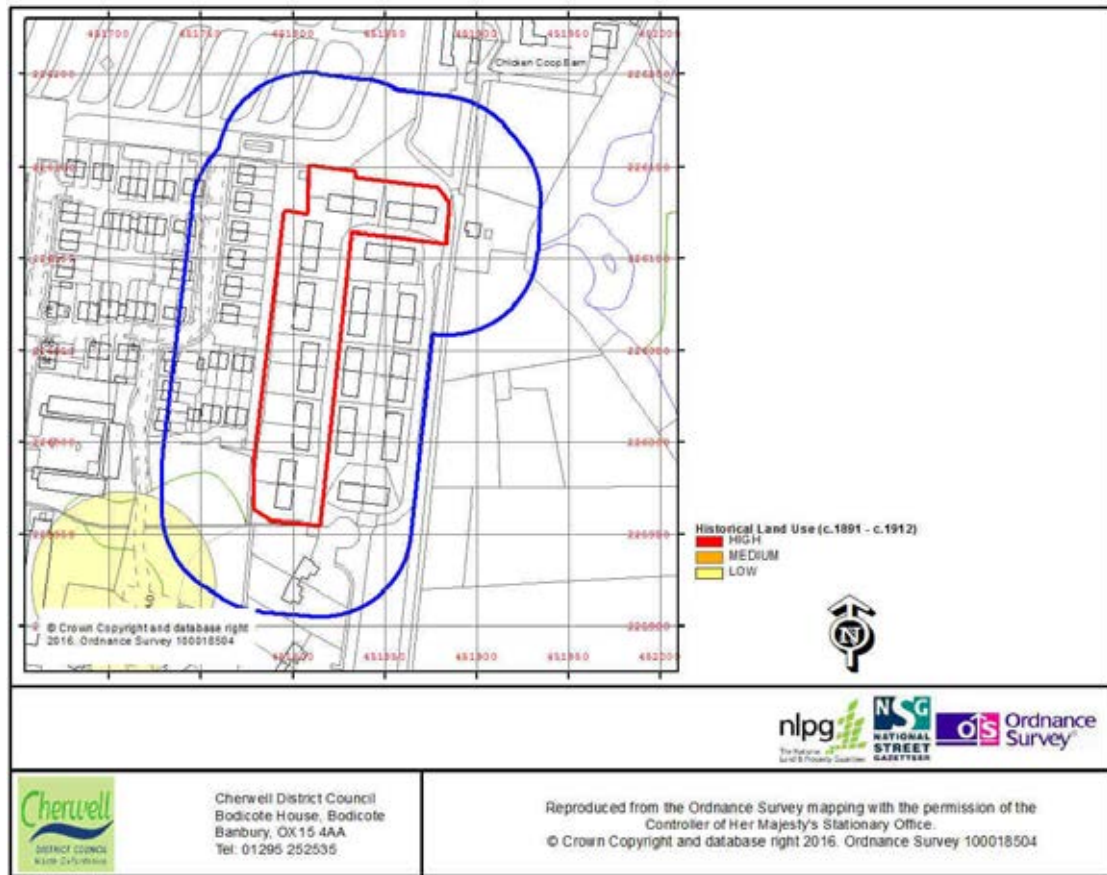
Site Results

No historical land use 2.5K (c.1991) mapped at the site

Search Radius Results

No historical land use 2.5K (c.1991) mapped in the search radius

Historical Land Use (c.1891 - c.1912)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use (c.1891 - c.1912) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1891-1912.

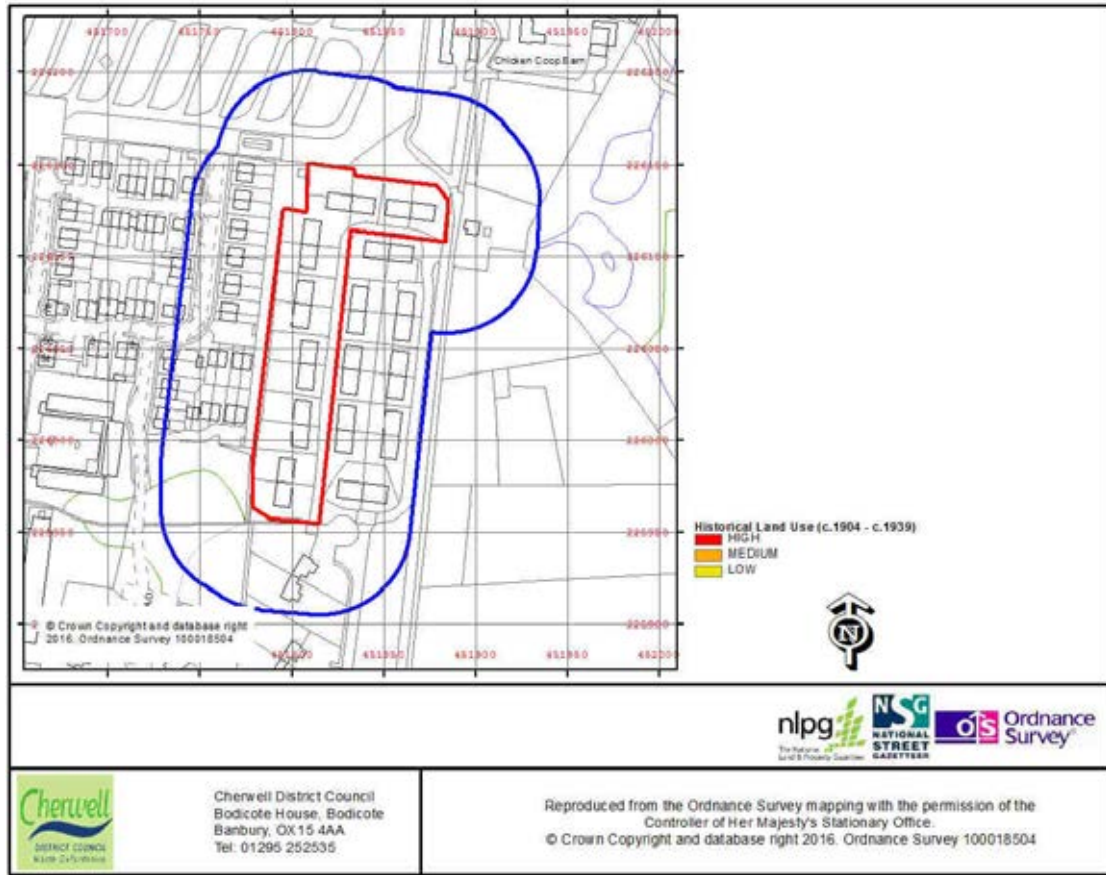
Site Results

No historical land use (c.1891 - c.1912) mapped at the site

Search Radius Results

Description
General quarrying

Historical Land Use (c.1904 - c.1939)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use (c.1904 - c.1939) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1904-1939.

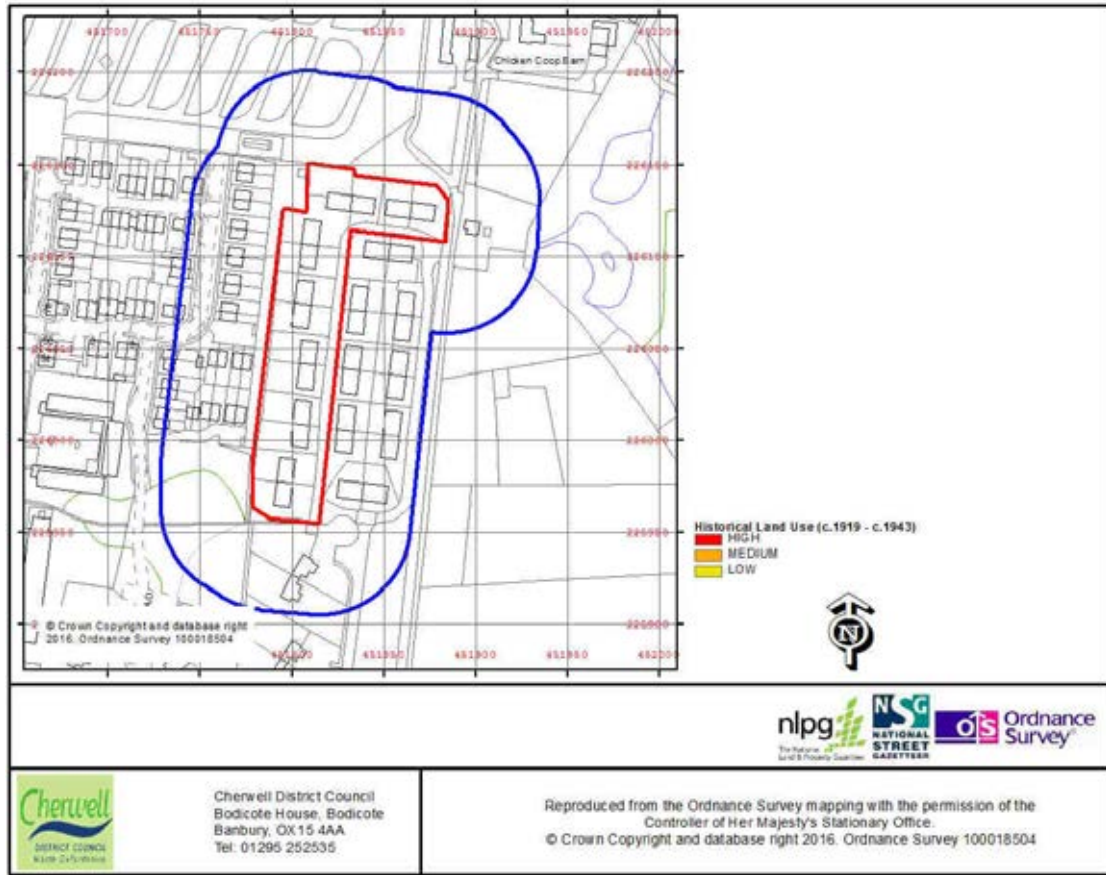
Site Results

No historical land use (c.1904 - c.1939) mapped at the site

Search Radius Results

No historical land use (c.1904 - c.1939) mapped in the search radius

Historical Land Use (c.1919 - c.1943)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use (c.1919 - c.1943) information is based on County Series maps of the entire Cherwell District at a scale of 6 inches to one mile, which were mapped in the period 1919-1943.

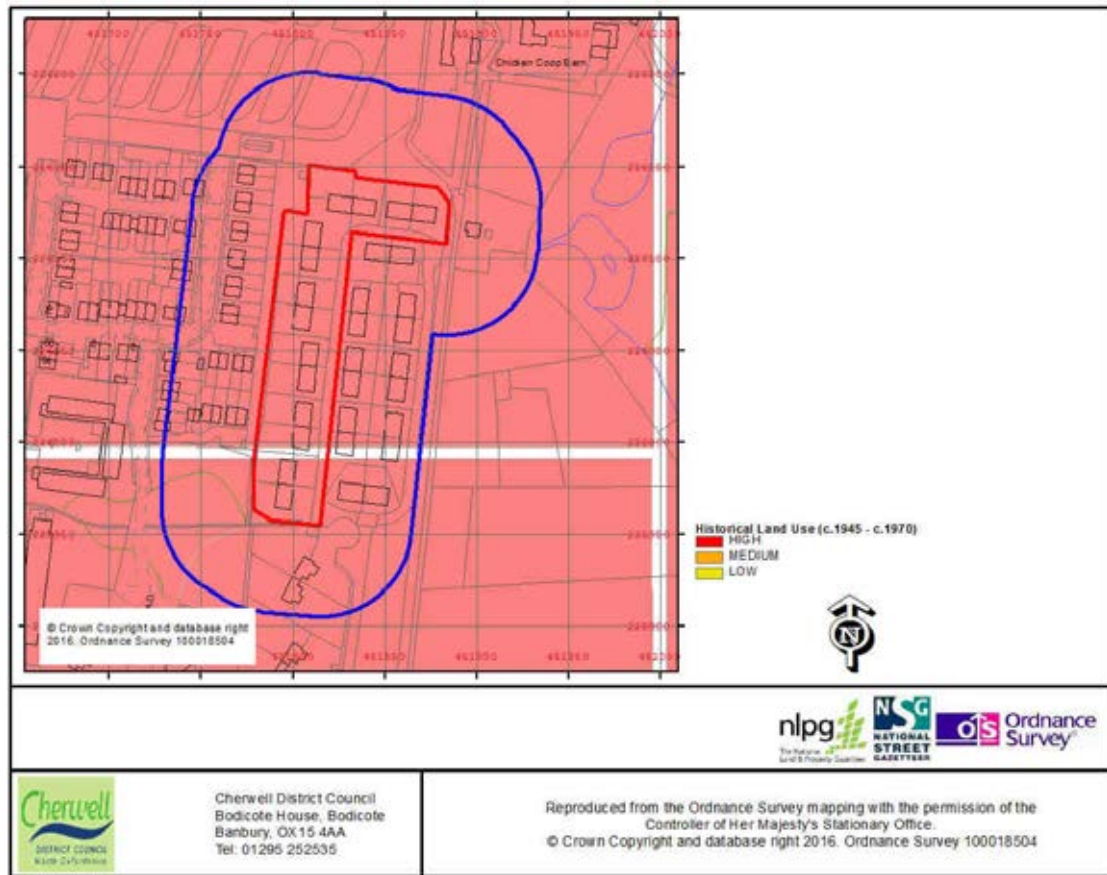
Site Results

No historical land use (c.1919 - c.1943) mapped at the site

Search Radius Results

No historical land use (c.1919 - c.1943) mapped in the search radius

Historical Land Use (c.1945 - c.1970)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use (c.1945 - c.1970) information is based on Ordnance Survey National Grid maps of the entire Cherwell District at a scale of 1:10 000, which were mapped in the period 1945-1970.

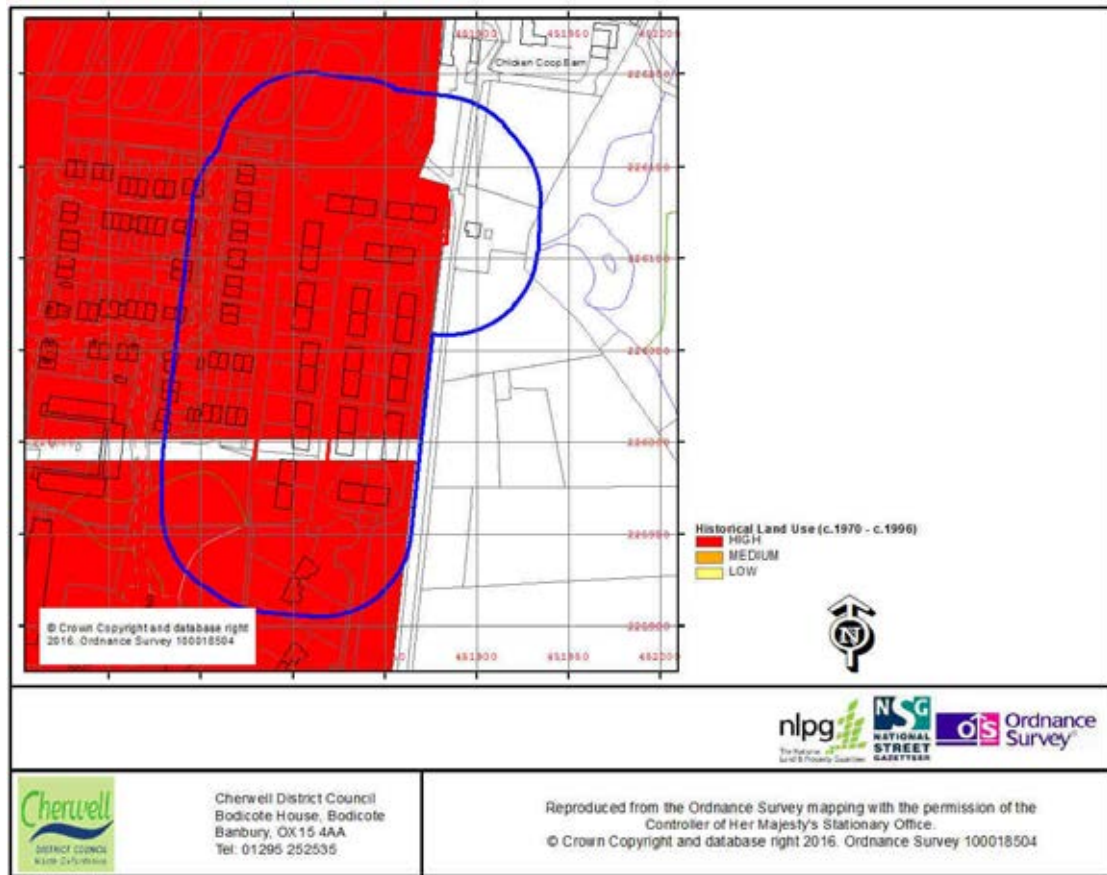
Site Results

Description
Military Land
Military Land

Search Radius Results

Description
Military Land
Military Land

Historical Land Use (c.1970 - c.1996)



The map shows the site (red) and a search radius of 50 meters (blue).

The historical land use (c.1970 - c.1996) information is based on Ordnance Survey National Grid maps of the entire Cherwell District at a scale of 1:10 000, which were mapped in the period 1970-1996.

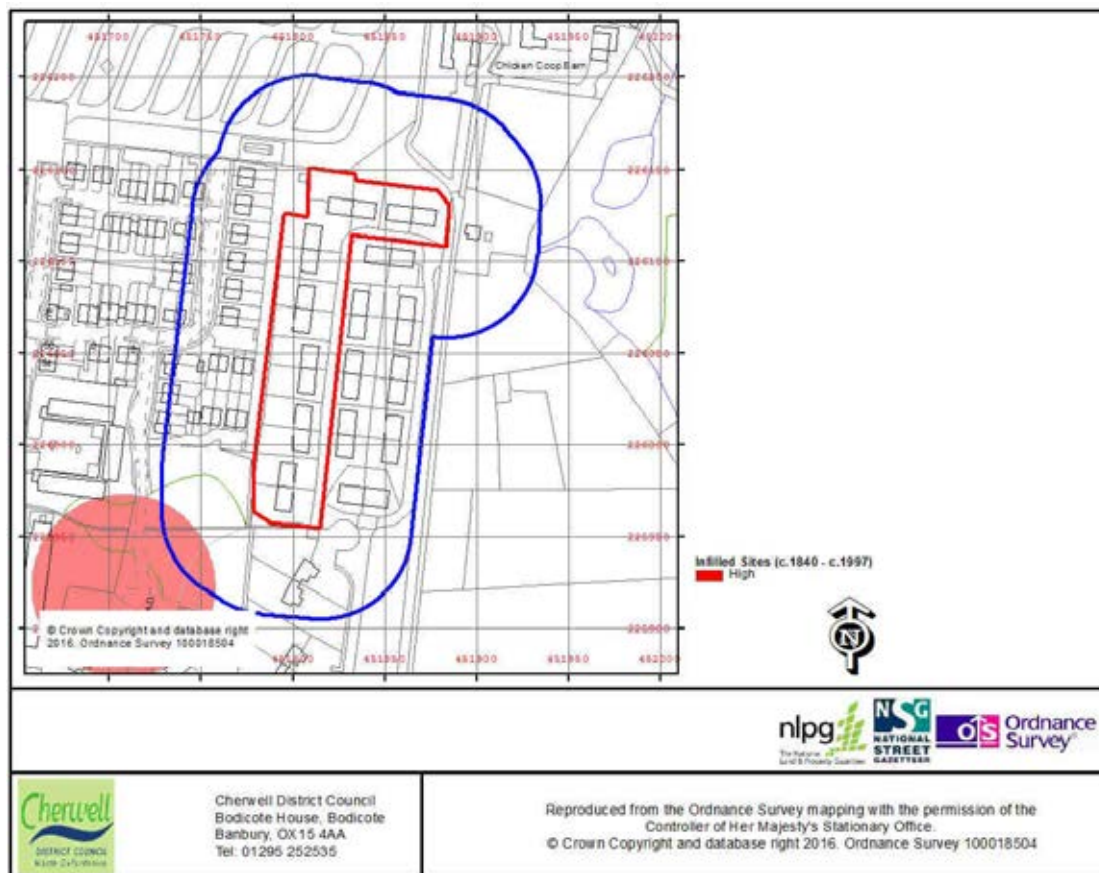
Site Results

Description
Military Land
Military Land

Search Radius Results

Description
Military Land
Military Land

Infilled Sites (c.1840 - c.1997)



The map shows the site (red) and a search radius of 50 meters (blue).

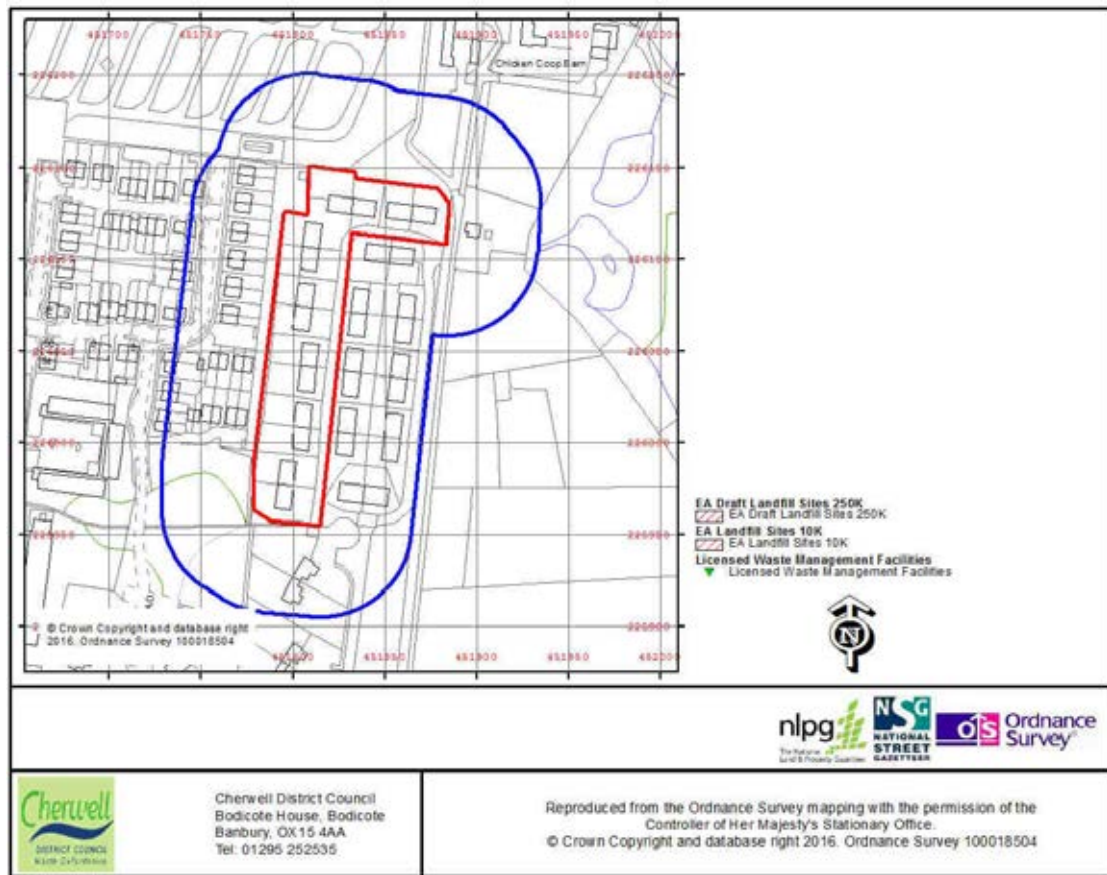
Site Results

No infilled Sites (c.1840 - c.1997) mapped at the site

Search Radius Results

Description
Unknown Filled Ground (Pit, quarry etc)

Landfill Sites and Licensed Waste Management Facilities



The map shows the site (red) and a search radius of 50 meters (blue).

Landfill and waste data derives from Environment Agency data & local knowledge of sites that pre-date Environment Agency data.

EA Landfill Sites 10K

Site Results

No EA registered landfills at the site

Search Radius Results

No EA registered landfills in the search radius

EA Draft Landfill Sites 250K

Site Results

No draft landfills at the site

Search Radius Results

No draft landfills in the search radius

Licensed Waste Management Facilities

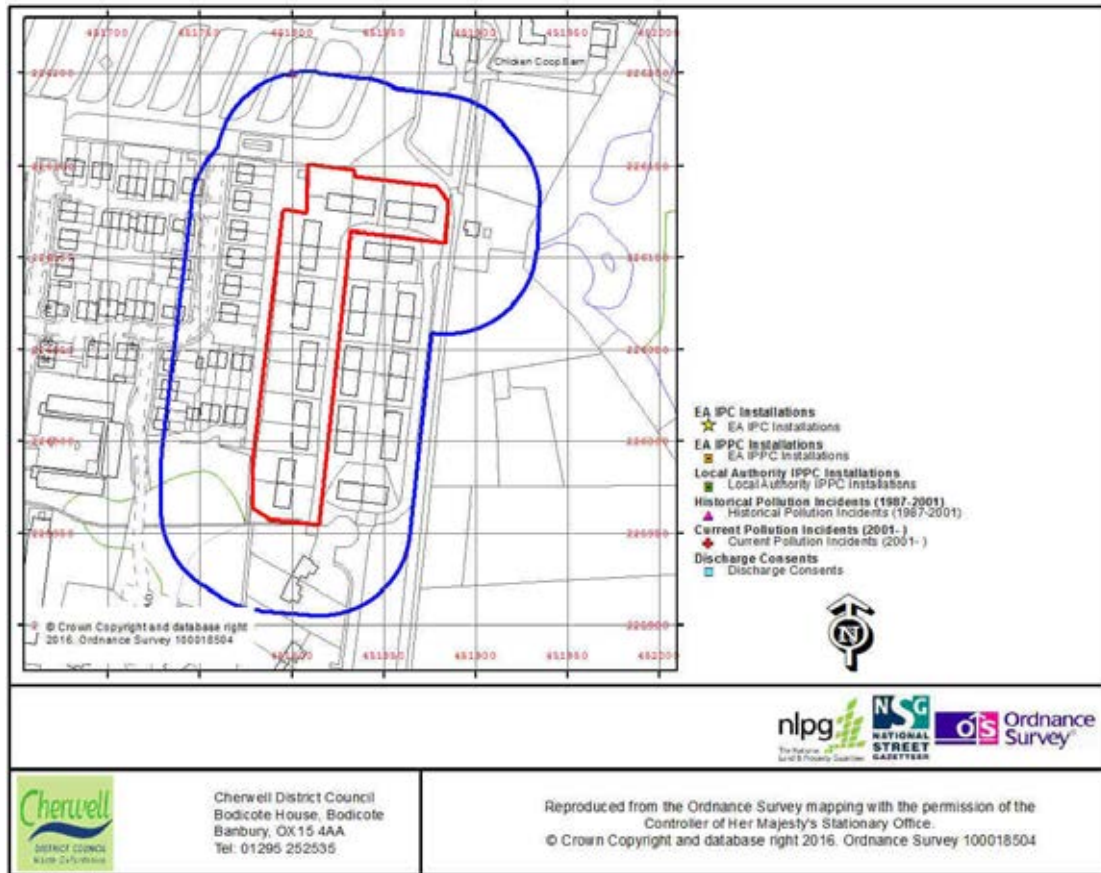
Site Results

No waste sites at the site

Search Radius Results

No waste sites in the search radius

Environmentally Sensitive Data



The map shows the site (red) and a search radius of 50 meters (blue).

All environmentally sensitive data derives from Environment Agency data

EA IPC Installations

Site Results

No IPC Installations at the site

Search Radius Results

No IPC Installations in the search radius

EA IPPC Installations

Site Results

No IPPC Installations at the site

Search Radius Results

No IPPC Installations in the search radius

Local Authority IPPC Installations

Site Results

No IPPC Installations at the site

Search Radius Results

No IPPC Installations in the search radius

Registered Radioactive Substance Sites

Site Results

No Registered Radioactive Substance sites at the site

Search Radius Results

No Registered Radioactive Substance sites in the search radius

Historical Pollution Incidents (1987-2001)

Site Results

No Historical Pollution Incidents (1987-2001) at the site

Search Radius Results

Details	NGR	Major Incident
Oil/Kerosene type/	SP 518 262	No
Not Yet Known/Not Yet Known/NOT KNOWN	SP518262	Miss

Current Pollution Incidents (2001-)

Site Results

No Current Pollution Incidents (2001-) at the site

Search Radius Results

No Current Pollution Incidents (2001-) in the search radius

Discharge Consents

Site Results

No discharge consents at the site

Search Radius Results

No discharge consents in the search radius

Important

All geological base maps contained herein are reproduced with the permission of the British Geological Survey. The copyright of materials derived from the British Geological Survey's work is vested in the Natural Environment Research Council [NERC]. No part of these materials, including the geological component of any maps, may be reproduced or transmitted in any form or by any means, or stored in a retrieval system of any nature, without the prior written permission of the copyright holder, via the British Geological Survey's Intellectual Property Rights Manager.

This report is compiled in good faith by information obtained from BGS's own researches and/or received from a number of different sources. The BGS and the Natural Environment Research Council give no warranties expressed or implied in relation to, and disclaim all responsibility for, the quality and/or accuracy of the information contained in this report, howsoever that information may have been obtained or received, or as to its suitability for any use. BGS and the Natural Environment Research Council accepts no liability whatsoever in respect of loss, damage, injury or death arising out of or in any way related to information contained in this report.

© Crown Copyright and database right 2016. Ordnance Survey 100018504. This copy has been produced specially by Cherwell District Council for reference purposes only. No further copies may be made.

Cherwell District Council cannot under any circumstances be responsible for the accuracy of factual data where the work was commissioned or carried out by others. Cherwell District Council makes no warranty as to the accuracy of the any site investigation plan. Cherwell District Council does not accept any liability in connection with information provided and makes no assurances to any interpretation of the information contained herein.

Appendix E

Site Investigation Logs



AA Environmental Ltd
 Units 4-8 Cholswell Court
 Shippon, Abingdon
 Oxfordshire
 OX13 6HX



Trial Pit Log

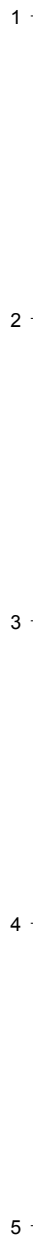
Trialpit No
TP01
 Sheet 1 of 1

Project Name: Trenchard Circle Project No. 163408 Co-ords: - Date 01/11/2016
 Level: Level:

Location: Upper Heyford, Oxfordshire Dimensions (m): Scale 1:25

Client: Conlon Ltd Depth 1.70 Logged JNT

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES	PID=0	0.10 0.30			Brown loamy sandy topsoil with occasional brick, concrete and glass. [MADE GROUND] Brown silty sand with occasional roots. [TOPSOIL]
	1.50	ES	PID=0	1.70			Highly weathered LIMESTONE recovered as a pale brown silty sand with limestone gravels and cobbles.
							End of pit at 1.70 m



Remarks: METHOD: Machine excavated pit; CONTAMINATION: No visual or olfactory contamination; GROUNDWATER: None encountered; NOTES: None.

Stability: Stable.





AA Environmental Ltd
 Units 4-8 Cholswell Court
 Shippon, Abingdon
 Oxfordshire
 OX13 6HX

Trial Pit Log

Trialpit No
TP02
 Sheet 1 of 1

Project Name: Trenchard Circle	Project No. 163408	Co-ords: - Level:	Date 01/11/2016
Location: Upper Heyford, Oxfordshire		Dimensions (m): Depth 2.00	Scale 1:25 Logged JNT
Client: Conlon Ltd			

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼	0.20	ES	PID=0	0.30			Brown clayey sands with limestone gravels. [POSSIBLE MADE GROUND]
				1.00			Highly weathered LIMESTONE recovered as a pale brown silty sand with limestone gravels and cobbles.
	1.80	ES	PID=4	2.00			Damp highly weathered LIMESTONE recovered as a pale brown silty sand with limestone gravels and cobbles.
							<u>Hydrocarbon staining and odour.</u>
							End of pit at 2.00 m

Remarks: METHOD: Machine excavated pit; CONTAMINATION: Hydrocarbon staining and odour 1.8 m; GROUNDWATER: Encountered as a slow seepage 1.8-2.0 m; NOTES: None.

Stability: Stable.





AA Environmental Ltd
 Units 4-8 Cholswell Court
 Shippon, Abingdon
 Oxfordshire
 OX13 6HX

Trial Pit Log

Trialpit No
TP03
 Sheet 1 of 1

Project Name: Trenchard Circle Project No. 163408 Co-ords: - Date 01/11/2016
 Level: Level:

Location: Upper Heyford, Oxfordshire Dimensions (m): Scale 1:25

Client: Conlon Ltd Depth 2.00 Logged JNT

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼	0.30	ES	PID=0	0.40			Brown clayey gravelly sand with occasional brick, wire, concrete and glass. [MADE GROUND]
				0.80			Highly weathered LIMESTONE recovered as limestone gravels and cobbles with silty sands.
	1.20	ES	PID=0	1.80			Highly weathered LIMESTONE recovered as a pale brown silty clay with limestone gravels and cobbles.
				2.00			Fractured LIMESTONE recovered as limestone gravels and cobbles.
							End of pit at 2.00 m

Remarks: METHOD: Machine excavated pit; CONTAMINATION: No visual or olfactory contamination; GROUNDWATER: Slow ingress at 2.0 m; NOTES: None.

Stability: Stable.





AA Environmental Ltd
Units 4-8 Cholswell Court
Shippon, Abingdon
Oxfordshire
OX13 6HX

Trial Pit Log

Trialpit No
TP04
Sheet 1 of 1

Project Name: Trenchard Circle Project No. 163408 Co-ords: -
Level: Date 01/11/2016

Location: Upper Heyford, Oxfordshire Dimensions (m): Scale 1:25

Client: Conlon Ltd Depth 2.10 Logged JNT

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼	0.25	ES	PID=0	0.30			Brown clayey gravelly sand with occasional brick, roots, wood, wire, concrete and glass. [MADE GROUND]
				1.00			Highly weathered LIMESTONE recovered as a pale brown silty gravelly sand.
				2.00			Highly weathered LIMESTONE recovered as a pale brown silty sand with limestone gravels and cobbles.
	1.80 - 2.00	ES	PID=0	2.10			Fractured LIMESTONE recovered as limestone gravels and cobbles.
							End of pit at 2.10 m

Remarks: METHOD: Machine excavated pit; CONTAMINATION: No visual or olfactory contamination; GROUNDWATER: Slow ingress 2.1 m; NOTES: None.

Stability: Stable.





AA Environmental Ltd
 Units 4-8 Cholswell Court
 Shippon, Abingdon
 Oxfordshire
 OX13 6HX

Trial Pit Log

Trialpit No
TP05
 Sheet 1 of 1

Project Name: Trenchard Circle Project No. 163408 Co-ords: - Date 01/11/2016
 Level: Level:

Location: Upper Heyford, Oxfordshire Dimensions (m): Scale 1:25

Client: Conlon Ltd Depth 2.40 Logged JNT

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.30 - 0.50	ES	PID=0	1.00			Brown clayey gravelly sand with pea gravels fill and occasional brick, roots, wood, wire, concrete and glass. [MADE GROUND]
	2.20	ES	PID=0	2.20			Highly weathered LIMESTONE recovered as a pale brown silty sand with limestone gravels and cobbles.
				2.40			Fractured LIMESTONE recovered as limestone gravels and cobbles.
----- End of pit at 2.40 m -----							

Remarks: METHOD: Machine excavated pit; CONTAMINATION: No visual or olfactory contamination; GROUNDWATER: None encountered; NOTES: None.

Stability: Stable.





AA Environmental Ltd
 Units 4-8 Cholswell Court
 Shippon, Abingdon
 Oxfordshire
 OX13 6HX

Trial Pit Log

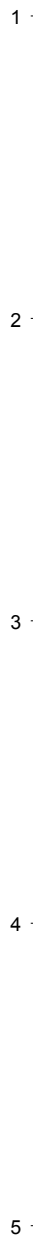
Trialpit No
TP06
 Sheet 1 of 1

Project Name: Trenchard Circle Project No. 163408 Co-ords: - Date 01/11/2016
 Level: Level:

Location: Upper Heyford, Oxfordshire Dimensions (m): Scale 1:25

Client: Conlon Ltd Depth 1.70 Logged JNT

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES	PID=0	0.25			Brown clayey gravelly sand with occasional brick, roots, wood, wire, concrete and glass. [MADE GROUND]
							Highly weathered LIMESTONE recovered as a pale brown silty sand with limestone gravels and cobbles.
	1.50	ES	PID=0	1.30			Fractured LIMESTONE recovered as limestone gravels and cobbles.
				1.70			End of pit at 1.70 m



Remarks: METHOD: Machine excavated pit; CONTAMINATION: No visual or olfactory contamination; GROUNDWATER: None encountered; NOTES: None.

Stability: Stable.





AA Environmental Ltd
 Units 4-8 Cholswell Court
 Shippon, Abingdon
 Oxfordshire
 OX13 6HX

Trial Pit Log

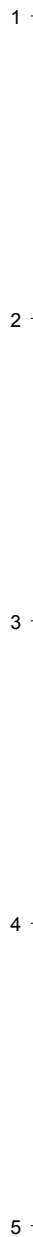
Trialpit No
TP07
 Sheet 1 of 1

Project Name: Trenchard Circle Project No. 163408 Co-ords: - Date 01/11/2016
 Level: Level:

Location: Upper Heyford, Oxfordshire Dimensions (m): Scale 1:25

Client: Conlon Ltd Depth 1.50 Logged JNT

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES	PID=0	0.20			Brown loamy sandy topsoil with occasional brick, concrete and glass. [MADE GROUND]
			PID=0	1.40			Highly weathered LIMESTONE recovered as a pale brown silty sand with limestone gravels and cobbles.
	1.70	ES		1.50			Fractured LIMESTONE recovered as limestone gravels and cobbles.
							End of pit at 1.50 m



Remarks: METHOD: Machine excavated pit; CONTAMINATION: No visual or olfactory contamination; GROUNDWATER: None encountered; NOTES: None.

Stability: Stable.



Appendix F

Certificates of Analysis



Final Report

Report No.: 16-26771-1

Initial Date of Issue: 08-Nov-2016

Client: AA Environmental Ltd

Client Address: Units 4 to 8
Cholswell Court
Shippon
Abingdon
Oxfordshire
OX136HX

Contact(s): Jack Taylor

Project: 163408 Conlon - Trenchard Circle,
Upper Heyford


Quotation No.: **Date Received:** 03-Nov-2016

Order No.: **Date Instructed:** 03-Nov-2016

No. of Samples: 23

Turnaround (Wkdays): 3 **Results Due:** 07-Nov-2016

Date Approved: 08-Nov-2016

Approved By:


Details: Keith Jones, Technical Manager

Project: 163408 Conlon - Trenchard Circle, Upper Heyford

Client: AA Environmental Ltd		Chemtest Job No.:		16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771
Quotation No.:		Chemtest Sample ID.:		373987	373989	373990	373992	373994	373995	373996	373998	374000	
		Client Sample ID.:		TP01	TP02	TP02	TP03	TP04	TP04	TP05	TP06	TP07	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.20	0.20	1.80	0.30	0.25	1.80	0.30	0.20	0.20	
		Bottom Depth (m):											
		Date Sampled:		01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	16	16	11	10	11	14	10	8.7	12
pH	U	2010		N/A	8.2	8.1	8.5	8.5	8.2	8.8	8.7	8.4	8.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.64	0.51	< 0.40	0.51	< 0.40	< 0.40	< 0.40	0.74	1.1
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	0.15	< 0.010	0.019	0.29	< 0.010	< 0.010	0.38	0.18
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	1.0	1.6	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	U	2325	mg/kg	0.50	1.6	9.8	1.2	2.1	1.1	1.5	1.1	1.1	0.99
Arsenic	U	2450	mg/kg	1.0	21	27	15	24	25	18	25	30	28
Cadmium	U	2450	mg/kg	0.10	0.25	0.16	< 0.10	0.22	0.21	< 0.10	0.10	0.25	0.22
Chromium	U	2450	mg/kg	1.0	36	21	5.0	25	23	4.5	13	25	26
Copper	U	2450	mg/kg	0.50	7.2	6.2	2.3	8.0	7.7	1.3	5.2	8.8	9.0
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.19	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	22	16	6.1	17	17	4.3	12	20	19
Lead	U	2450	mg/kg	0.50	26	60	3.4	23	24	2.3	14	18	20
Selenium	U	2450	mg/kg	0.20	0.68	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Vanadium	U	2450	mg/kg	5.0	63	44	7.5	47	42	12	30	56	60
Zinc	U	2450	mg/kg	0.50	41	30	5.0	38	54	8.4	19	45	38
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	1.1	0.94	0.61	1.9	3.7	5.1	1.4	2.4	1.5
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Project: 163408 Conlon - Trenchard Circle, Upper Heyford

Client: AA Environmental Ltd		Chemtest Job No.:		16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771
Quotation No.:		Chemtest Sample ID.:		373987	373989	373990	373992	373994	373995	373996	373998	374000	
		Client Sample ID.:		TP01	TP02	TP02	TP03	TP04	TP04	TP05	TP06	TP07	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		0.20	0.20	1.80	0.30	0.25	1.80	0.30	0.20	0.20	
		Bottom Depth (m):											
		Date Sampled:		01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	
		Asbestos Lab:		COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Total Phenols	U	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Project: 163408 Conlon - Trenchard Circle, Upper Heyford

Client: AA Environmental Ltd		Chemtest Job No.:		16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771
Quotation No.:		Chemtest Sample ID.:		374001	374002	374003	374004	374005	374006	374007	374008	374009	374009
		Client Sample ID.:		TP07	TP08	TP09	TP10	TP11	TP12	TP13	TP14	TP15	TP15
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		1.40	2.00	1.10	0.60	1.80	1.00	1.00	1.00	1.00	1.00
		Bottom Depth (m):											
		Date Sampled:		01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016
		Asbestos Lab:		COVENTRY									
Determinand	Accred.	SOP	Units	LOD									
ACM Type	U	2192		N/A	-								
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected								
Moisture	N	2030	%	0.020	8.5	8.4	15	11	11	12	14	11	12
pH	U	2010		N/A	8.7								
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40								
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010								
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50								
Sulphide (Easily Liberatable)	U	2325	mg/kg	0.50	0.96								
Arsenic	U	2450	mg/kg	1.0	14								
Cadmium	U	2450	mg/kg	0.10	< 0.10								
Chromium	U	2450	mg/kg	1.0	3.3								
Copper	U	2450	mg/kg	0.50	1.2								
Mercury	U	2450	mg/kg	0.10	< 0.10								
Nickel	U	2450	mg/kg	0.50	4.7								
Lead	U	2450	mg/kg	0.50	1.9								
Selenium	U	2450	mg/kg	0.20	< 0.20								
Vanadium	U	2450	mg/kg	5.0	6.6								
Zinc	U	2450	mg/kg	0.50	3.3								
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50								
Total Organic Carbon	U	2625	%	0.20	5.0								
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	17	75	< 1.0	13	4.3	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	98	570	< 1.0	68	2.4	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	530	2400	< 1.0	320	34	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	480	2500	< 1.0	260	35	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	77	110	< 1.0	69	49	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	1200	5600	< 5.0	730	120	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	12	180	< 1.0	13	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	140	1300	< 1.0	89	3.9	< 1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	120	760	< 1.0	82	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	34	97	< 1.0	34	4.5	< 1.0	< 1.0

Project: 163408 Conlon - Trenchard Circle, Upper Heyford

Client: AA Environmental Ltd		Chemtest Job No.:		16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771
Quotation No.:		Chemtest Sample ID.:		374001	374002	374003	374004	374005	374006	374007	374008	374009	
		Client Sample ID.:		TP07	TP08	TP09	TP10	TP11	TP12	TP13	TP14	TP15	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		1.40	2.00	1.10	0.60	1.80	1.00	1.00	1.00	1.00	
		Bottom Depth (m):											
		Date Sampled:		01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016	
		Asbestos Lab:		COVENTRY									
Determinand	Accred.	SOP	Units	LOD									
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	310	2300	< 5.0	220	8.4	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10	< 10	< 10	1500	7900	< 10	950	130	< 10	< 10
Naphthalene	U	2700	mg/kg	0.10	< 0.10								
Acenaphthylene	U	2700	mg/kg	0.10	< 0.10								
Acenaphthene	U	2700	mg/kg	0.10	< 0.10								
Fluorene	U	2700	mg/kg	0.10	< 0.10								
Phenanthrene	U	2700	mg/kg	0.10	< 0.10								
Anthracene	U	2700	mg/kg	0.10	< 0.10								
Fluoranthene	U	2700	mg/kg	0.10	< 0.10								
Pyrene	U	2700	mg/kg	0.10	< 0.10								
Benzo[a]anthracene	U	2700	mg/kg	0.10	< 0.10								
Chrysene	U	2700	mg/kg	0.10	< 0.10								
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	< 0.10								
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	< 0.10								
Benzo[a]pyrene	U	2700	mg/kg	0.10	< 0.10								
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	< 0.10								
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	< 0.10								
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	< 0.10								
Total Of 16 PAH's	U	2700	mg/kg	2.0	< 2.0								
Total Phenols	U	2920	mg/kg	0.30	< 0.30								

Project: 163408 Conlon - Trenchard Circle, Upper Heyford

Client: AA Environmental Ltd		Chemtest Job No.:				16-26771	16-26771	16-26771	16-26771
Quotation No.:		Chemtest Sample ID.:				374010	374011	374012	374013
		Client Sample ID.:				TP16	TP17	TP18	TP18
		Sample Type:				SOIL	SOIL	SOIL	SOIL
		Top Depth (m):				1.80	1.50	0	0.90
		Bottom Depth (m):						0.10	
		Date Sampled:				01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016
		Asbestos Lab:							
Determinand	Accred.	SOP	Units	LOD					
ACM Type	U	2192		N/A					
Asbestos Identification	U	2192	%	0.001					
Moisture	N	2030	%	0.020	10	9.8	9.4	9.7	
pH	U	2010		N/A					
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40					
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010					
Cyanide (Total)	U	2300	mg/kg	0.50					
Sulphide (Easily Liberatable)	U	2325	mg/kg	0.50					
Arsenic	U	2450	mg/kg	1.0					
Cadmium	U	2450	mg/kg	0.10					
Chromium	U	2450	mg/kg	1.0					
Copper	U	2450	mg/kg	0.50					
Mercury	U	2450	mg/kg	0.10					
Nickel	U	2450	mg/kg	0.50					
Lead	U	2450	mg/kg	0.50					
Selenium	U	2450	mg/kg	0.20					
Vanadium	U	2450	mg/kg	5.0					
Zinc	U	2450	mg/kg	0.50					
Chromium (Hexavalent)	N	2490	mg/kg	0.50					
Total Organic Carbon	U	2625	%	0.20					
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	390	< 1.0	
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	2100	35	
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	8600	98	
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	47000	360	
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	34000	260	
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	14000	110	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	110000	870	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	77	4.2	
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	2100	27	
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	15000	120	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	11000	63	
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	3700	42	

Project: 163408 Conlon - Trenchard Circle, Upper Heyford

Client: AA Environmental Ltd		Chemtest Job No.:		16-26771	16-26771	16-26771	16-26771
Quotation No.:		Chemtest Sample ID.:		374010	374011	374012	374013
		Client Sample ID.:		TP16	TP17	TP18	TP18
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		1.80	1.50	0	0.90
		Bottom Depth (m):				0.10	
		Date Sampled:		01-Nov-2016	01-Nov-2016	01-Nov-2016	01-Nov-2016
		Asbestos Lab:					
Determinand	Accred.	SOP	Units	LOD			
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	31000
Total Petroleum Hydrocarbons	N	2680	mg/kg	10	< 10	< 10	140000
Naphthalene	U	2700	mg/kg	0.10			
Acenaphthylene	U	2700	mg/kg	0.10			
Acenaphthene	U	2700	mg/kg	0.10			
Fluorene	U	2700	mg/kg	0.10			
Phenanthrene	U	2700	mg/kg	0.10			
Anthracene	U	2700	mg/kg	0.10			
Fluoranthene	U	2700	mg/kg	0.10			
Pyrene	U	2700	mg/kg	0.10			
Benzo[a]anthracene	U	2700	mg/kg	0.10			
Chrysene	U	2700	mg/kg	0.10			
Benzo[b]fluoranthene	U	2700	mg/kg	0.10			
Benzo[k]fluoranthene	U	2700	mg/kg	0.10			
Benzo[a]pyrene	U	2700	mg/kg	0.10			
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10			
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10			
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10			
Total Of 16 PAH's	U	2700	mg/kg	2.0			
Total Phenols	U	2920	mg/kg	0.30			

Project: 163408 Conlon - Trenchard Circle, Upper Heyford

Client: AA Environmental Ltd	Chemtest Job No.:				16-26771
Quotation No.:	Chemtest Sample ID.:				373991
	Client Sample ID.:				TP02
	Sample Type:				WATER
	Top Depth (m):				2.00
	Date Sampled:				01-Nov-2016
Determinand	Accred.	SOP	Units	LOD	
pH	U	1010		N/A	8.2
Sulphate	U	1220	mg/l	1.0	42
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050
Magnesium	U	1415	mg/l	0.50	48
Arsenic (Dissolved)	U	1450	µg/l	1.0	1.3
Boron (Dissolved)	U	1450	µg/l	20	49
Cadmium (Dissolved)	U	1450	µg/l	0.080	< 0.080
Copper (Dissolved)	U	1450	µg/l	1.0	< 1.0
Mercury (Dissolved)	U	1450	µg/l	0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1.0	1.9
Lead (Dissolved)	U	1450	µg/l	1.0	< 1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Vanadium (Dissolved)	U	1450	µg/l	1.0	< 1.0
Zinc (Dissolved)	U	1450	µg/l	1.0	1.1
Chromium (Total)	U	1450	µg/l	1.0	1.4
Chromium (Hexavalent)	U	1490	µg/l	20	< 20
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	1200
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	9700
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	49000
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	59000
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	3200
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	120000
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	190
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	1300
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	15000
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	11000
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	860
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	73
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	28000
Total Petroleum Hydrocarbons	N	1675	µg/l	10	150000
Naphthalene	U	1700	µg/l	0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10

Project: 163408 Conlon - Trenchard Circle, Upper Heyford

Client: AA Environmental Ltd	Chemtest Job No.:		16-26771		
Quotation No.:	Chemtest Sample ID.:		373991		
	Client Sample ID.:		TP02		
	Sample Type:		WATER		
	Top Depth (m):		2.00		
	Date Sampled:		01-Nov-2016		
Determinand	Accred.	SOP	Units	LOD	
Phenanthrene	U	1700	µg/l	0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10
Chrysene	U	1700	µg/l	0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10
Total Of 16 PAH's	U	1700	µg/l	2.0	< 2.0
Benzene	U	1760	µg/l	1.0	< 1.0
Toluene	U	1760	µg/l	1.0	< 1.0
Ethylbenzene	U	1760	µg/l	1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1.0	< 1.0
o-Xylene	U	1760	µg/l	1.0	< 1.0
Total Phenols	U	1920	mg/l	0.030	< 0.030

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44 Aromatics: >C5-C7, >C7-C8, >C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35-C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and Trimethylphenols Note: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.co.uk



Final Report

Report No.: 16-26968-1

Initial Date of Issue: 08-Nov-2016

Client: AA Environmental Ltd

Client Address: Units 4 to 8
Cholswell Court
Shippon
Abingdon
Oxfordshire
OX136HX

Contact(s): Carrie Lorton
Ed Brown
Jack Taylor
Mark Anderson
Matthew Lawman
Penny Hearn
Richard Heath
Sam Muir

Project: 163408 Conlon - Trenchard Circle,
Upper Heyford


Quotation No.: **Date Received:** 04-Nov-2016

Order No.: **Date Instructed:** 04-Nov-2016

No. of Samples: 3

Turnaround (Wkdays): 3 **Results Due:** 08-Nov-2016

Date Approved: 08-Nov-2016

Approved By:


Details: Keith Jones, Technical Manager

Project: 163408 Conlon - Trenchard Circle, Upper Heyford

Client: AA Environmental Ltd	Chemtest Job No.:		16-26968	16-26968		
Quotation No.:	Chemtest Sample ID.:		374543	374547		
	Client Sample ID.:		TP29	TP37		
	Sample Type:		SOIL	SOIL		
	Top Depth (m):		1.30	0.60		
	Date Sampled:		03-Nov-2016	03-Nov-2016		
Determinand	Accred.	SOP	Units	LOD		
Moisture	N	2030	%	0.020	9.3	7.4
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	81	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	920	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	4800	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	3800	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	470	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	10000	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	71	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	430	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	940	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	360	< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	30	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	1800	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10	12000	< 10

Project: 163408 Conlon - Trenchard Circle, Upper Heyford

Client: AA Environmental Ltd	Chemtest Job No.: 16-26968				
Quotation No.:	Chemtest Sample ID.: 374536				
	Client Sample ID.: TP21				
	Sample Type: WATER				
	Top Depth (m): 0.80				
	Date Sampled: 03-Nov-2016				
Determinand	Accred.	SOP	Units	LOD	
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	410000
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	1200000
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	3600000
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	2200000
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	1400000
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	8800000
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	150000
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	400000
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	1500000
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	1500000
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	190000
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	3200
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	3700000
Total Petroleum Hydrocarbons	N	1675	µg/l	10	13000000

Test Methods

SOP	Title	Parameters included	Method summary
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5-C6, >C6-C8, >C8- C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44 Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Pentane extraction / GCxGC FID detection
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44 Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.co.uk

Appendix G

Consolidated Soil Results

Site: Trenchard Circle, Upper Heyford
Project Reference: 163408
Client: Conlon
Strata: ALL Strata
Notes:
KEY

Sample Location	TP01	TP02	TP02	TP03	TP04	TP04	TP05	TP06	TP07	TP07	TP08	TP09
Sample Ref	373987	373989	373990	373992	373994	373995	373996	373998	374000	374001	374002	374003
Depth (top)	0.20	0.20	1.80	0.30	0.25	1.80	0.30	0.20	0.20	1.40	2.00	1.10
Depth (bottom)												
Lab Report	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771
Sample Date	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16
Originator	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe
Strata												

Exceedance of SGV

Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	TP01	TP02	TP02	TP03	TP04	TP04	TP05	TP06	TP07	TP07	TP08	TP09
pH	pH unit	0.1	6 to 9	8.8	10		8.2	8.1	8.5	8.5	8.2	8.8	8.7	8.4	8.3	8.7		
Boron (Hot Water Soluble)	mg/kg	0.4	290	1.1	10		0.64	0.51	0.4	0.51	0.4	0.4	0.4	0.74	1.1	0.4		
Cyanide (Total)	mg/kg	0.5	20	1.6	10		0.5	0.5	1	1.6	0.5	0.5	0.5	0.5	0.5	0.5		
Sulphide (Easily Liberatable)	mg/kg	0.5		9.8	10		1.6	9.8	1.2	2.1	1.1	1.5	1.1	1.1	0.99	0.96		
Arsenic	mg/kg	1	37	30	10		21	27	15	24	25	18	25	30	28	14		
Cadmium	mg/kg	0.1	11	0.25	10		0.25	0.16	0.1	0.22	0.21	0.1	0.1	0.25	0.22	0.1		
Chromium	mg/kg	1	910	36	10		36	21	5	25	23	4.5	13	25	26	3.3		
Copper	mg/kg	0.5	2400	9	10		7.2	6.2	2.3	8	7.7	1.3	5.2	8.8	9	1.2		
Mercury	mg/kg	0.1	1.2	0.19	10		0.1	0.1	0.1	0.1	0.19	0.1	0.1	0.1	0.1	0.1		
Nickel	mg/kg	0.5	180	22	10		22	16	6.1	17	17	4.3	12	20	19	4.7		
Lead	mg/kg	0.5	200	60	10		26	60	3.4	23	24	2.3	14	18	20	1.9		
Selenium	mg/kg	0.2	250	0.68	10		0.68	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
Vanadium	mg/kg	5	410	63	10		63	44	7.5	47	42	12	30	56	60	6.6		
Zinc	mg/kg	0.5	3700	54	10		41	30	5	38	54	8.4	19	45	38	3.3		
Chromium (Hexavalent)	mg/kg	0.5	6	0.5	10		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
Total Organic Carbon	%	0.2	3	5.1	10	3	1.1	0.94	0.61	1.9	3.7	5.1	1.4	2.4	1.5	5		
Aliphatic TPH >C5-C6	mg/kg	0.1	42	1	24		1	1	1	1	1	1	1	1	1	1	1	1
Aliphatic TPH >C6-C8	mg/kg	0.1	100	390	24	1	1	1	1	1	1	1	1	1	1	1	1	1
Aliphatic TPH >C8-C10	mg/kg	0.1	27	2100	24	4	1	1	1	1	1	1	1	1	1	1	1	17
Aliphatic TPH >C10-C12	mg/kg	1	130	8600	24	3	1	1	1	1	1	1	1	1	1	1	1	98
Aliphatic TPH >C12-C16	mg/kg	1	1100	47000	24	3	1	1	1	1	1	1	1	1	1	1	1	530
Aliphatic TPH >C16-C21	mg/kg	1	65000	34000	24		1	1	1	1	1	1	1	1	1	1	1	480
Aliphatic TPH >C21-C35	mg/kg	1	65000	14000	24		1	1	1	1	1	1	1	1	1	1	1	77
Aliphatic TPH >C35-C44	mg/kg	1	65000	1	24		1	1	1	1	1	1	1	1	1	1	1	1
Total Aliphatic Hydrocarbons	mg/kg	5		110000	24		5	5	5	5	5	5	5	5	5	5	5	1200
Aromatic TPH >C5-C7	mg/kg	0.1	70	1	24		1	1	1	1	1	1	1	1	1	1	1	1
Aromatic TPH >C7-C8	mg/kg	0.1	130	1	24		1	1	1	1	1	1	1	1	1	1	1	1
Aromatic TPH >C8-C10	mg/kg	0.1	34	77	24	2	1	1	1	1	1	1	1	1	1	1	1	1
Aromatic TPH >C10-C12	mg/kg	1	74	2100	24	3	1	1	1	1	1	1	1	1	1	1	1	12
Aromatic TPH >C12-C16	mg/kg	1	140	15000	24	3	1	1	1	1	1	1	1	1	1	1	1	140
Aromatic TPH >C16-C21	mg/kg	1	260	11000	24	3	1	1	1	1	1	1	1	1	1	1	1	120
Aromatic TPH >C21-C35	mg/kg	1	1100	3700	24	1	1	1	1	1	1	1	1	1	1	1	1	34
Aromatic TPH >C35-C44	mg/kg	1	1100	1	24		1	1	1	1	1	1	1	1	1	1	1	1
Total Aromatic Hydrocarbons	mg/kg	5		31000	24		5	5	5	5	5	5	5	5	5	5	5	310
TPH C6-C10	mg/kg	1																
TPH C10-C21	mg/kg	1																
TPH C21-C40	mg/kg	1																
Total Petroleum Hydrocarbons	mg/kg	10		140000	24		10	10	10	10	10	10	10	10	10	10	10	1500
Naphthalene	mg/kg	0.1	2.3	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		

Site: Trenchard Circle, Upper Heyford
Project Reference: 163408
Client: Conlon
Strata: ALL Strata
Notes:
KEY

Exceedance of SGV

Below Limit of Detection

Sample Location	TP01	TP02	TP02	TP03	TP04	TP04	TP05	TP06	TP07	TP07	TP08	TP09
Sample Ref	373987	373989	373990	373992	373994	373995	373996	373998	374000	374001	374002	374003
Depth (top)	0.20	0.20	1.80	0.30	0.25	1.80	0.30	0.20	0.20	1.40	2.00	1.10
Depth (bottom)												
Lab Report	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771
Sample Date	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16
Originator	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe
Strata												

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances												
Acenaphthylene	mg/kg	0.1	170	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Acenaphthene	mg/kg	0.1	210	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Fluorene	mg/kg	0.1	170	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Phenanthrene	mg/kg	0.1	95	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Anthracene	mg/kg	0.1	2400	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Fluoranthene	mg/kg	0.1	280	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Pyrene	mg/kg	0.1	620	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Benzo[a]anthracene	mg/kg	0.1	7.2	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Chrysene	mg/kg	0.1	15	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Benzo[b]fluoranthene	mg/kg	0.1	2.6	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Benzo[k]fluoranthene	mg/kg	0.1	77	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Benzo[a]pyrene	mg/kg	0.1	2.2	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	27	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Dibenz(a,h)Anthracene	mg/kg	0.1	0.24	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Benzo[g,h,i]perylene	mg/kg	0.1	320	0.1	10		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Total Of 16 PAH's	mg/kg	2		2	10		2	2	2	2	2	2	2	2	2			
Total Phenols	mg/kg	0.3	280	0.3	10		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3			
Asbestos	Type	If present	Detected				NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	N/T
Asbestos % (if present)	%	0.001																
Benzene	mg/kg	0.1	0.087															
Toluene	mg/kg	0.1	130															
Ethylbenzene	mg/kg	0.1	47															
M-Xylene	mg/kg	0.1	59															
P-Xylene	mg/kg	0.1	56															
O-Xylene	mg/kg	0.1	60															

Site: Trenchard Circle, Upper Heyford
Project Reference: 163408
Client: Conlon
Strata: ALL Strata
Notes:
KEY

Sample Location	TP10	TP11	TP12	TP13	TP14	TP15	TP16	TP17	TP18	TP18	TP29	TP37
Sample Ref	374004	374005	374006	374007	374008	374009	374010	374011	374012	374013	374543	374547
Depth (top)	0.60	1.80	1.00	1.00	1.00	1.00	1.80	1.50	0	0.90	1.30	0.60
Depth (bottom)									0.10			
Lab Report	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26968	16-26968
Sample Date	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	3/11/16	3/11/16
Originator	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe
Strata												

Exceedance of SGV

Below Limit of Detection

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances	TP10	TP11	TP12	TP13	TP14	TP15	TP16	TP17	TP18	TP18	TP29	TP37
pH	pH unit	0.1	6 to 9	8.8	10													
Boron (Hot Water Soluble)	mg/kg	0.4	290	1.1	10													
Cyanide (Total)	mg/kg	0.5	20	1.6	10													
Sulphide (Easily Liberatable)	mg/kg	0.5		9.8	10													
Arsenic	mg/kg	1	37	30	10													
Cadmium	mg/kg	0.1	11	0.25	10													
Chromium	mg/kg	1	910	36	10													
Copper	mg/kg	0.5	2400	9	10													
Mercury	mg/kg	0.1	1.2	0.19	10													
Nickel	mg/kg	0.5	180	22	10													
Lead	mg/kg	0.5	200	60	10													
Selenium	mg/kg	0.2	250	0.68	10													
Vanadium	mg/kg	5	410	63	10													
Zinc	mg/kg	0.5	3700	54	10													
Chromium (Hexavalent)	mg/kg	0.5	6	0.5	10													
Total Organic Carbon	%	0.2	3	5.1	10	3												
Aliphatic TPH >C5-C6	mg/kg	0.1	42	1	24		1	1	1	1	1	1	1	1	1	1	1	1
Aliphatic TPH >C6-C8	mg/kg	0.1	100	390	24	1	1	1	1	1	1	1	1	1	390	1	1	1
Aliphatic TPH >C8-C10	mg/kg	0.1	27	2100	24	4	75	1	13	4.3	1	1	1	1	2100	35	81	1
Aliphatic TPH >C10-C12	mg/kg	1	130	8600	24	3	570	1	68	2.4	1	1	1	1	8600	98	920	1
Aliphatic TPH >C12-C16	mg/kg	1	1100	47000	24	3	2400	1	320	34	1	1	1	1	47000	360	4800	1
Aliphatic TPH >C16-C21	mg/kg	1	65000	34000	24		2500	1	260	35	1	1	1	1	34000	260	3800	1
Aliphatic TPH >C21-C35	mg/kg	1	65000	14000	24		110	1	69	49	1	1	1	1	14000	110	470	1
Aliphatic TPH >C35-C44	mg/kg	1	65000	1	24		1	1	1	1	1	1	1	1	1	1	1	1
Total Aliphatic Hydrocarbons	mg/kg	5		110000	24		5600	5	730	120	5	5	5	5	110000	870	10000	5
Aromatic TPH >C5-C7	mg/kg	0.1	70	1	24		1	1	1	1	1	1	1	1	1	1	1	1
Aromatic TPH >C7-C8	mg/kg	0.1	130	1	24		1	1	1	1	1	1	1	1	1	1	1	1
Aromatic TPH >C8-C10	mg/kg	0.1	34	77	24	2	1.1	1	1	1	1	1	1	1	77	4.2	71	1
Aromatic TPH >C10-C12	mg/kg	1	74	2100	24	3	180	1	13	1	1	1	1	1	2100	27	430	1
Aromatic TPH >C12-C16	mg/kg	1	140	15000	24	3	1300	1	89	3.9	1	1	1	1	15000	120	940	1
Aromatic TPH >C16-C21	mg/kg	1	260	11000	24	3	760	1	82	1	1	1	1	1	11000	63	360	1
Aromatic TPH >C21-C35	mg/kg	1	1100	3700	24	1	97	1	34	4.5	1	1	1	1	3700	42	30	1
Aromatic TPH >C35-C44	mg/kg	1	1100	1	24		1	1	1	1	1	1	1	1	1	1	1	1
Total Aromatic Hydrocarbons	mg/kg	5		31000	24		2300	5	220	8.4	5	5	5	5	31000	250	1800	5
TPH C6-C10	mg/kg	1																
TPH C10-C21	mg/kg	1																
TPH C21-C40	mg/kg	1																
Total Petroleum Hydrocarbons	mg/kg	10		140000	24		7900	10	950	130	10	10	10	10	140000	1100	12000	10
Naphthalene	mg/kg	0.1	2.3	0.1	10													

Site: Trenchard Circle, Upper Heyford
Project Reference: 163408
Client: Conlon
Strata: ALL Strata
Notes:
KEY

Exceedance of SGV

Below Limit of Detection

Sample Location	TP10	TP11	TP12	TP13	TP14	TP15	TP16	TP17	TP18	TP18	TP29	TP37
Sample Ref	374004	374005	374006	374007	374008	374009	374010	374011	374012	374013	374543	374547
Depth (top)	0.60	1.80	1.00	1.00	1.00	1.00	1.80	1.50	0	0.90	1.30	0.60
Depth (bottom)									0.10			
Lab Report	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26771	16-26968	16-26968
Sample Date	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	1/11/16	3/11/16	3/11/16
Originator	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe	AAe
Strata												

Determinant	Units	LOD	SGV	Max	Number	No. Exceedances												
Acenaphthylene	mg/kg	0.1	170	0.1	10													
Acenaphthene	mg/kg	0.1	210	0.1	10													
Fluorene	mg/kg	0.1	170	0.1	10													
Phenanthrene	mg/kg	0.1	95	0.1	10													
Anthracene	mg/kg	0.1	2400	0.1	10													
Fluoranthene	mg/kg	0.1	280	0.1	10													
Pyrene	mg/kg	0.1	620	0.1	10													
Benzo[a]anthracene	mg/kg	0.1	7.2	0.1	10													
Chrysene	mg/kg	0.1	15	0.1	10													
Benzo[b]fluoranthene	mg/kg	0.1	2.6	0.1	10													
Benzo[k]fluoranthene	mg/kg	0.1	77	0.1	10													
Benzo[a]pyrene	mg/kg	0.1	2.2	0.1	10													
Indeno(1,2,3-c,d)Pyrene	mg/kg	0.1	27	0.1	10													
Dibenz(a,h)Anthracene	mg/kg	0.1	0.24	0.1	10													
Benzo[g,h,i]perylene	mg/kg	0.1	320	0.1	10													
Total Of 16 PAH's	mg/kg	2		2	10													
Total Phenols	mg/kg	0.3	280	0.3	10													
Asbestos	Type	If present	Detected				N/T	N/T	N/T	N/T	N/T	N/T	N/T	N/T	N/T	N/T	N/T	N/T
Asbestos % (if present)	%	0.001																
Benzene	mg/kg	0.1	0.087															
Toluene	mg/kg	0.1	130															
Ethylbenzene	mg/kg	0.1	47															
M-Xylene	mg/kg	0.1	59															
P-Xylene	mg/kg	0.1	56															
O-Xylene	mg/kg	0.1	60															

Appendix H

Tier 1 Soil Guidance Values

AA Environmental Limited – Tier 1 Soil Guidance Values

The following table presents the AA Environmental Tier 1 Soil Guidance Values (SGVs) Revision 002 based on LQM/CIEH Suitable 2 Use Levels (S4UL) for Human Health Assessment (unless stated otherwise).

Determinant	Land-Use Scenario					
	Residential with Homegrown Produce	Residential without Homegrown Produce	Public Open Space (POS) Residential	Public Open Space (POS) Park	Allotment	Commercial and Industrial
Metals and Metalloids						
Arsenic	37	40	79	170	43	640
Boron	290	11000	21000	46000	45	240000
Cadmium	11	85	120	532	1.9	190
Chromium (Hexavalent)	6	6	7.7	220	1.8	33
Chromium	910	910	1500	33000	18000	8600
Copper	2400	7100	12000	44000	520	68000
Lead (C4SL Criteria)	200	310	630	1300	80	2330
Elemental Mercury	1.2	1.2	16	30	21	58
Inorganic Mercury	40	56	120	240	19	1100
Nickel	180	180	230	3400	230	980
Selenium	250	430	1100	1800	88	12000
Vanadium	410	1200	2000	5000	91	9000
Zinc	3700	40000	81000	170000	620	730000
Other Inorganics						
pH	6-9 Units					
Asbestos	If Detected					
Cyanide (Dutch Intervention Value)	20	20	20	20	20	-
Phenol (based on 1% SOM)						
Phenol (Total)	280	750	760	760	66	760
Total Petroleum Hydrocarbons (TPH) (based on 1% SOM)						
Aliphatic (5-6)	42	42	570000	95000	730	3200
Aliphatic (6-8)	100	100	600000	150000	2300	7800
Aliphatic (8-10)	27	27	13000	14000	320	2000
Aliphatic (10-12)	130	130	13000	21000	2200	9700
Aliphatic (12-16)	1100	1100	13000	25000	11000	59000
Aliphatic (16-35)	65000	65000	250000	450000	260000	1600000
Aliphatic (35-44)	65000	65000	250000	450000	260000	1600000
Aromatic (5-7 benzene)*	0.087(70)	0.38(370)	72(56000)	90(76000)	0.017(13)	27(26000)
Aromatic (7-8 toluene)	130	860	56000	87000	22	56000
Aromatic (8-10)	34	47	5000	7200	8.6	3500
Aromatic (10-12)	74	250	5000	9200	13	16000
Aromatic (12-16)	140	1800	5100	10000	23	36000
Aromatic (16-21)	260	1900	3800	7600	46	28000
Aromatic (21-35)	1100	1900	3800	7800	370	28000
Aromatic (35-44)	1100	1900	3800	7800	370	28000
BTEX (based on 1% SOM)						
Benzene	0.087	0.38	72	90	0.017	27
Toluene	130	880	56000	87000	22	56000
Ethylbenzene	47	83	24000	17000	16	5700
m-Xylene	59	82	41000	17000	31	6200
p-Xylene	56	79	41000	17000	29	5900
o-Xylene	60	88	41000	17000	28	6600

All values in mg/kg unless stated otherwise

* Benzene values to be used as a conservative screen for TPH Aromatic C5-C7 range hydrocarbons if Speciated BTEX results are not available. If Speciated BTEX are available then TPH Aromatic C5-C7 screening value in () can be adopted.

AA Environmental Limited – Tier 1 Soil Guidance Values (Cont.)

Determinant	Land-Use Scenario					
	Residential with Homegrown Produce	Residential without Homegrown Produce	Public Open Space (POS) Residential	Public Open Space (POS) Park	Allotment	Commercial and Industrial
Polycyclic Aromatic Hydrocarbons (PAH) (based on 1% SOM)						
Naphthalene	2.3	2.3	4900	1200	4.1	190
Acenaphthene	210	3000	15000	29000	34	84000
Acenaphthylene	170	2900	15000	29000	28	83000
Fluorene	170	2800	9900	20000	27	63000
Anthracene	2400	31000	74000	150000	380	520000
Fluoranthene	280	1500	3100	6300	52	23000
Phenanthrene	95	1300	3100	6200	15	22000
Pyrene	620	3700	7400	15000	110	54000
Benzo(a)anthracene	7.2	11	29	49	2.9	170
Chrysene	15	30	57	93	4.1	350
Benzo(b)fluoranthene	2.6	3.9	7.1	13	0.99	44
Benzo(k)fluoranthene	77	110	190	370	37	1200
Benzo(ghi)perylene	320	360	640	1400	290	3900
Benzo(a)pyrene	2.2	3.2	5.7	11	0.97	35
Dibenzo(ah)anthracene	0.24	0.31	0.57	1.1	0.14	3.5
Indeno(123-cd)pyrene	27	45	82	150	9.5	500

All values in mg/kg unless stated otherwise

References

LQM/CIEH Suitable 2 Use Levels (S4UL) for Human Health Assessment – Land Quality Management Limited (LQM) and Chartered Institute of Environmental Health (CIEH) Land Quality Press (2015)

SP1010: Development of Category 4 Screening Levels (C4SL) for Assessment of Land Affected by Contamination - Department for Environment, Food and Rural Affairs (2014)

Dutch Target and Intervention Values (the New Dutch List) (2000)

Descriptions of Public Open Space (POS): Section 1.4.2 of The LQM S4UL for Human Health Assessment

POS Residential: Includes the predominantly grassed areas adjacent to high density housing, the central green area on many 1930s-1970s housing estates, and smaller areas commonly incorporated in newer developments as informal grassed areas or more formal landscaped areas with a mixture of open space and covered soil with planting. It is assumed that the close proximity to the place of residence will allow tracking back of soil to occur.

POS Park: An area of open space, usually owned and maintained by the Local Authority, provided for recreational uses including family visits and picnics, children's play area, informal sporting activities such as football (but not a dedicated sports pitch), and dog walking. It is assumed that tracking back of soils into the place of residence will be negligible.

SOM – Soil Organic Matter

Soil Guidance Values for Organics are presented as the most-conservative values based on 1.0% SOM. In the event of exceedance, the actual SOM content of the sample(s) should be reviewed to determine if a higher value based on 2.5% or 6.0% can be adopted.