

**A PHASE I DESK STUDY REPORT FOR A MIXED RESIDENTIAL AND COMMERCIAL
DEVELOPMENT AT:**

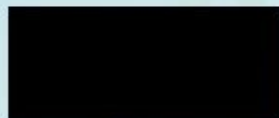
ST JOHN'S NURSERY, CLACTON-ON-SEA, ESSEX, CO16 8BP



CLIENT: E3 Planning and Design Consultants Limited
REFERENCE: MSH/18.093/Phase1
DATE: 29 March 2018

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1. INTRODUCTION

A F Howland Associates Limited was instructed by E3 Planning and Design Consultants Limited (the 'Client') to carry out a Phase I Desk Study of a plot of land at St John's Nursery, Clacton-on-Sea, Essex, CO16 8BP (Fig. 18.093/Phasel/1). This is to support a proposed mixed residential and commercial development.

The report has been carried out in general accordance with accepted best practice and methodologies (BSI, 2017) (DEFRA and EA, 2004) (DCLG, 2010) and was prepared for the sole and exclusive use of the Client and its advisors. Other parties using the contained information do so at their own risk and any duty of care to those parties is specifically excluded subject to copyright as detailed below.

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2. SITE LOCATION

The site is located on the north eastern outskirts of Clacton-on-Sea, Essex, at National Grid reference 614518, 216081 and at an elevation of around 18 m above Ordnance Datum (aOD).

A proposed site layout has been provided by the client on a feasibility test plan, included in Appendix C. The site comprises St John's Nursery and three adjoining residential properties along St John's Road, one of which is the site of the proposed access for the residential development.



3. GEOLOGY

The regional geology of the area, as mapped by the British Geological Survey¹, comprises a bedrock of the Thames Group (London Clay) overlain by superficial sand and gravel deposits of the Kesgrave Catchment Subgroup.

4. HYDROLOGY

The Kesgrave Catchment Subgroup is classified as a secondary A aquifer and the underlying Thames Group is unproductive strata. The superficial soils are considered to be of intermediate leaching potential. The site does not lie within a groundwater source protection zone. There are two current groundwater abstraction licences listed at the site for "spray irrigation". The next nearest groundwater abstraction licence is located approximately 350 m to the west, also for "spray irrigation". There are no potable water abstraction licences recorded within 2 km of the site.

The nearest significant surface water feature is large pond approximately 150 m to the south west. A water filled ditch runs along the eastern site boundary. There are no surface water abstraction licences within a 300 m radius of the site. The site is not within an area considered to be at risk from flooding from rivers or the sea.

5. HISTORICAL INFORMATION

The earliest Ordnance Survey map of the area (OS First Edition, 1874) showed that the site was located within a featureless field just north of St John's Road with Earls Hall Drive adjacent to the western boundary. A gravel pit was shown within the south western corner of the site. The surrounding area was rural and sparsely populated. Approximately 300 m north of the site lay a cluster of buildings, including a "saw pit", identified as "Earls Hall". To the west was "Duchess Farm".

With the exception of the gravel pit, the site remained unchanged until the 1973/78 map edition which identified the site as a nursery occupied by large greenhouses. The 1994 edition depicts most of the site as being occupied by greenhouses. An area roughly central to the site was shown with circular and rectangular features identified as "Tanks". An additional "Tank" was shown near the eastern boundary and an electricity substation was

¹ <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>



shown adjacent to the western boundary. The proposed new access onto St John's Road was depicted as an empty plot of land at this time but by 2002 a house was shown.

The gravel pit identified on the 1874 edition had increased in size by 1897 but appeared disused and planted with trees by 1923. The outline of the pit was still shown on the 1957 edition but by 1967/71 the pit had been redeveloped with three residential dwellings. The northern boundary of these dwellings is curved reflecting the shape of the former pit.

In the surrounding area, housing was first shown along the St John's Road on the 1938 edition. The 1953 map shows a disused gravel pit, approximately 300 m west of the site. The site of which forms part of a historic refuse pit identified within the environmental database report (see Section 6).

Aerial images² are available for the site area between 2000 and 2017. The image from 2000 shows a layout similar to the 1994 OS map edition. By 2005 a strip of greenhouse in the north west corner had been demolished and in 2006 a circular tank was visible in this area. The aerial image from 2017 shows the site similar to the current layout, with the strip of greenhouse along the southern boundary demolished. Some other changes were visible including a new building in the north west corner and two tanks, instead of one, adjacent to the eastern boundary.

In the surrounding area to the west was an area of rough ground with various (possibly disused) cars in 2000. This plot of land falls within the area of the historic refuse tip identified by the environmental database report (see Section 6). More recent aerial images show this plot of land becoming progressively overgrown. The exception being a rectangular shaped parcel of land adjacent to Earls Hall Drive which appears level and free of vegetation on the 2017 image.

Historical industrial uses are also recorded within the environmental database report obtained for the site (Appendix B). This lists various tanks, the electrical substation and gravel pits all described above. Any other historical industrial uses in the wider surrounding area are not considered to be significant.

² Google Earth



6. HAZARDOUS GASES

Building Research Establishment report BR211 (BRE, 2015) indicates that the site is not within an area where specific protection from radon gas is required.

The environmental database report identifies a historic refuse tip adjacent west of the site. This is recorded as a Clacton Urban District Council operated site and was licenced to take household and commercial waste between 1956 and 1965. No other historic or current landfills were recorded within 1 km of the site.

A potentially infilled gravel pit was identified on site within the environmental database report. Additional potentially infilled land included the refuse tip described above and a pond, located approximately 30 to the east. Aerial images suggests that the pond is unlikely to be significant as it exists to date.

7. CURRENT LAND USES ON SITE AND IN THE SURROUNDING AREA

Current industrial land uses on site, identified in the environmental database report, were various tanks and an electrical substation. The nearest current land use off-site is an electricity substation approximately 45 m south west of the site but this is not considered to be significant.

8. WALKOVER SURVEY

A walkover survey was carried out on the 13 March 2018 to enable identification of the current land uses and other relevant details not otherwise identified from the archival information. The salient features are shown on Figures 18.093/Phase1/2a, 2b and 2c in Appendix C.

The site was set within a rural area on the outskirts of Clacton-on-Sea. The surrounding land use was predominantly agricultural, with a row of residential houses and gardens along the southern site boundary fronting onto St John's Road. Access was from Earls Hall Drive in the south west corner of the site. On the opposite side of Earls Hall Drive was an aggregate and 'muck away' haulage business with various stockpiles of soil visible from the road.

Most of the site was occupied by greenhouses. In general, the south western greenhouses were used for the retail parts of the nursery. In the east, the greenhouses were being used for raising plants, although much of the space was clearly not in use. In the north was a



mix of warehousing and plant storage. At the time of the walkover, the northern part of the site was where there was most of the staff activity including deliveries and planting. Surfacing within the greenhouses was a mix of concrete, gravel and bare earth covered with a geotextile, the concrete formed pathways between racking used to support the plants.

Outside of the greenhouses, the car park along the southern edge was surfaced with compacted hardcore and at the time of the walkover there was an excavator on site installing drains. This area of car park had been previously occupied by greenhouses. Green corrugated metal fencing divided the greenhouses from the car park. The car park did not extend the full length of the site. Within the south east corner were derelict and partly demolished greenhouses. Soil had also been stockpiled here, including spent compost. Within the far south east corner was a brick building housing a pump for the nursery's groundwater bore.

Roughly midway along the eastern boundary were two water storage tanks with an associated pump housed within a timber shed. A gap between the greenhouses ran from the eastern edge through to the boiler house in the centre of the site. This area was being used for storage of miscellaneous items, including greenhouse glass, pipework, bricks, light bulbs and scrap metal. There were also open fronted sheds / storage shelters within this area, which were partly constructed with corrugated cement board, a suspected asbestos containing material (ACM).

Towards the centre of the site was a two-storey concrete block building. The building appeared to have been previously used as a workshop but was now disused and inhabited by doves. There were some cans of oil stored upon the concrete floor of the workshop. Also, within the building were disused toilets and shower room. Upstairs, the building was being used for general storage. Some gas cylinders were being stored outside the workshop.

Next to the workshop were five large diameter tanks. One of which was being used for water storage. The other four appeared redundant. These tanks were formerly used for the storage of 'black oil'³, fuel oil and red diesel (see Figure 18.093/Phase1/2c) and have since all been 'cleaned out'. Some staining by fuel/oil was noted on the ground within this

³ Black oil is unrefined oil burned in its natural state to provide heat for the boilers. This was delivered to the site by tankers and because of its viscosity it required to be kept warm to keep it fluid and useable. The tanks therefore have heating coils through the centre for this purpose.



area. A further two smaller tanks, one with "gas oil" marked on the outside and another unmarked were sited adjacent to the boiler room. These are understood to have contained paraffin or heating oil but are now redundant. Also, within this area was an electrical substation, overgrown with brambles.

Just west of the tanks was the boiler room and staff canteen. The boiler room, although cluttered, was fairly clean. The current heating system is powered by natural gas. Outside the entrance to the boiler room was an above ground small fuel tank, a brick structure housing a pump and a pressurised cylinder. There were also some metal uprights on concrete slabs which were possible former locations of fuel tanks.

South of the boiler room and roughly central to the southern half of the site was a tall building partly clad and roofed with corrugated cement board, a suspected ACM. It was being used for the general storage of nursery related items. Within this building were also various fuse boards, and pipes and pumps with associated with the heating system and water supply. The lagging on the heating pipes, a suspected ACM, was disintegrating. Within an adjoining greenhouse a leaky metal fuel pipe was noted to have stained the surrounding area, although the pipe was understood to have been disused.

Along the western edge and north western corner of the site, the outside space was mainly being used for storage of compost and pallets. There were also some skips for waste and shipping containers and a further water storage tank. This area in the north west was also formerly occupied by greenhouses. A relatively new storage building had been constructed here. In the south west, the outside space was part of the retail area of the nursery.

Access for deliveries was roughly midway along the western boundary. Adjacent to the delivery access was small brick-built building housing the gas apparatus. A "danger of death sign" on an adjacent fence, indicated the presence of a further electrical substation.

In the south west corner of the site, the area of the former gravel pit was at the same level as the surrounding area. It was occupied by three residential properties. A curved brick wall ran along the rear gardens of the three dwellings on the approximate alignment of the former gravel pit, suggesting that the pit did not extend onto the nursery site and any infill would be found within the boundaries of these dwellings.



The proposed new access onto St John's Road was through an existing chalet bungalow and surrounding garden.

The site and surrounds sloped gently down to the south. A drainage ditch with water ran along the eastern boundary. In places, this was partly infilled, possibly with waste from the nursery site. A field drain was shown on the historical mapping along the western boundary but this was not seen during the walkover, although this may have been obscured by the existing conifer hedge.

9. DISCUSSION OF ENVIRONMENTAL ISSUES

The majority of the site has been a nursery for about 50 years, previous to this it was an undeveloped field. A historic gravel pit is mapped to lie outside of the nursery site but within the development area. A historic refuse tip is mapped to lie adjacent to the west.

Human end-users are going to be introduced through the proposed development which includes garden areas for the proposed housing, soft landscaping elsewhere, play areas and a sports field. The proposed commercial properties will have hardstanding parking and be surrounded by soft landscaping. Groundwater in the underlying secondary aquifer is considered to be sensitive but the underlying bedrock is unproductive. There are no significant surface water features within the immediate surrounding area other than field drains.

Given the previous use of the site as a nursery there is the potential for contamination to have been introduced to the near-surface soils and groundwater. The following key contaminants are typically associated with a nursery site:

- polyaromatic hydrocarbons (PAH), petroleum hydrocarbons, BTEX, MTBE and metals from fuel storage and spent fuels
- metals including arsenic, cadmium, lead, mercury, chromium (III & VI), nickel, copper and zinc from inorganic pesticides and fertilisers
- persistent organic pesticides (POP) including DDT, DDE, Aldrin, dieldrin, chlordane and hexachlorobenzene,
- acids and alkalis.



Additionally, contamination may have been introduced through the demolition of greenhouses, with particular regard to asbestos containing materials (ACMs). Localised areas of made ground may also exist where field drains have been infilled.

Depending on the final development proposed it is possible that the electrical substations will be removed or altered. Polychlorobiphenyls (PCBs) contamination is associated with electrical substations and may be present in the ground immediately below these.

The adjacent refuse tip is a potential source of ground gas. Although the age of the infill material (50 years) and the presence of neighbouring residential properties suggests that this is unlikely to be significant. The historic gravel pit is also a possible source of ground gas but again unlikely to be significant.

10. PRELIMINARY CONCEPTUAL MODEL

Following a review of the archival information and the walkover survey a preliminary conceptual model has been devised to determine the risk to appropriate targets from the potential contamination sources. This collates the evidence gained and establishes the potential linkages that may exist under the principle of “source-pathway-receptor” and is presented in Table 1 below.

A risk category is determined for the potential linkages and an assessment made of risk and the significance of that risk from professional judgement. Risk assessment classification is included in Appendix D. Where appropriate, further work is recommended to assess whether the potential linkages are realised and a revised conceptual model formulated as part of a Phase II investigation.

It should be noted that an assessment of risk to construction workers suggests that only contamination of acute toxicity might represent an unacceptable risk to the health of construction workers and should be managed through health and safety procedures.



Source of Contamination	Pathway	Receptor	Probability and Reasoning	Consequence and Reasoning	Risk Classification
Potentially contaminated soils from current and past use	Direct contact, inhalation, ingestion	Human end-users	Likely – former use as a nursery is likely to have introduced contamination. Soil sampling and analysis is recommended	Medium – residential end-use proposed with domestic garden	Moderate Risk
		Construction workers		Mild – short term exposure but can be controlled by use of PPE and suitable hygiene practices	Low/Moderate Risk
	Percolation of leachate / mobile contaminants	Groundwater	Likely –mobile or leachable contamination probable, particularly relating the to the former fuel storage. Soil sampling and analysis is recommended	Medium – secondary aquifer underlies the site, but no potable groundwater abstractions are located nearby	Moderate Risk
		Surface water		Mild – no water features near the site other than adjacent field drains	Low/Moderate Risk
	Direct Contact	Buildings and Services	Likely – potential sources of contamination identified with potential impact on concrete and water supply pipes. Soil sampling and analysis is recommended.	Medium – robust receptors	Moderate Risk
Possible infilled gravel pit on site, adjacent refuse tip	Gas migration and accumulation in structures	Human end-users	Low likelihood – adjacent historic refuse tip although age of infill suggests that it is unlikely to be a significant source.	Severe - acute risk to potential end users.	Moderate Risk
		Structures			Moderate Risk
Radon Gas		Human end-users	Unlikely – site outside of radon affected area	Medium - chronic risk to human end users	Low Risk

Table 1 – Preliminary Conceptual Site Model

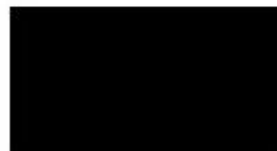


11. SUMMARY AND RECOMMENDATIONS

1. A Phase I Desk Study was undertaken for a residential development at St John's Nursery, Clacton-on-Sea, Essex CO16 8BP.
2. The site is anticipated to be underlain by a bedrock of the Thames Group overlain by superficial sand and gravel deposits of the Kesgrave Catchment Subgroup.
3. The superficial deposits are classified as a secondary A aquifer. The underlying Thames Group is classified as unproductive strata. The site does not lie within a source protection zone. There are two groundwater abstraction licences registered to the site. The nearest surface water feature is an adjacent field drain.
4. The majority of the site is currently a nursery and garden centre. The development area also includes three adjacent residential properties. Historically the site was an undeveloped field prior to becoming a nursery c1970.
5. Potential sources of contamination have been identified at the site. Principally associated with the use and storage of various fuels and horticultural chemicals. Potential ACMs have been identified within the construction of the buildings. Demolition materials and infill to the historic gravel pit and field drains are also potential sources of contamination.
6. An adjacent historic refuse tip and infill to the gravel pit on site have been identified as potential sources of ground gas.
7. A moderate risk to human end-users, groundwater, buildings and services has been concluded.
8. An intrusive investigation is recommended. This should involve systematic sampling across the site to investigate both soils and groundwater as well as targeted sampling in the vicinity of the redundant fuel tanks. If the electrical substations are to be removed as part of the development investigation should take place below these to identify the presence of PCBs.
9. In addition to the above, an asbestos survey should be carried out prior to demolition and removal of any asbestos containing materials.



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29 March 2018



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APPENDIX A: REFERENCES

BSI. 2017. BS 10175:2011+A2:2017. Code of practice for investigation of potentially contaminated Sites. British Standards Institution. London.

BRE. 2015. BRE 211. Radon: Guidance on protective measures for new buildings. British Research Establishment. Bracknell.

DEFRA AND THE ENVIRONMENT AGENCY. 2004. Model Procedures for the Management of Land Contamination. Contaminated Land Report 11. Environment Agency, Bristol.



APPENDIX B: ENVIRONMENTAL DATABASE REPORT

Groundsure Enviro Insight Reference: GS-4790680



Address: ST John's Nursery, Clacton on Sea, CO16 8BP
Date: 8 Mar 2018
Reference: GS-4790680
Client: A F Howland Associates



Aerial Photograph Capture date: 05-May-2016
Grid Reference: 614586,216052
Site Size: 7.60ha

Report Reference: GS-4790680
Client Reference: BJH_18_093

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Overview of Findings

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Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	6	0	0	3
1.2 Additional Information – Historical Tank Database	9	0	0	0
1.3 Additional Information – Historical Energy Features Database	2	1	0	2
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	0
1.6 Potentially Infilled Land	3	0	2	6

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	1
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	0
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	1	0	0	0	0	2
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	3
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	4

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	6	1	1	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section	

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified					
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	2	1	0	2	6	6
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	2	8	5
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	0	2	3	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Environment Agency Zone 2 floodplains within 250m of the study site	None identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low					
7.4 Flood Defences within 250m of the study site	None identified					
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified					
7.6 Areas used for Flood Storage within 250m of the study site	None identified					
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface					
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Moderate					

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	1
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	1	3
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	1

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	1	0	0	1	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	Moderate
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Moderate
9.1.2 Maximum Landslides hazard rating identified on the study site	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Low
9.2 Radon	
9.2.1 Radon Affected Area rating	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Radon protection measures requirements	No radon protective measures are necessary.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon.

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

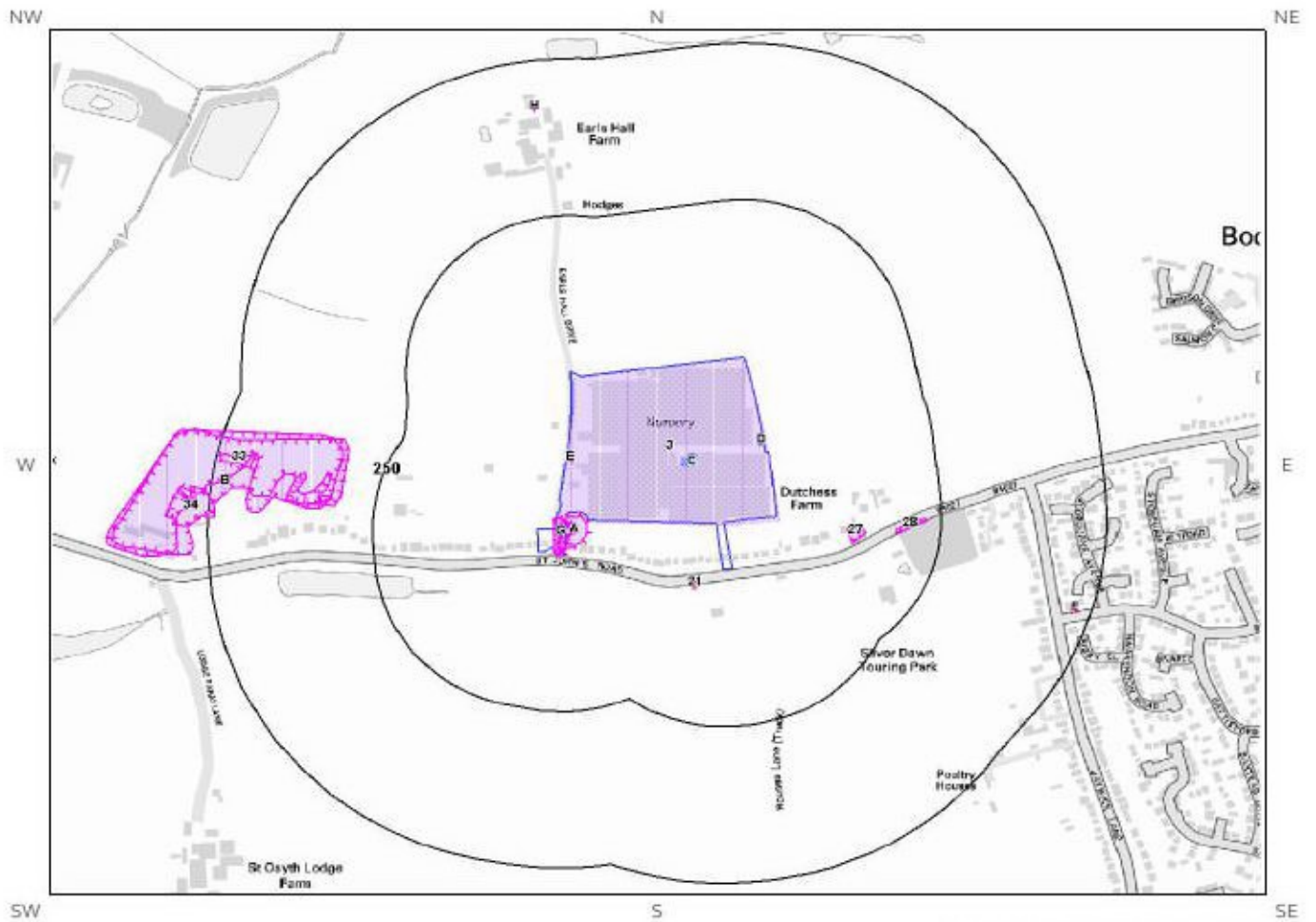
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



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1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 9

ID	Distance [m]	Direction	Use	Date
1D	0	On Site	Unspecified Tank	1978
2C	0	On Site	Unspecified Tank	1978
3	0	On Site	Nursery	1978
4A	0	On Site	Unspecified Pit	1967
5G	0	On Site	Gravel Pit	1896
6A	0	On Site	Gravel Pit	1898
7B	303	W	Unspecified Pits	1967
8B	315	W	Disused Gravel Pit	1953
9H	420	N	Saw Pit	1874

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 9

ID	Distance (m)	Direction	Use	Date
10C	0	On Site	Tanks	1983
11C	0	On Site	Unspecified Tank	1983
12C	0	On Site	Tanks	1983
13D	0	On Site	Unspecified Tank	1983
14C	0	On Site	Tanks	1994
15C	0	On Site	Unspecified Tank	1994
16C	0	On Site	Unspecified Tank	1994
17D	0	On Site	Unspecified Tank	1994
18C	0	On Site	Tanks	1994

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary:

5

ID	Distance (m)	Direction	Use	Date
19E	0	On Site	Electricity Substation	1994
20E	0	On Site	Electricity Substation	1983
21	43	SW	Electricity Substation	1994
22F	468	E	Gas Governor	1994
23F	474	E	Gas Governor	1991

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary:

0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary:

0

Database searched and no data found.

1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site:

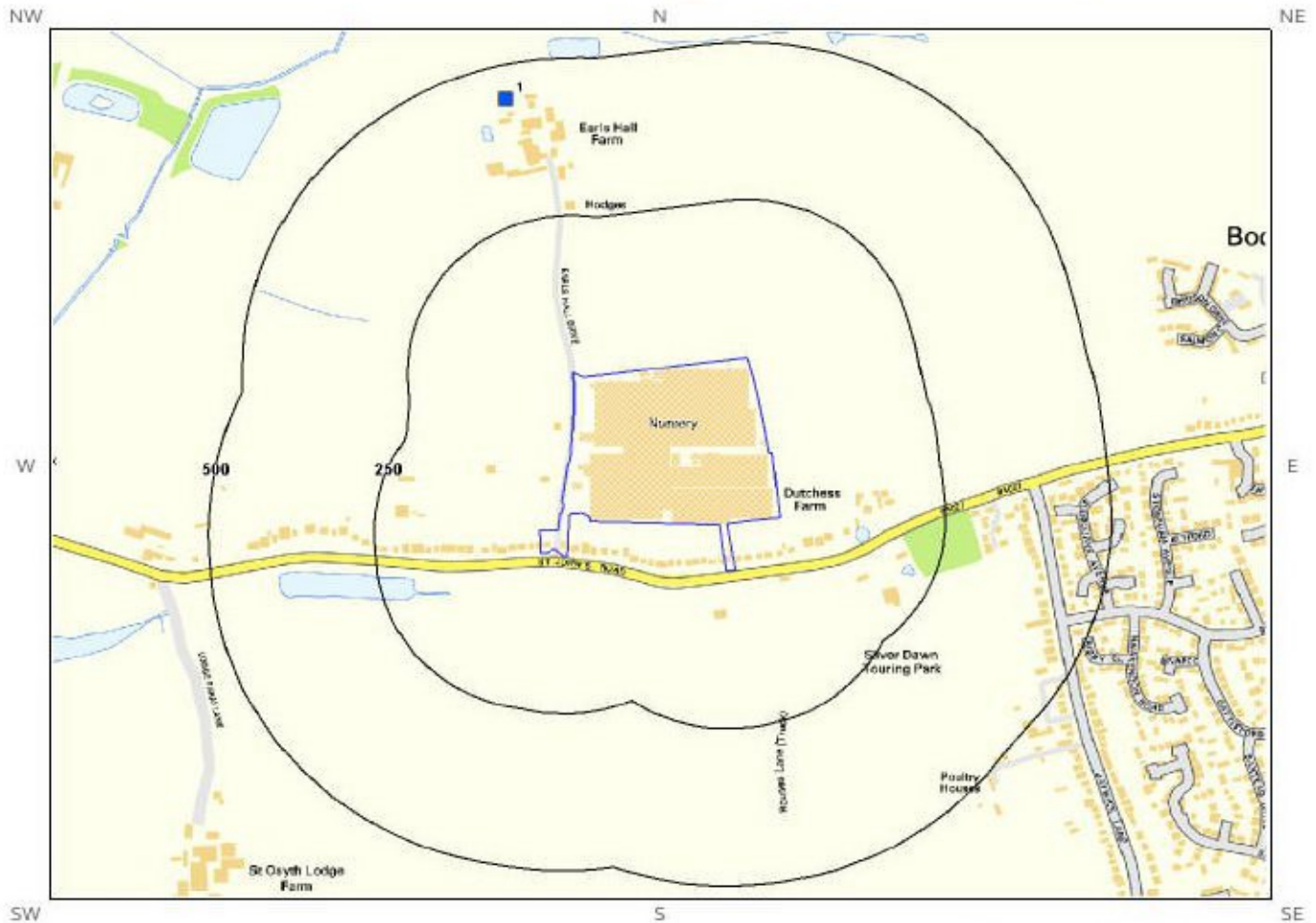
11

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
24G	0	On Site	Gravel Pit	1896
25G	0	On Site	Unspecified Pit	1967
26G	0	On Site	Gravel Pit	1898
27	107	E	Pond	1874
28	182	E	Pond	1953
29B	303	W	Unspecified Pits	1967
30	314	W	Pond	1967
31B	315	W	Disused Gravel Pit	1953

32H	420	N	Saw Pit	1874
33	444	W	Pond	1967
34	489	W	Pond	1967

2. Environmental Permits, Incidents and Registers Map



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- | | | |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
|  Site Outline |  Recorded Pollution Incident |  RAS 3 & 4 Authorisations |
|  Dangerous Substances (List 1) |  Part A(1) Authorised Processes and Historic IPC Authorisations |  Part A(2) and Part B Authorised Processes |
|  Dangerous Substances (List 2) |  Water Industry Referrals |  COMAH / NIHHS Sites |
|  250 |  Licenced Discharge Consents |  Sites Determined as Contaminated Land |
|  500 |  Red List Discharge Consents |  Hazardous Substance Consents and Enforcements |

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

1

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
1	446	N	614269 216635	<p>Address: POND HOUSE, POND COTTAGE, EARLS HALL FARM, ST JOHNS ROAD, CLACTON ON SEA, ESSEX, CO16 8BP</p> <p>Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY</p> <p>Permit Number: PRENF16536</p> <p>Permit Version: 1</p> <p>Receiving Water: OSYTH BROOK Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995)</p> <p>Issue date: 18/06/2004 Effective Date: 18-Jun-2004 Revocation Date: -</p>

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

0

Database searched and no data found.

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

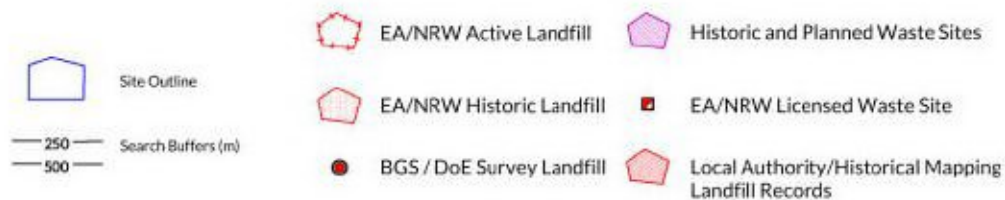
Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site 0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

3

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
1	0	On Site	613900 216000	Site Address: Rear of 796-886 St Osyth Main Road, Clacton, Tendring Waste Licence: - Site Reference: TEN027 Waste Type: Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: Clacton on Sea Operator: Clacton Urban District Council Licence Holder: Clacton Urban District Council First Recorded: 31-Dec-1956 Last Recorded: 31-Dec-1965
Not shown	1085	SE	615600 215100	Site Address: Rush Green Road, Clacton, Tendring Waste Licence: - Site Reference: TEN025 Waste Type: Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: Town Hall, Clacton-on-Sea, Essex Operator: - Licence Holder: The Clerk, Clacton Urban District Council First Recorded: 31-Dec-1956 Last Recorded: 31-Dec-1966
Not shown	1203	SE	615500 214900	Site Address: Rush Green Road, Clacton, Tendring Waste Licence: - Site Reference: TEN026 Waste Type: Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: Town Hall, Clacton on Sea, Essex Operator: - Licence Holder: The Clerk, Clacton Urban District Council First Recorded: 31-Dec-1956 Last Recorded: 31-Dec-1966

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

3

The following landfill records are represented as points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
Not shown	1083	SE	615608 215182	Refuse Tip	1971 mapping	Polygon
Not shown	1214	SE	615581 214922	Refuse Tip	1969 mapping	Polygon
Not shown	1370	SE	615718 214976	Refuse Tip	1969 mapping	Polygon

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

Database searched and no data found.

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

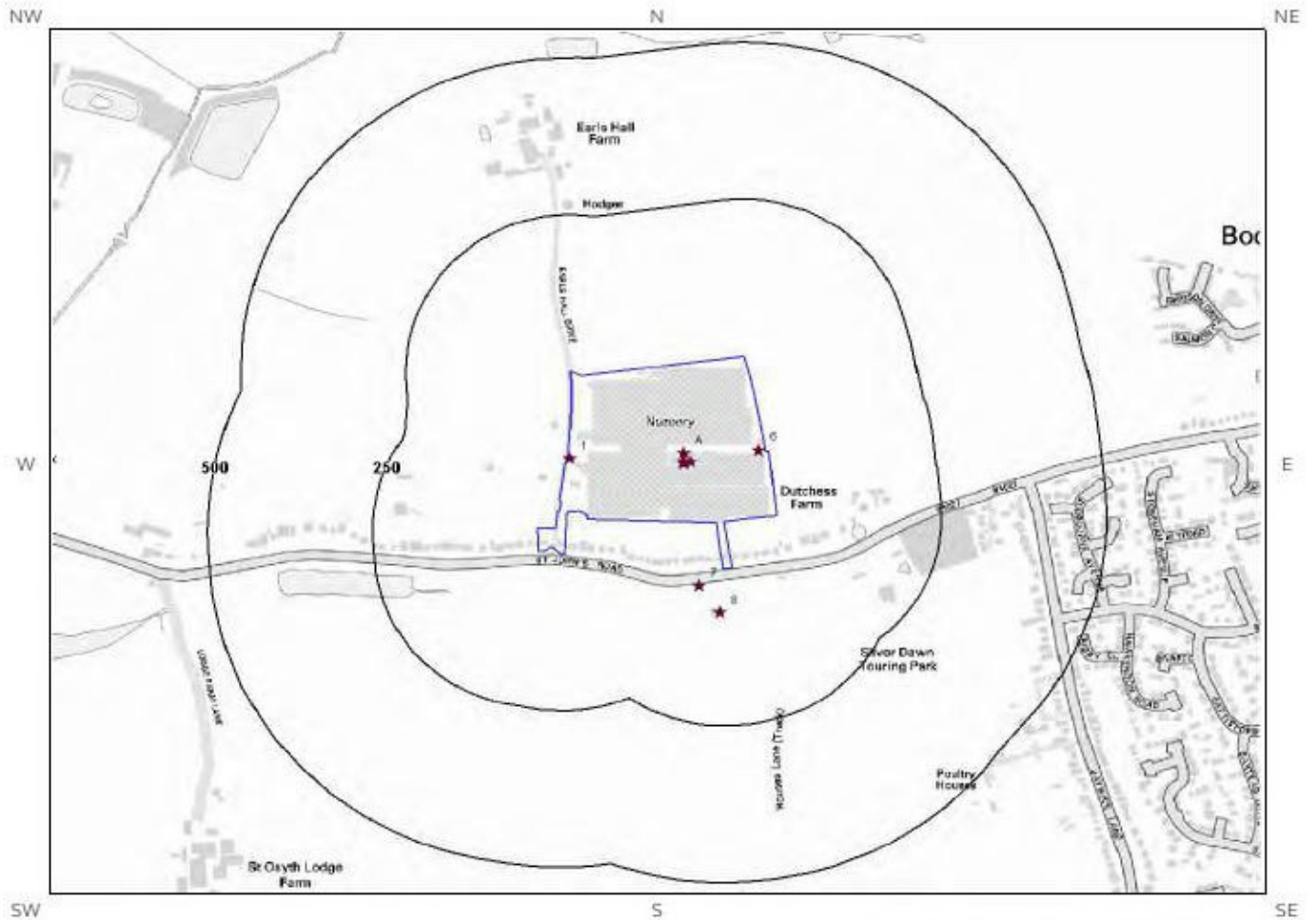
4

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
Not shown	1396	SE	615596 214892	<p>Site Address: Clacton Civic Amenity Site, Rush Green Road, Clacton On Sea, Essex, CO16 7AD</p> <p>Type: Household Waste Amenity Site</p> <p>Size: < 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: ESS009</p> <p>EPR reference: EA/EPR/ZP3399NM/A001</p> <p>Operator: Essex County Council</p> <p>Waste Management licence No: 70426</p> <p>Annual Tonnage: 20000.0</p> <p>Issue Date: 21/03/1997</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Issued</p> <p>Site Name: Clacton Civic Amenity Site</p> <p>Correspondence Address: Clacton Civic Amenity Site, Rush Green Road, Clacton On Sea, Essex, CO16</p>

ID	Distance (m)	Direction	NGR	Details	
Not shown	1396	SE	615596 214892	<p>Site Address: Rush Green Road, Clacton On Sea, Essex, CO16 7AD</p> <p>Type: Household, Commercial & Industrial Waste T Stn</p> <p>Size: < 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: ESS009</p> <p>EPR reference: -</p> <p>Operator: Essex County Council</p> <p>Waste Management licence No: 70426</p> <p>Annual Tonnage: 0.0</p>	<p>Issue Date: 21/03/1997</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Issued</p> <p>Site Name: Clacton Civic Amenity Site</p> <p>Correspondence Address: Waste Management Group, County Hall, Chelmsford, Essex, CM1 1QH</p>
Not shown	1396	SE	615596 214892	<p>Site Address: Clacton Civic Amenity Site, Rush Green Road, Clacton On Sea, Essex, CO16 7AD</p> <p>Type: Household Waste Amenity Site</p> <p>Size: < 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: VEO186</p> <p>EPR reference: EA/EPR/AB3701SF/T001</p> <p>Operator: Veolia Environmental Services (U K) Plc</p> <p>Waste Management licence No: 70426</p> <p>Annual Tonnage: 24999.0</p>	<p>Issue Date: 21/03/1997</p> <p>Effective Date: 01/11/2013</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Transferred</p> <p>Site Name: Clacton Civic Amenity Site</p> <p>Correspondence Address: Clacton Civic Amenity Site, Rush Green Road, Clacton On Sea, Essex, CO16</p>
Not shown	1396	SE	615596 214892	<p>Site Address: Clacton Civic Amenity Site, Rush Green Road, Clacton On Sea, Essex, CO16 7AD</p> <p>Type: Household Waste Amenity Site</p> <p>Size: < 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: VEO186</p> <p>EPR reference: EA/EPR/AB3701SF/V002</p> <p>Operator: Veolia Environmental Services (U K) Plc</p> <p>Waste Management licence No: 70426</p> <p>Annual Tonnage: 24999.0</p>	<p>Issue Date: 21/03/1997</p> <p>Effective Date: 01/11/2013</p> <p>Modified: 03/06/2016</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Modified</p> <p>Site Name: Clacton Civic Amenity Site</p> <p>Correspondence Address: Clacton Civic Amenity Site, Rush Green Road, Clacton On Sea, Essex, CO16</p>

4. Current Land Use Map



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- | | | | | | |
|-------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------|---------------------------------|
|  | Site Outline |  | Current Industrial Sites |  | Electricity Transmission Cables |
|  | Search Buffers (m) |  | Petrol & Fuel Sites |  | Gas Transmission Pipelines |

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 8

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Electricity Sub Station	614370 216062	CO16	Electrical Features	Infrastructure and Facilities
2A	0	On Site	Tank	614542 216071	CO16	Tanks (Generic)	Industrial Features
3A	0	On Site	Tank	614543 216054	CO16	Tanks (Generic)	Industrial Features
4A	0	On Site	Tank	614543 216058	CO16	Tanks (Generic)	Industrial Features
5A	0	On Site	Tank	614553 216057	CO16	Tanks (Generic)	Industrial Features
6	0	On Site	Tank	614656 216076	CO16	Tanks (Generic)	Industrial Features
7	44	SW	Electricity Sub Station	614566 215859	CO16	Electrical Features	Infrastructure and Facilities
8	69	S	Youngs Ices	614596 215816	777, St. Johns Road, Clacton-on-Sea, CO16 8BN	Abrasive Products and Grinding Equipment	Industrial Products

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
KGCA-XSV	KESGRAVE CATCHMENT SUBGROUP	SAND AND GRAVEL
CSD-XCZS	COVER SAND	CLAY, SILT AND SAND

5.3 Bedrock and Solid Geology

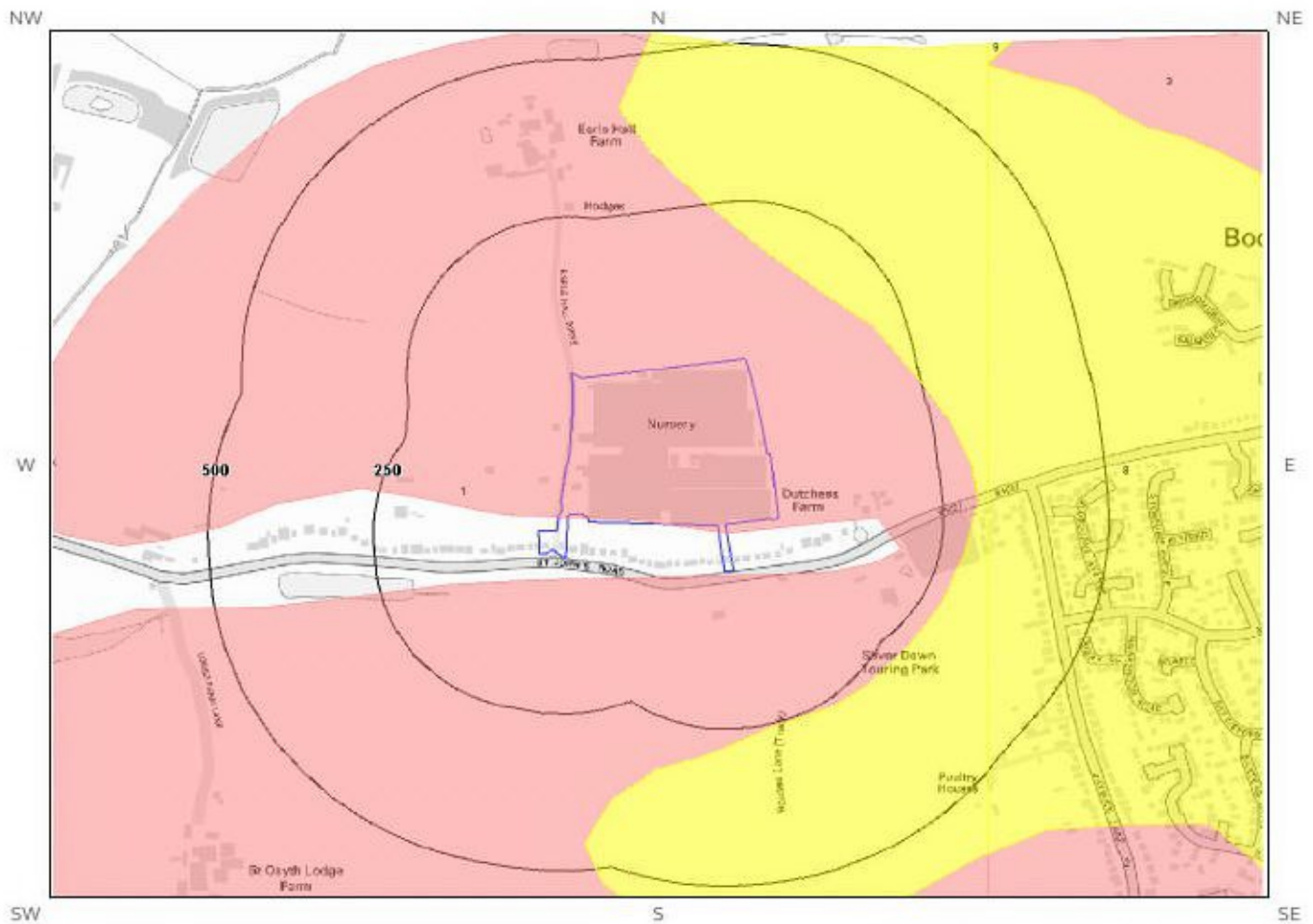
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
THAM-XCZS	THAMES GROUP	CLAY, SILT AND SAND

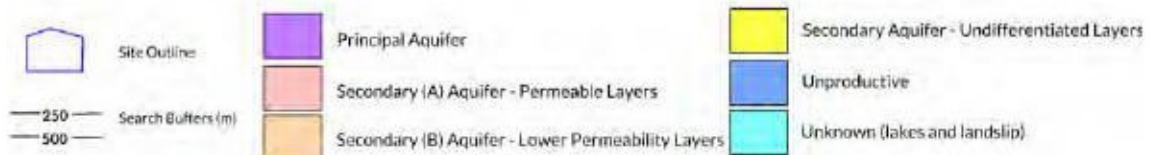
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



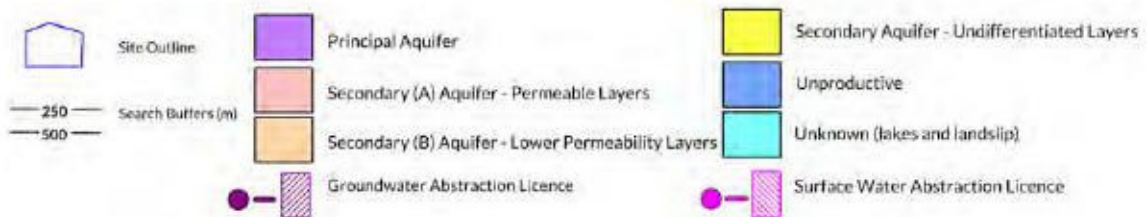
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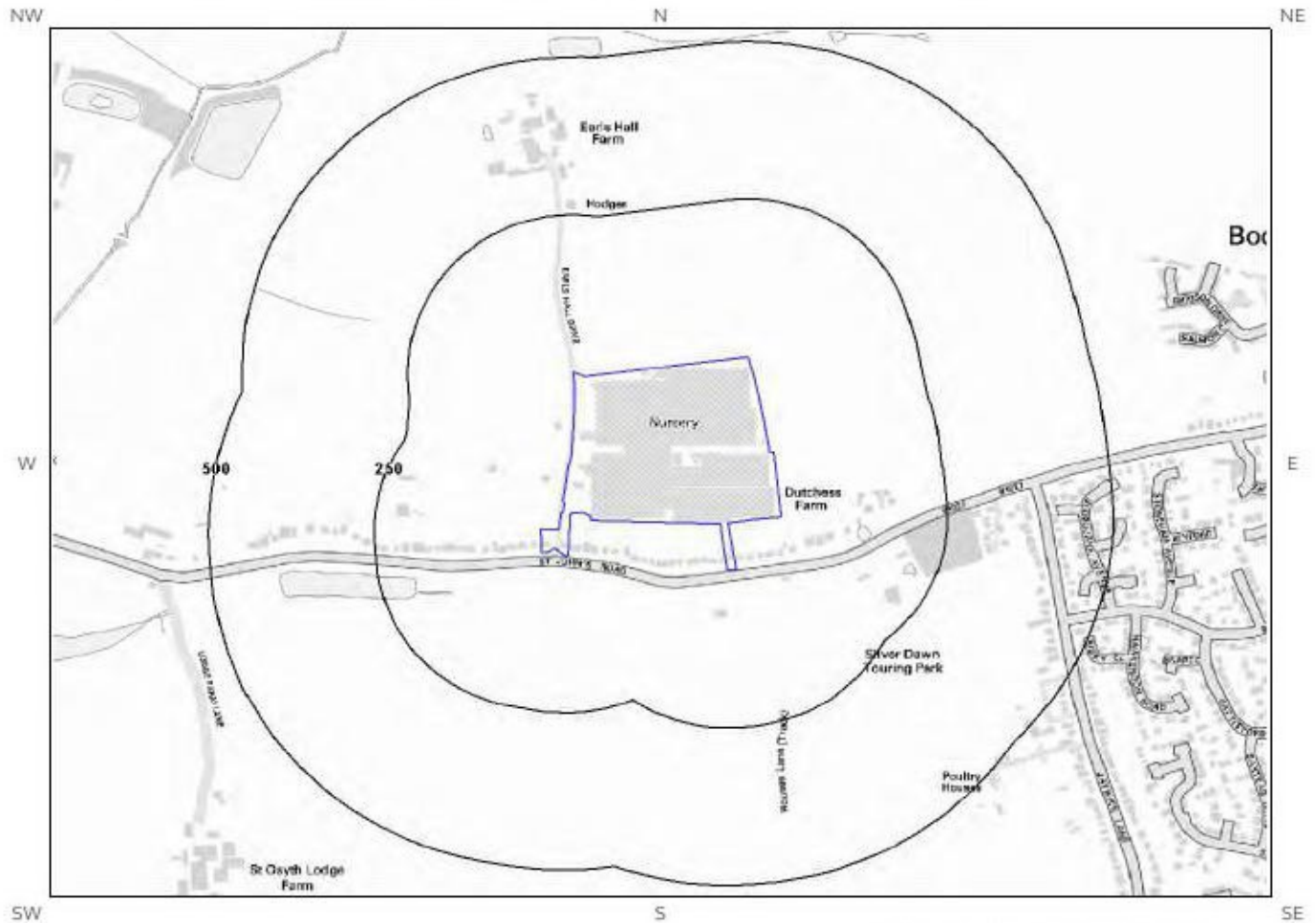
6b. Aquifer Within Bedrock Geology and Abstraction Licenses



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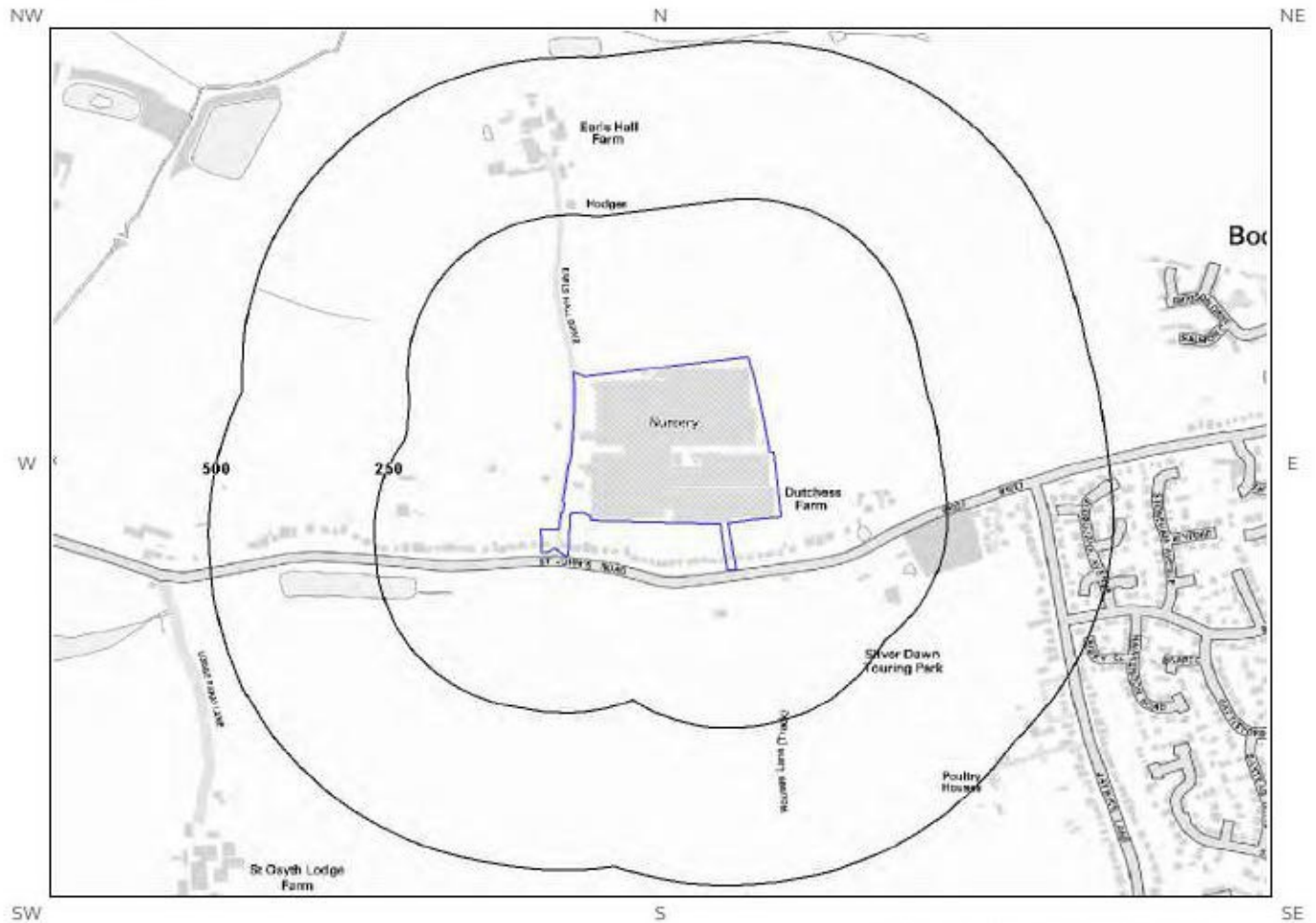
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



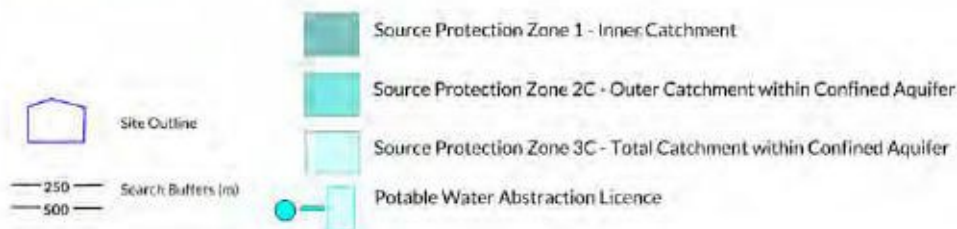
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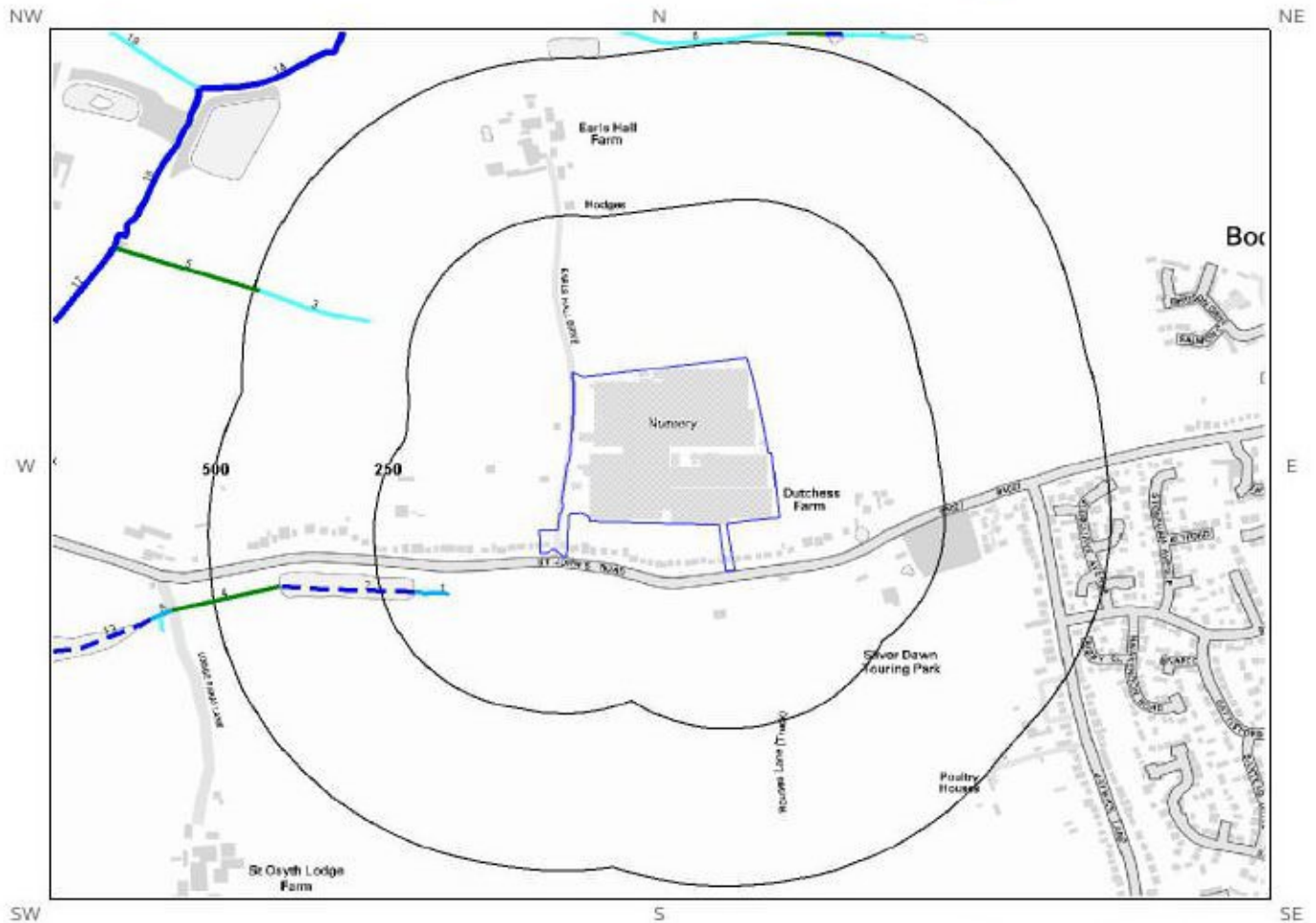
6d. Hydrogeology – Source Protection Zones within confined aquifer



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6e. Hydrology – Detailed River Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
7	154	NE	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
8	316	E	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	316	E	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site

Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
5	0	On Site	614600 215900	<p>Status: Active Licence No: 8/37/25/*G/0189 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Ruaton Garden 1, Clacton Data Type: Point Name: Park View Nursery (Enfield) Limited</p> <p>Annual Volume (m³): 56800 Max Daily Volume (m³): 655 Original Application No: NPS/WR/016316 Original Start Date: 1/1/1973 Expiry Date: - Issue No: 104 Version Start Date: 30/7/2014 Version End Date:</p>
6	0	On Site	614600 216000	<p>Status: Active Licence No: 8/37/25/*G/0189 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Ruaton Garden 2, Clacton Data Type: Point Name: Park View Nursery (Enfield) Limited</p> <p>Annual Volume (m³): 56800 Max Daily Volume (m³): 655 Original Application No: NPS/WR/016316 Original Start Date: 1/1/1973 Expiry Date: - Issue No: 104 Version Start Date: 30/7/2014 Version End Date:</p>
7	13	S	614641 215952	<p>Status: Historical Licence No: 8/37/25/*G/0189 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Ruaton Garden 1, Clacton Data Type: Point Name: Chessum Plants Limited</p> <p>Annual Volume (m³): 56800 Max Daily Volume (m³): 655 Original Application No: PS1974 Original Start Date: 1/1/1973 Expiry Date: - Issue No: 103 Version Start Date: 1/3/2007 Version End Date:</p>
8B	349	W	613979 215860	<p>Status: Active Licence No: 8/37/25/*G/0308 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Abstraction Point 1 Reservoir 1 Groundwater Seepage Res Data Type: Point Name: J A Low & Son</p> <p>Annual Volume (m³): 48000 Max Daily Volume (m³): 1120 Original Application No: NPSWR022067 Original Start Date: 1/7/1991 Expiry Date: - Issue No: 101 Version Start Date: 27/5/2016 Version End Date:</p>
9C	439	W	613900 215800	<p>Status: Historical Licence No: 8/37/25/*G/0238 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Seepage Res At St. Osyth Data Type: Point Name: J A LOW & SON</p> <p>Annual Volume (m³): 23000 Max Daily Volume (m³): 520 Original Application No: - Original Start Date: 1/11/1983 Expiry Date: - Issue No: 100 Version Start Date: 1/11/1983 Version End Date:</p>
10	617	E	615300 216000	<p>Status: Historical Licence No: 8/37/25/*G/0321 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Well - Clacton On Sea Data Type: Point Name: CLACTON GARDEN CENTRE</p> <p>Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 1/11/1992 Expiry Date: - Issue No: 100 Version Start Date: 1/11/1992 Version End Date:</p>

ID	Distance (m)	Direction	NGR	Details
11A	716	W	613625 215758	<p>Status: Active Licence No: 8/37/25/*G/0308 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Ap 2 Reservoir 2 Groundwater Seepage Reservoir Lodge Farm Data Type: Point Name: J A Low & Son</p> <p>Annual Volume (m³): 48000 Max Daily Volume (m³): 1120 Original Application No: NPSWR022067 Original Start Date: 1/7/1991 Expiry Date: - Issue No: 101 Version Start Date: 27/5/2016 Version End Date:</p>
12A	716	W	613625 215758	<p>Status: Active Licence No: 8/37/25/*G/0308 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Ap 2 Reservoir 2 Groundwater Seepage Reservoir Lodge Farm Data Type: Point Name: J A Low & Son</p> <p>Annual Volume (m³): 48000 Max Daily Volume (m³): 1120 Original Application No: NPSWR022067 Original Start Date: 1/7/1991 Expiry Date: - Issue No: 101 Version Start Date: 27/5/2016 Version End Date:</p>
13	808	SW	613700 215400	<p>Status: Historical Licence No: 8/37/25/*G/0216 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: 20 Jet Wells At St Osyth Data Type: Point Name: J A Low & Sons</p> <p>Annual Volume (m³): 45500 Max Daily Volume (m³): 778 Original Application No: EN1317 Original Start Date: 1/4/1978 Expiry Date: - Issue No: 101 Version Start Date: 24/11/2009 Version End Date:</p>
Not shown	851	W	613500 215700	<p>Status: Historical Licence No: 8/37/25/*G/0308 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Seepage Reservoir At Lodge Frm Data Type: Point Name: J A LOW & SON</p> <p>Annual Volume (m³): 25000 Max Daily Volume (m³): 600 Original Application No: - Original Start Date: 1/7/1991 Expiry Date: - Issue No: 100 Version Start Date: 1/7/1991 Version End Date:</p>
Not shown	851	W	613500 215700	<p>Status: Historical Licence No: 8/37/25/*G/0308 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Seepage Reservoir At Lodge Farm Data Type: Point Name: J A LOW & SON</p> <p>Annual Volume (m³): 25000 Max Daily Volume (m³): 600 Original Application No: - Original Start Date: 1/7/1991 Expiry Date: - Issue No: 100 Version Start Date: 1/7/1991 Version End Date:</p>
Not shown	1001	SW	613448 215430	<p>Status: Historical Licence No: AN/037/0025/002 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Seepage Reservoir In Lodge Farm St Osyth Data Type: Point Name: J A Low & Sons</p> <p>Annual Volume (m³): 45500 Max Daily Volume (m³): 3600 Original Application No: NPS/WR/001728 Original Start Date: 24/11/2009 Expiry Date: 31/3/2016 Issue No: 1 Version Start Date: 1/4/2014 Version End Date:</p>
Not shown	1001	SW	613448 215430	<p>Status: Active Licence No: AN/037/0025/002/R01 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Seepage Reservoir In Lodge Farm St Osyth Data Type: Point Name: J A Low & Son</p> <p>Annual Volume (m³): 45500 Max Daily Volume (m³): 3600 Original Application No: NPS/WR/022787 Original Start Date: 1/4/2016 Expiry Date: 31/3/2028 Issue No: 2 Version Start Date: 20/5/2016 Version End Date:</p>
Not shown	1014	SW	613450 215400	<p>Status: Historical Licence No: 8/37/25/*G/0339 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Seepage Reservoir In Lodge Farm St Osyth Data Type: Point Name: J A LOW & SONS</p> <p>Annual Volume (m³): 45500 Max Daily Volume (m³): 3600 Original Application No: AA0058 Original Start Date: 31/1/2000 Expiry Date: 31/10/2009 Issue No: 3 Version Start Date: 1/8/2006 Version End Date:</p>

ID	Distance (m)	Direction	NGR	Details
Not shown	1014	SW	613450 215400	Status: Historical Licence No: 8/37/25/*G/0339 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Seepage Reservoir In Lodge Farm St Osyth Data Type: Point Name: J A LOW & SONS Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: EN1317 Original Start Date: - Expiry Date: 31/10/2009 Issue No: 1 Version Start Date: 31/1/2000 Version End Date:
Not shown	1285	S	614600 214600	Status: Active Licence No: 8/37/25/*G/0070 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water Source Of Supply Point: Well, Sacketts Grove, Clacton Data Type: Point Name: Tingdene Parks Limited Annual Volume (m ³): 909 Max Daily Volume (m ³): 27 Original Application No: NPS/WR/016080 Original Start Date: 1/12/1967 Expiry Date: - Issue No: 101 Version Start Date: 17/7/2014 Version End Date:
Not shown	1439	W	612900 215700	Status: Historical Licence No: 8/37/25/*G/0156 Details: General Farming & Domestic Direct Source: Ground Water Source Of Supply Point: Well At Folly Farm, St Osyth Data Type: Point Name: KNIGHTS Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 1/6/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/6/1966 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site

Identified

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
22B	349	W	613979 215860	Status: Active Licence No: 8/37/25/*S/0307 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Ap1 Surface Water Reservoir 1 On St Osyth Brook Lodge Farm Data Type: Point Name: J A Low & Son Annual Volume (m ³): 48000 Max Daily Volume (m ³): 1120 Application No: NPS/WR/022132 Original Start Date: 1/7/1991 Expiry Date: - Issue No: 102 Version Start Date: 27/5/2016 Version End Date:
23C	439	W	613900 215800	Status: Historical Licence No: 8/37/25/*S/0237 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Trib St. Osyth Brook, St Osyth Data Type: Point Name: J A LOW & SON Annual Volume (m ³): 23000 Max Daily Volume (m ³): 520 Application No: AA208 Original Start Date: 1/11/1983 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2007 Version End Date:
24	504	N	614300 216700	Status: Historical Licence No: 8/37/25/*S/0242 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Trib St.Osyth Brook, Clacton Data Type: Point Name: R E LORD & T G HUNT Annual Volume (m ³): 32000 Max Daily Volume (m ³): 2667 Application No: ES2092 Original Start Date: 1/4/1984 Expiry Date: - Issue No: 101 Version Start Date: 29/9/1999 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
25	568	NW	614100 216700	Status: Historical Licence No: 8/37/25/*S/0242 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Trib St.osyth Brook, Clacton Data Type: Point Name: R E LORD & T G HUNT	Annual Volume (m ³): 32000 Max Daily Volume (m ³): 2667 Application No: ES2092 Original Start Date: 1/4/1984 Expiry Date: - Issue No: 101 Version Start Date: 29/9/1999 Version End Date:
Not shown	584	N	614300 216780	Status: Active Licence No: 8/37/25/*S/0242 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Tributary Of St Osyth Brook At Earls Hall Farm Data Type: Point Name: R E LORD & T G HUNT	Annual Volume (m ³): 32000 Max Daily Volume (m ³): 2667 Application No: AA220 Original Start Date: 1/4/1984 Expiry Date: - Issue No: 102 Version Start Date: 4/5/2007 Version End Date:
Not shown	604	N	614200 216780	Status: Active Licence No: 8/37/25/*S/0242 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Tributary Of St Osyth Brook, Earls Hall Farm Data Type: Point Name: R E LORD & T G HUNT	Annual Volume (m ³): 32000 Max Daily Volume (m ³): 2667 Application No: AA220 Original Start Date: 1/4/1984 Expiry Date: - Issue No: 102 Version Start Date: 4/5/2007 Version End Date:
28A	716	W	613625 215758	Status: Active Licence No: 8/37/25/*S/0307 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Abstraction Point 2 Reservoir 2 Surface Water Data Type: Point Name: J A Low & Son	Annual Volume (m ³): 48000 Max Daily Volume (m ³): 1120 Application No: NPS/WR/022132 Original Start Date: 1/7/1991 Expiry Date: - Issue No: 102 Version Start Date: 27/5/2016 Version End Date:
29A	716	W	613625 215758	Status: Active Licence No: 8/37/25/*S/0307 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Abstraction Point 2 Reservoir 2 Surface Water Data Type: Point Name: J A Low & Son	Annual Volume (m ³): 48000 Max Daily Volume (m ³): 1120 Application No: NPS/WR/022132 Original Start Date: 1/7/1991 Expiry Date: - Issue No: 102 Version Start Date: 27/5/2016 Version End Date:
30	735	NW	613700 216500	Status: Active Licence No: 8/37/25/*S/0204 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Park Farm, Clacton Data Type: Point Name: FORD	Annual Volume (m ³): 46000 Max Daily Volume (m ³): 3629 Application No: - Original Start Date: 1/4/1977 Expiry Date: - Issue No: 100 Version Start Date: 2/4/1997 Version End Date:
Not shown	851	W	613500 215700	Status: Historical Licence No: 8/37/25/*S/0307 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Trib Of St. Osyth Brook Data Type: Point Name: J A LOW & SON	Annual Volume (m ³): 25000 Max Daily Volume (m ³): 600 Application No: AA211 Original Start Date: 1/7/1991 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2007 Version End Date:
Not shown	1253	N	614010 217400	Status: Active Licence No: 8/37/25/*S/0242 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Tributary Of St Osyth Brook Earls Hall Farm Data Type: Point Name: R E LORD & T G HUNT	Annual Volume (m ³): 32000 Max Daily Volume (m ³): 2667 Application No: AA220 Original Start Date: 1/4/1984 Expiry Date: - Issue No: 102 Version Start Date: 4/5/2007 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1256	N	614000 217400	<p>Status: Historical Licence No: 8/37/25/'S/0242 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Trib St.osyth Brook, Clacton Data Type: Point Name: R E LORD & T G HUNT</p> <p>Annual Volume (m³): 32000 Max Daily Volume (m³): 2667 Application No: ES2092 Original Start Date: 1/4/1984 Expiry Date: - Issue No: 101 Version Start Date: 29/9/1999 Version End Date:</p>
Not shown	1387	W	613000 215500	<p>Status: Active Licence No: 8/37/25/'S/0155 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: St Osyth Brook,folly Frm,clctn Data Type: Point Name: KNIGHTS</p> <p>Annual Volume (m³): 2272 Max Daily Volume (m³): 113 Application No: - Original Start Date: 1/6/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/6/1966 Version End Date:</p>
Not shown	1515	N	614876 217720	<p>Status: Active Licence No: AN/037/0026/003 Details: Make-Up Or Top Up Water Direct Source: Surface Water Source Of Supply Point: Hartley Wood Ditch, Essex Data Type: Point Name: R E LORD & T G HUNT</p> <p>Annual Volume (m³): 4550 Max Daily Volume (m³): 345.6 Application No: NPS/WR/003212 Original Start Date: 30/6/2010 Expiry Date: 31/3/2028 Issue No: 1 Version Start Date: 1/4/2012 Version End Date:</p>
Not shown	1945	S	614640 213940	<p>Status: Active Licence No: 8/37/25/'S/0338 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Jaywick Ditch, Jaywick Data Type: Point Name: R E LORD & T G HUNT</p> <p>Annual Volume (m³): 25000 Max Daily Volume (m³): 1200 Application No: AA219 Original Start Date: 1/11/1999 Expiry Date: 31/3/2019 Issue No: 2 Version Start Date: 4/5/2007 Version End Date:</p>

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/Intermediate Leaching Potential	11	Soils which can possibly transmit a wide range of pollutants.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site None identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Detailed River Network

Detailed River Network entries within 500m of the study site Identified

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details	
1	153	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
2	201	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined
3	318	W	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
4	398	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
5	491	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined

6.11 Surface Water Features

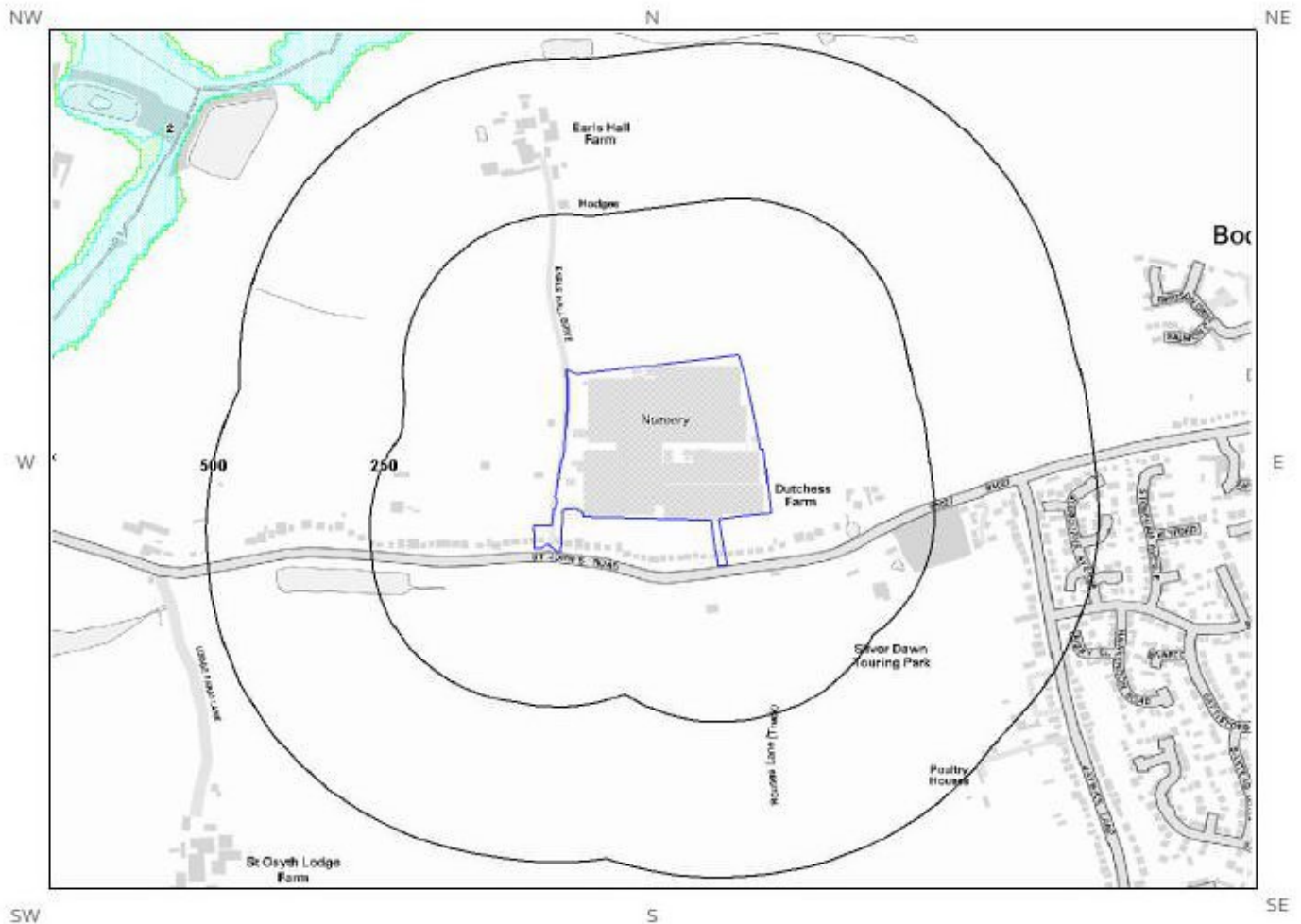
Surface water features within 250m of the study site

Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
0	On Site
153	SW

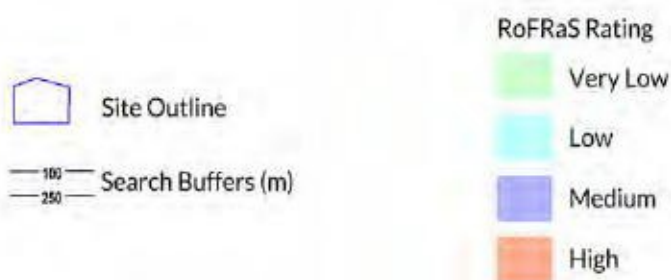
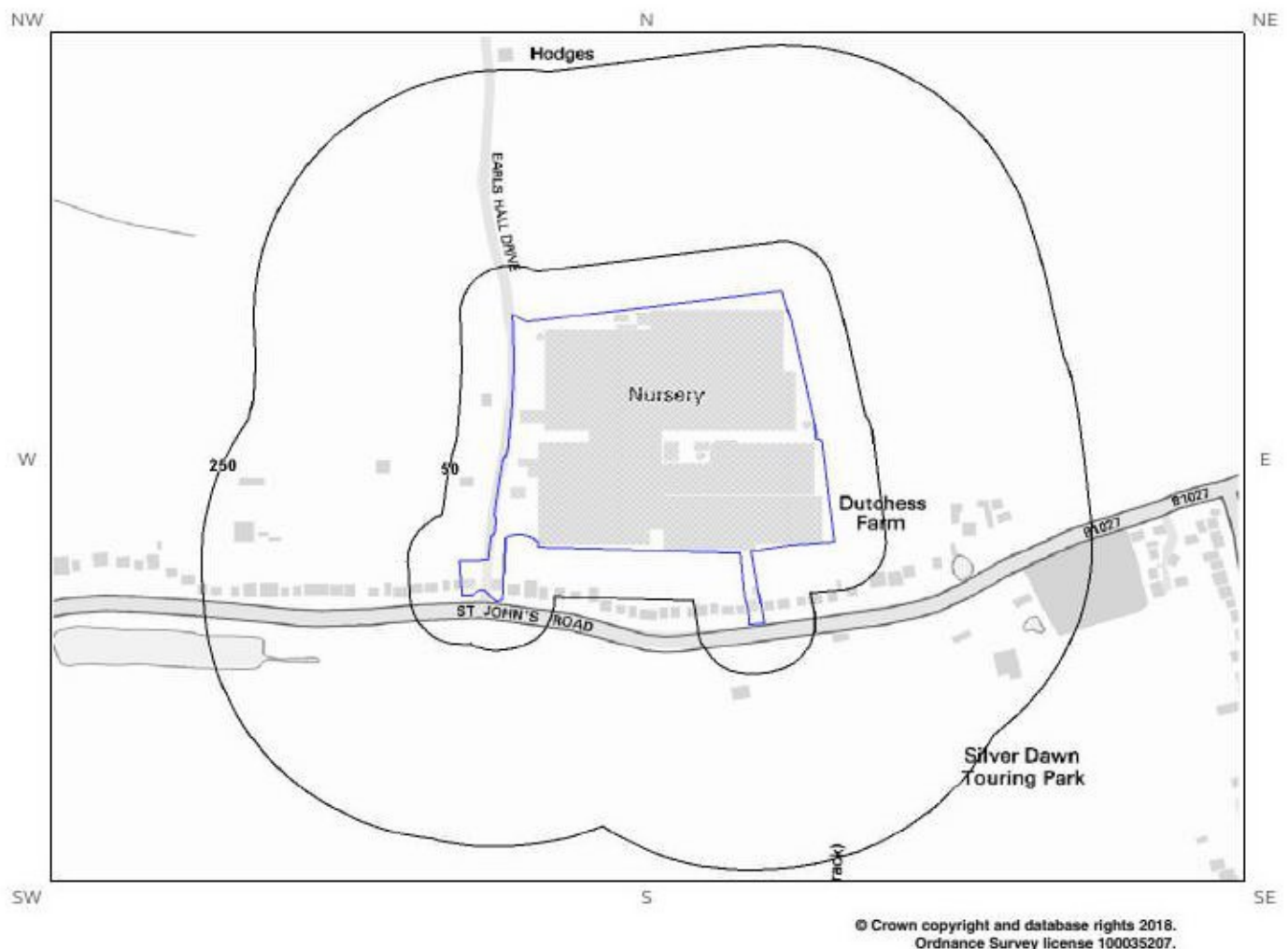
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m None identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m None identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

Database searched and no data found.

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Flood Defences within 250m of the study site None identified
Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site

None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site

Identified

Clearwater Flooding or Superficial Deposits Flooding

Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

7.8 Groundwater Flooding Confidence Areas

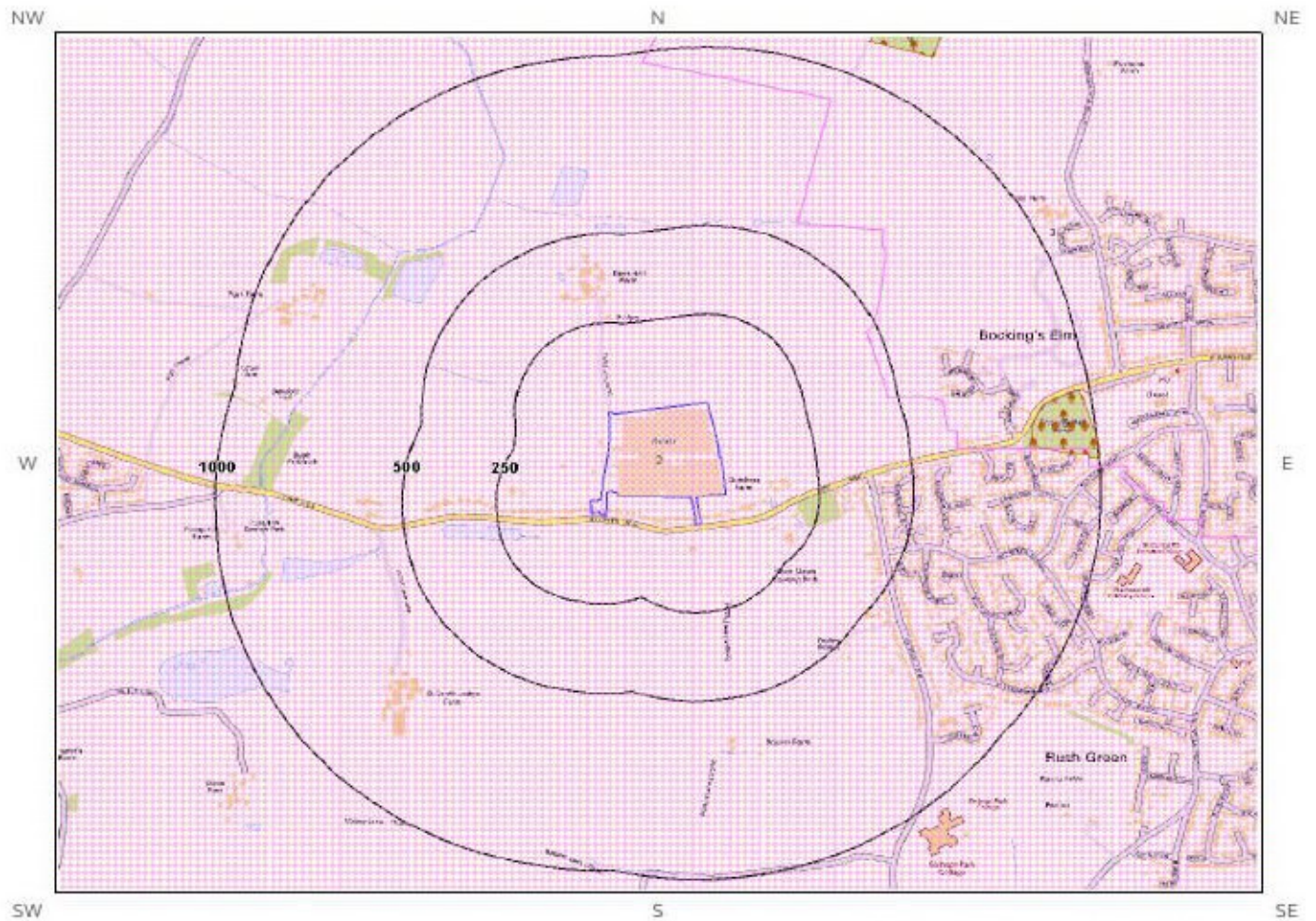
British Geological Survey confidence rating in this result

Moderate

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

1

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
Not shown	1970	NW	Riddles Wood	Natural England

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

4

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
5	817	E	UNKNOWN	Ancient and Semi-Natural Woodland
6	1105	NE	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1927	NE	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1970	NW	UNKNOWN	Ancient and Semi-Natural Woodland

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

1

The following Environmentally Sensitive Area records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	ESA Name	Data Source
Not shown	1904	SW	Essex Coast	Natural England

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

2

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
2	0	On Site	Existing	DEFRA
3	466	E	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a **Groundsure Geo Insight**, available from our **website**. The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell* hazard rating identified on the study site Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site

Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand* hazard rating identified on the study site

Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Radon Affected Area assessment: The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Radon protection measures requirements for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment: No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site

None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary

None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site

None identified

Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com



British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG



BGS Geological Hazards Reports and general geological enquiries:

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY



Web: [REDACTED]
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG



Main switchboard: [REDACTED]

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG



Ordnance Survey
Adanac Drive, Southampton
SO16 0AS



Local Authority
Authority: Tendring District Council

Address: Town Hall, Station Road, Clacton on Sea, Essex, CO15 1SE

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England who retain the Copyright and Intellectual Property Rights for the data.

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Standard Terms and Conditions

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<https://www.groundsure.com/terms-and-conditions-march-2018>

APPENDIX C: HISTORICAL MAPPING



Site Details:

ST John's Nursery, Clacton on Sea, CO16 8BP

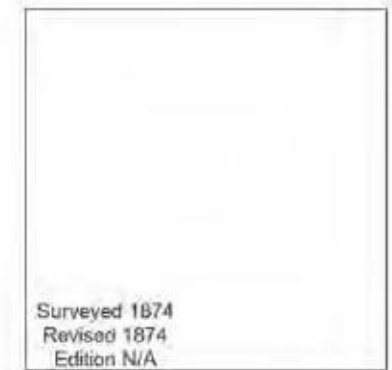
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Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: County Series

Map date: 1874

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1874
 Revised 1874
 Edition N/A
 Copyright N/A
 Levelled N/A



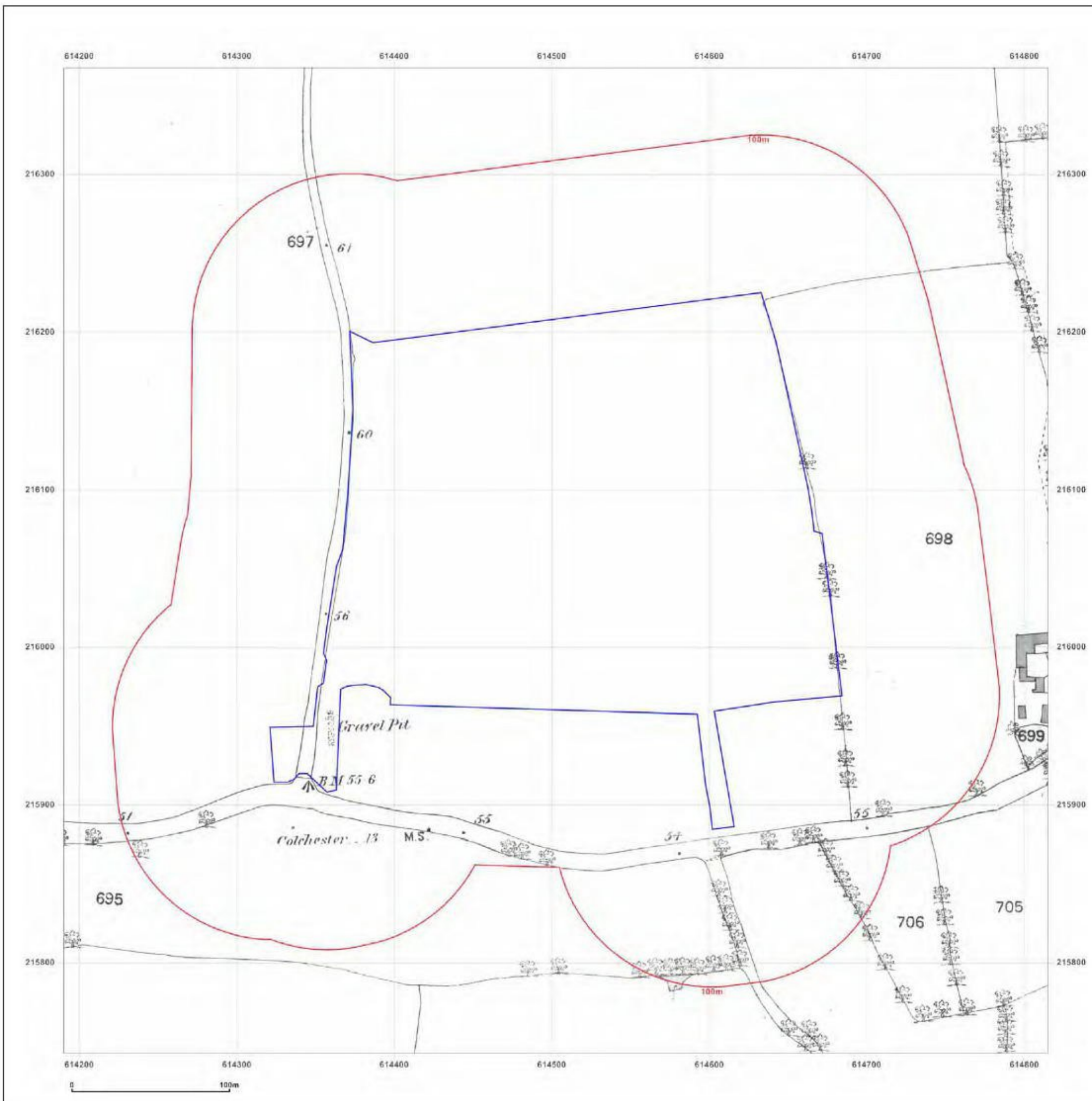
Produced by
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Production date: 08 March 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

ST John's Nursery, Clacton on Sea, CO16 8BP

Client Ref: BJH_18_093
Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: County Series

Map date: 1897

Scale: 1:2,500

Printed at: 1:2,500



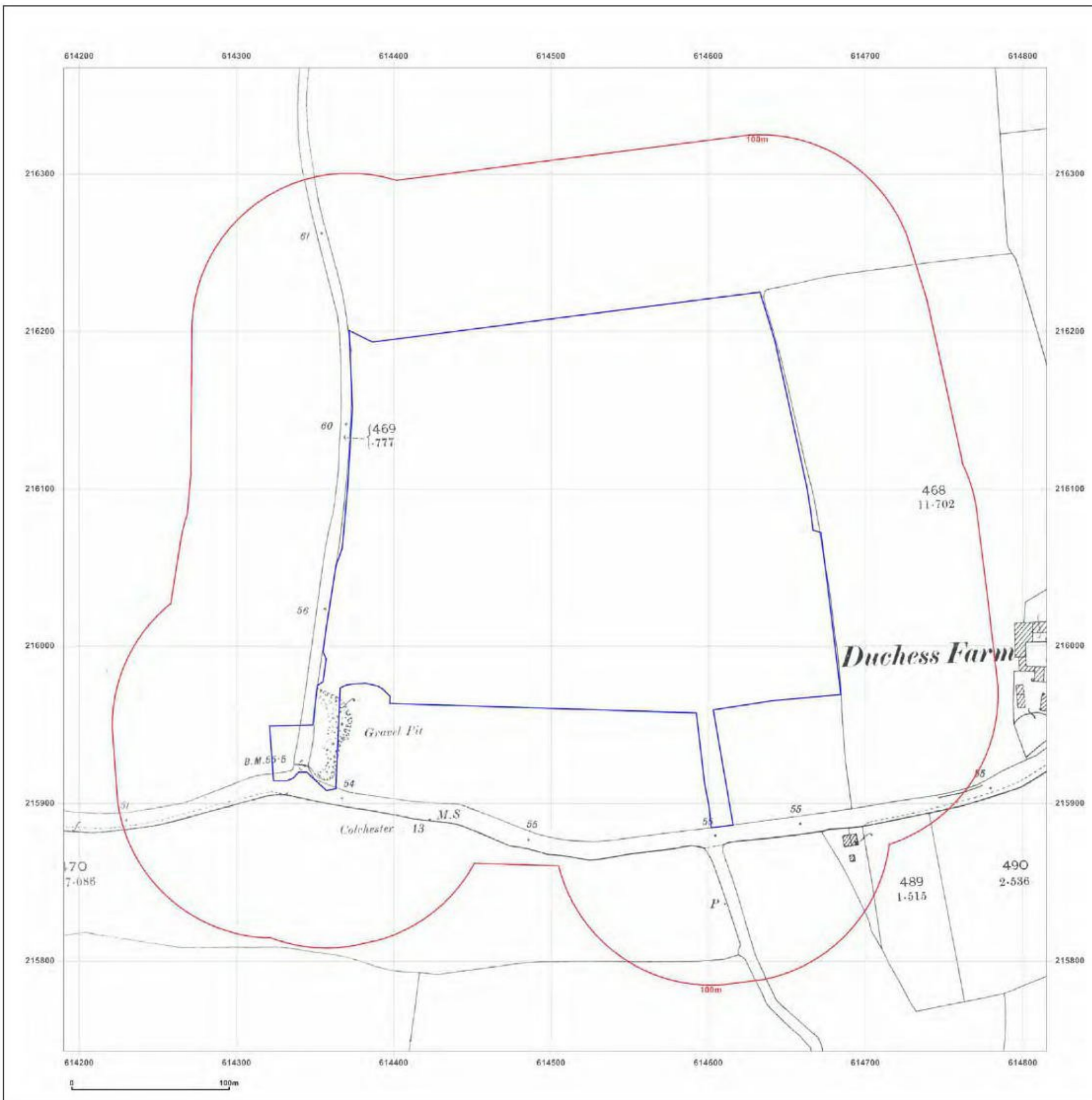
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Production date: 08 March 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

ST John's Nursery, Clacton on Sea, CO16 8BP

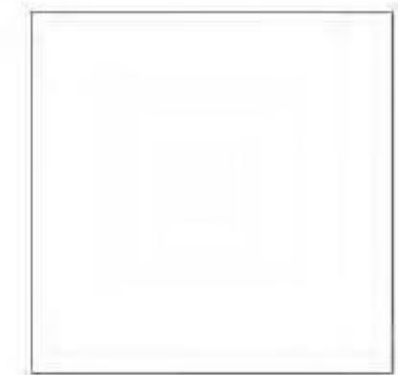
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Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: County Series

Map date: 1923

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1923
 Revised 1923
 Edition N/A
 Copyright N/A
 Levelled N/A



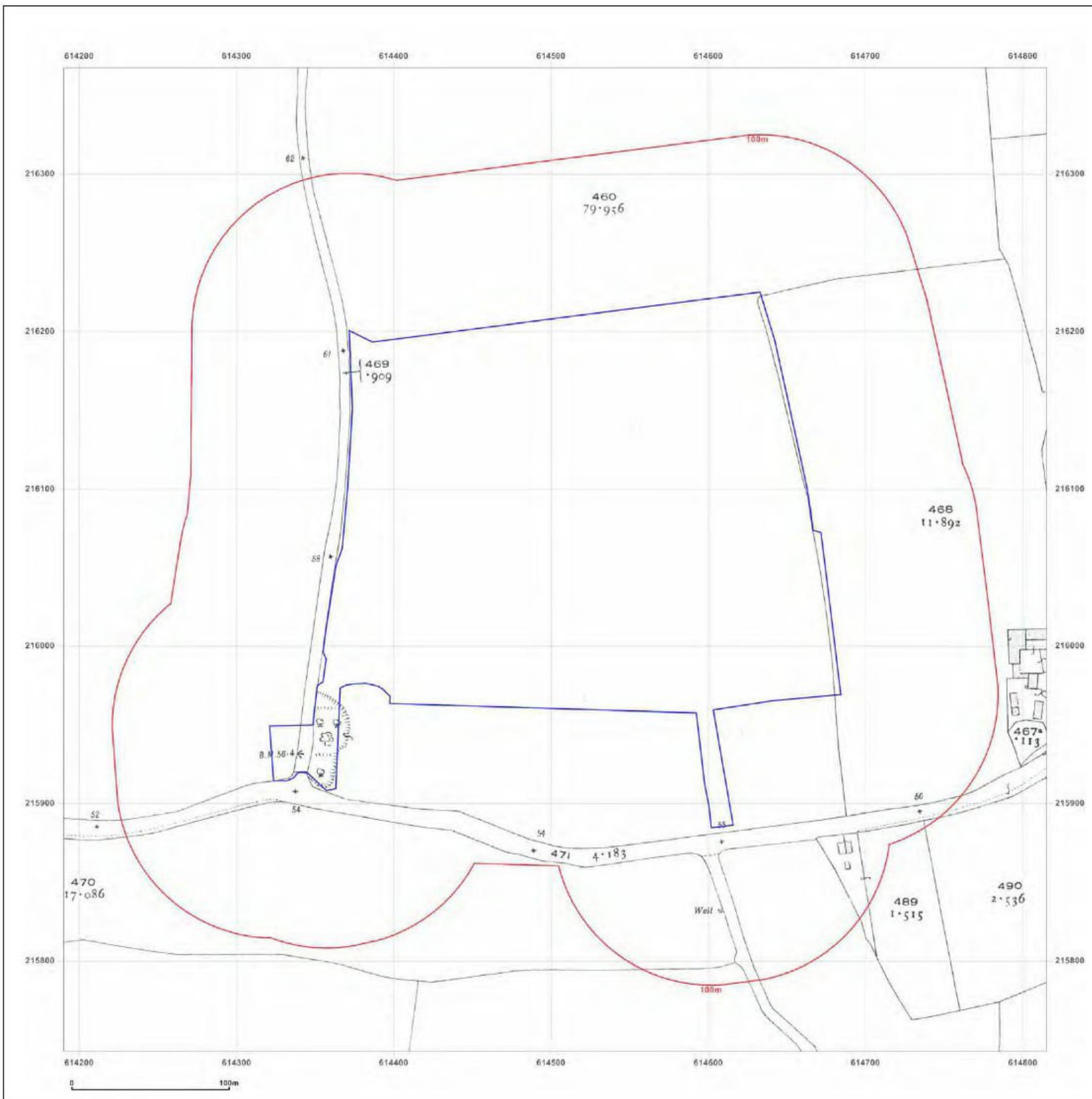
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Site Details:

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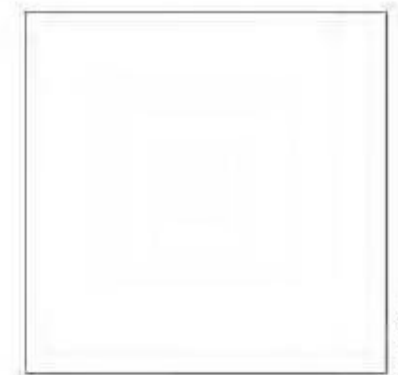
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Map Name: County Series

Map date: 1939

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Printed at: 1:2,500



Surveyed 1939
 Revised 1939
 Edition N/A
 Copyright N/A
 Levelled N/A



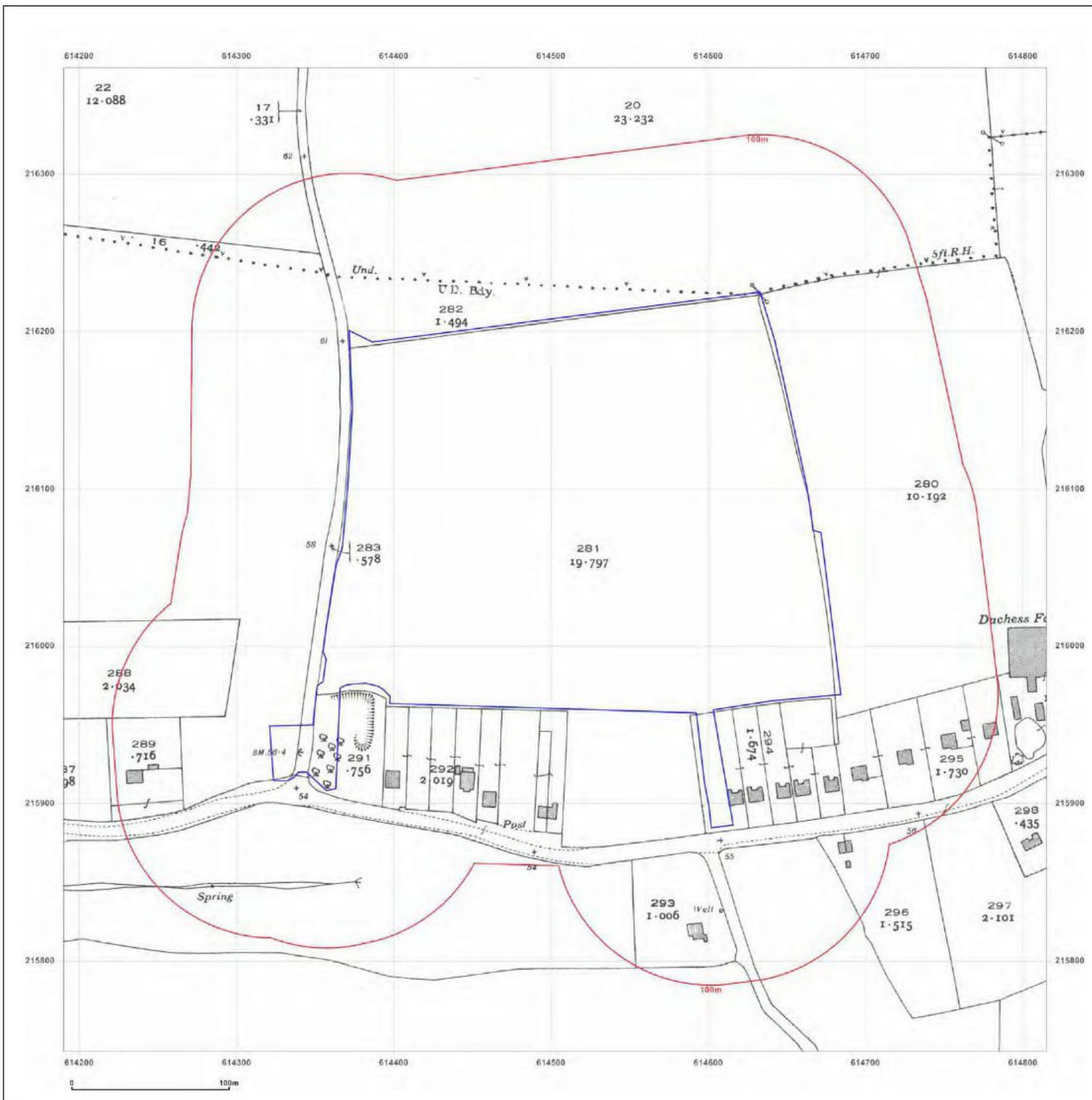
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Production date: 08 March 2018

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Client Ref: BJH_18_093
Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: National Grid

Map date: 1957

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1957
 Revised 1957
 Edition N/A
 Copyright N/A
 Levelled 1948

Surveyed 1957
 Revised 1957
 Edition N/A
 Copyright N/A
 Levelled 1948

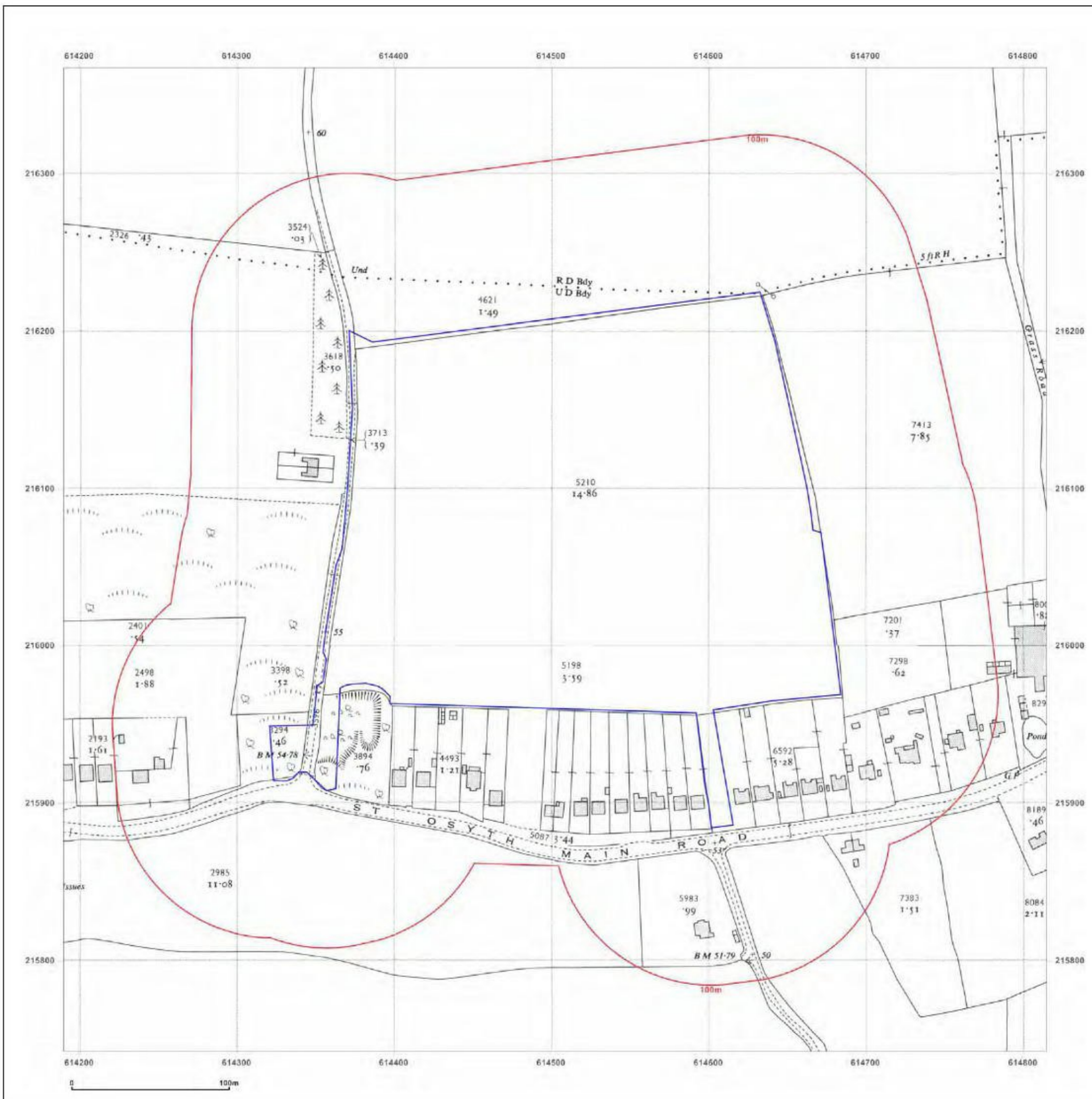


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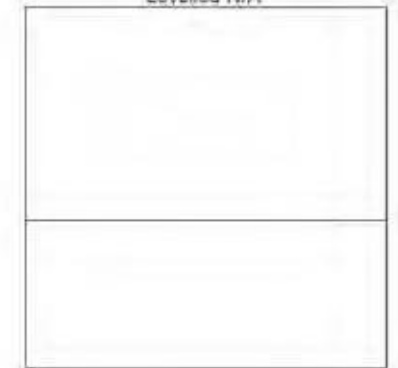
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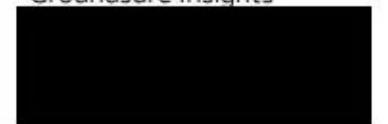
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Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright N/A
 Levelled N/A



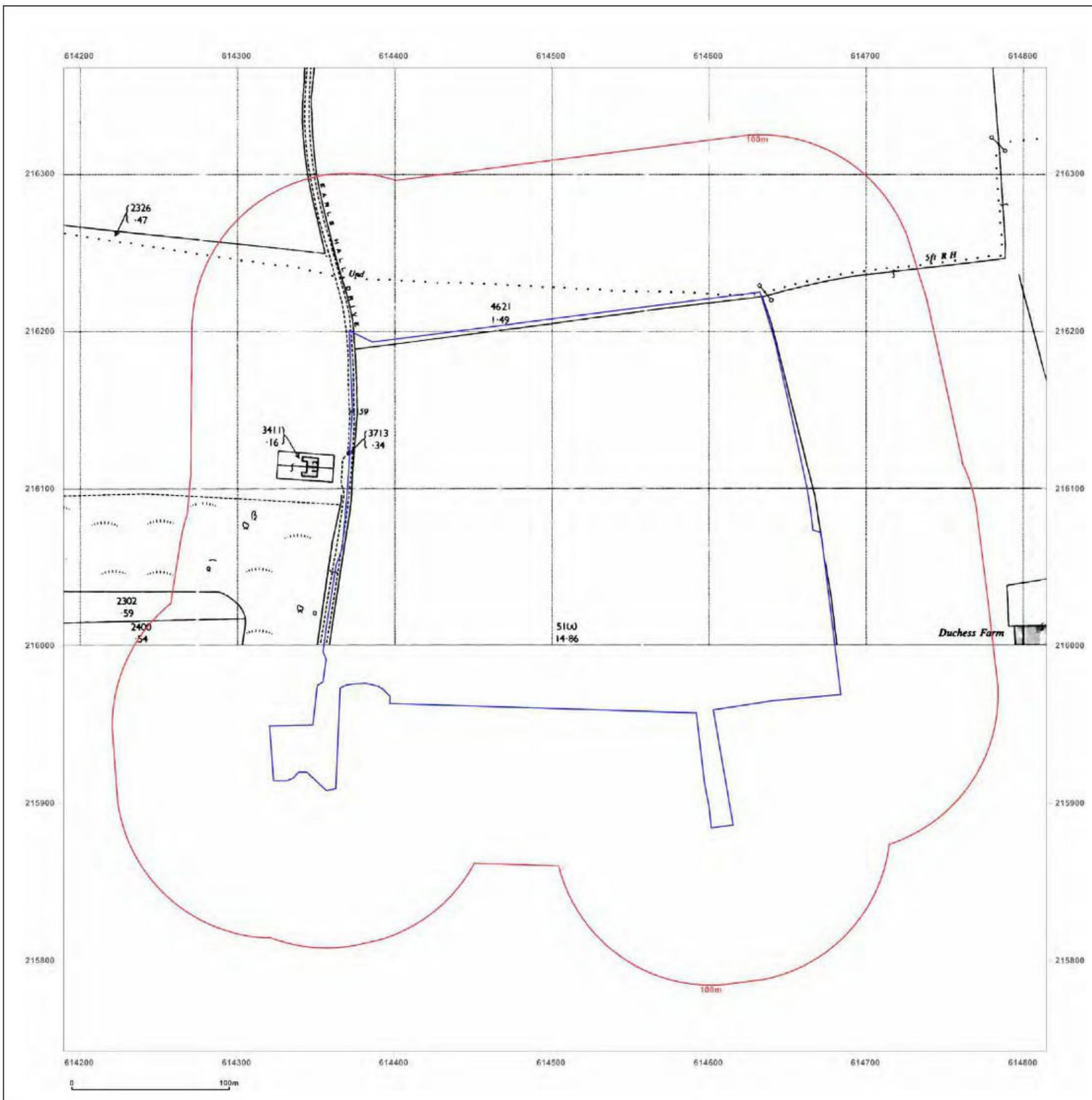
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Site Details:

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Client Ref: BJH_18_093
Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: National Grid

Map date: 1967-1971

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1967
 Revised 1967
 Edition N/A
 Copyright 1989
 Levelled 1961

Surveyed 1971
 Revised 1971
 Edition N/A
 Copyright 1972
 Levelled 1961



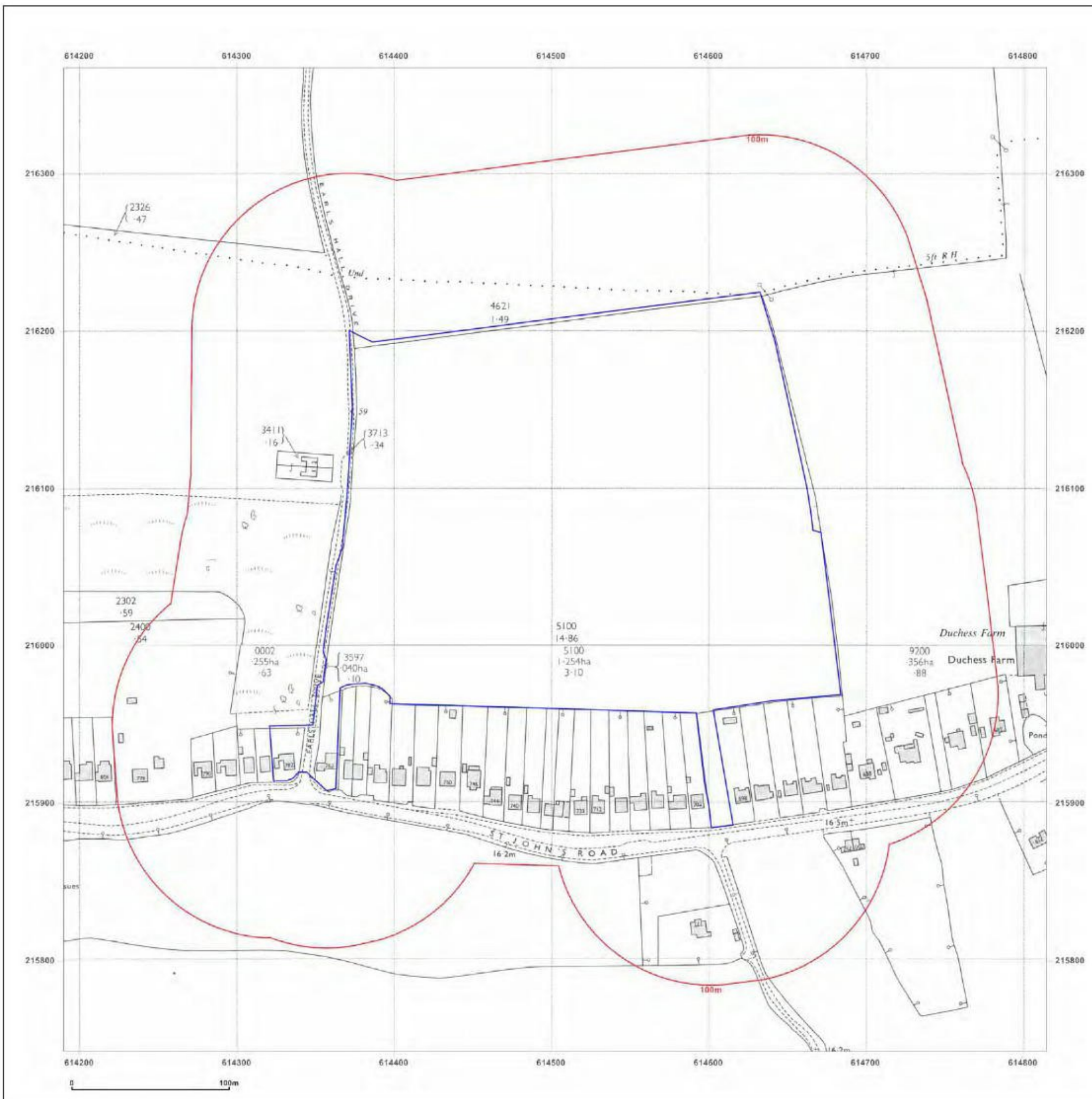
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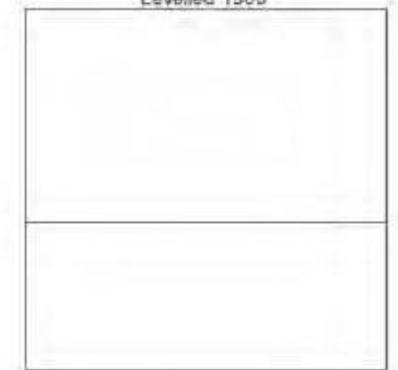
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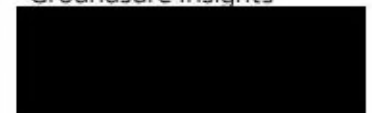
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Surveyed 1960
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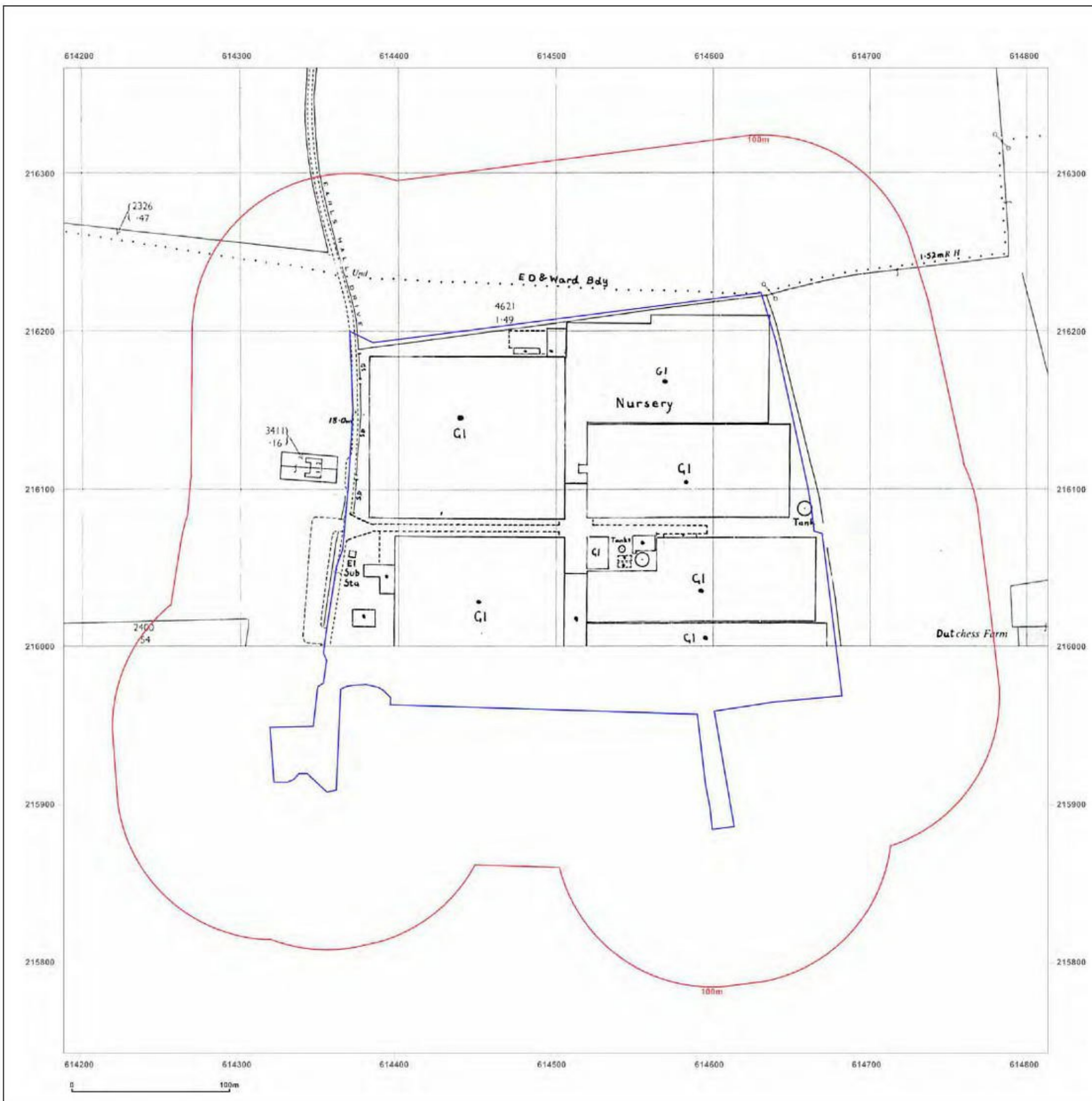
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Site Details:

ST John's Nursery, Clacton on Sea, CO16 8BP

Client Ref: BJH_18_093
Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: National Grid

Map date: 1994

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1994
 Revised N/A
 Edition N/A
 Copyright 1994
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 Edition N/A
 Copyright 1994
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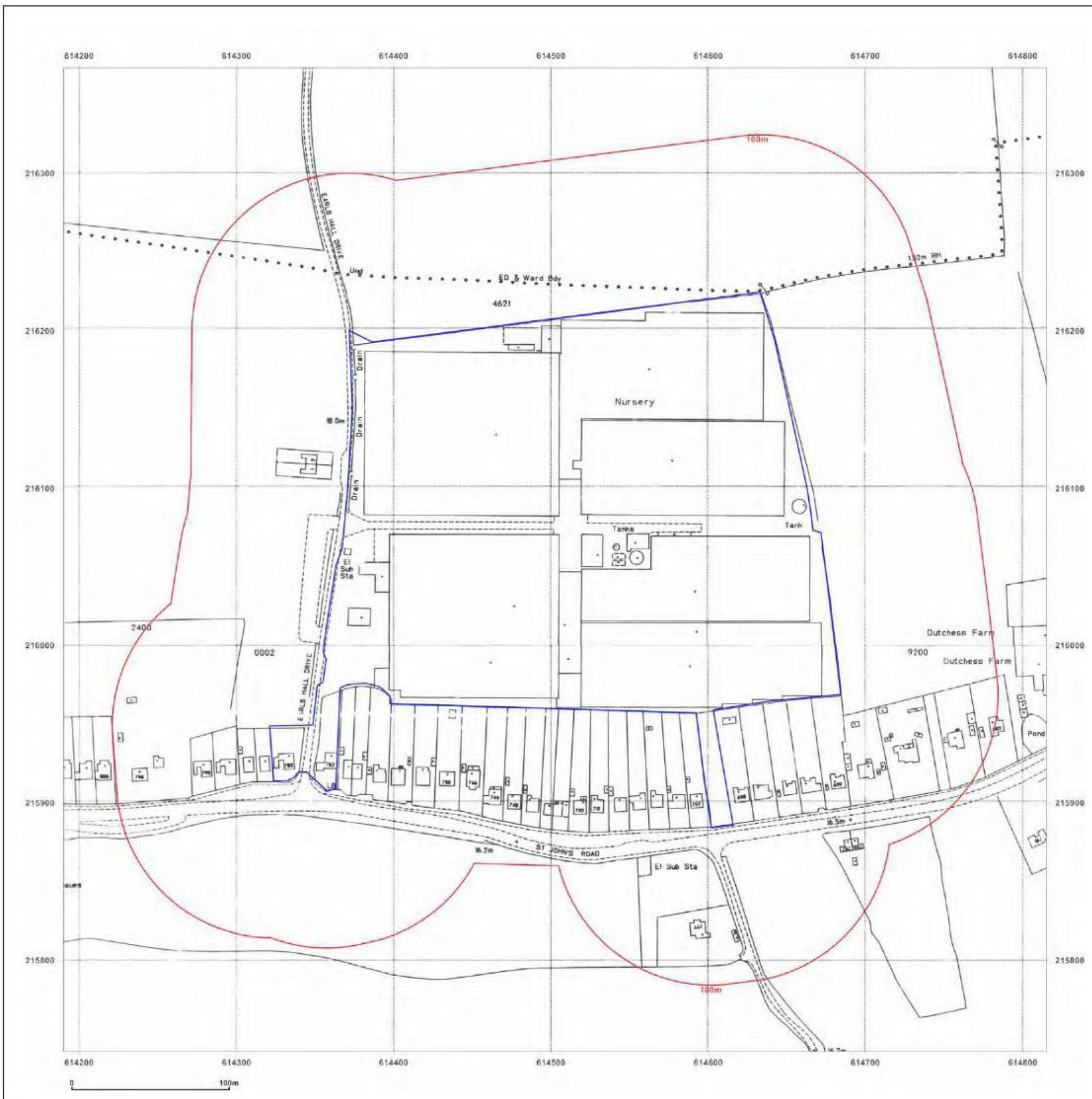
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Site Details:

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 Grid Ref: 614502, 216055

Map Name: County Series

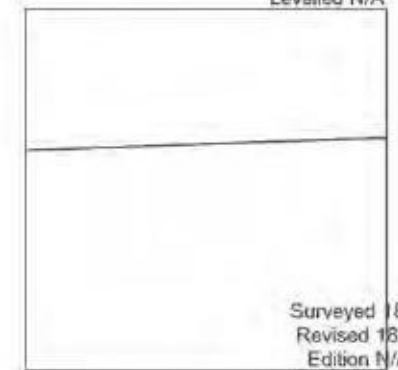
Map date: 1874

Scale: 1:10,560

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Surveyed 1874
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 Edition N/A
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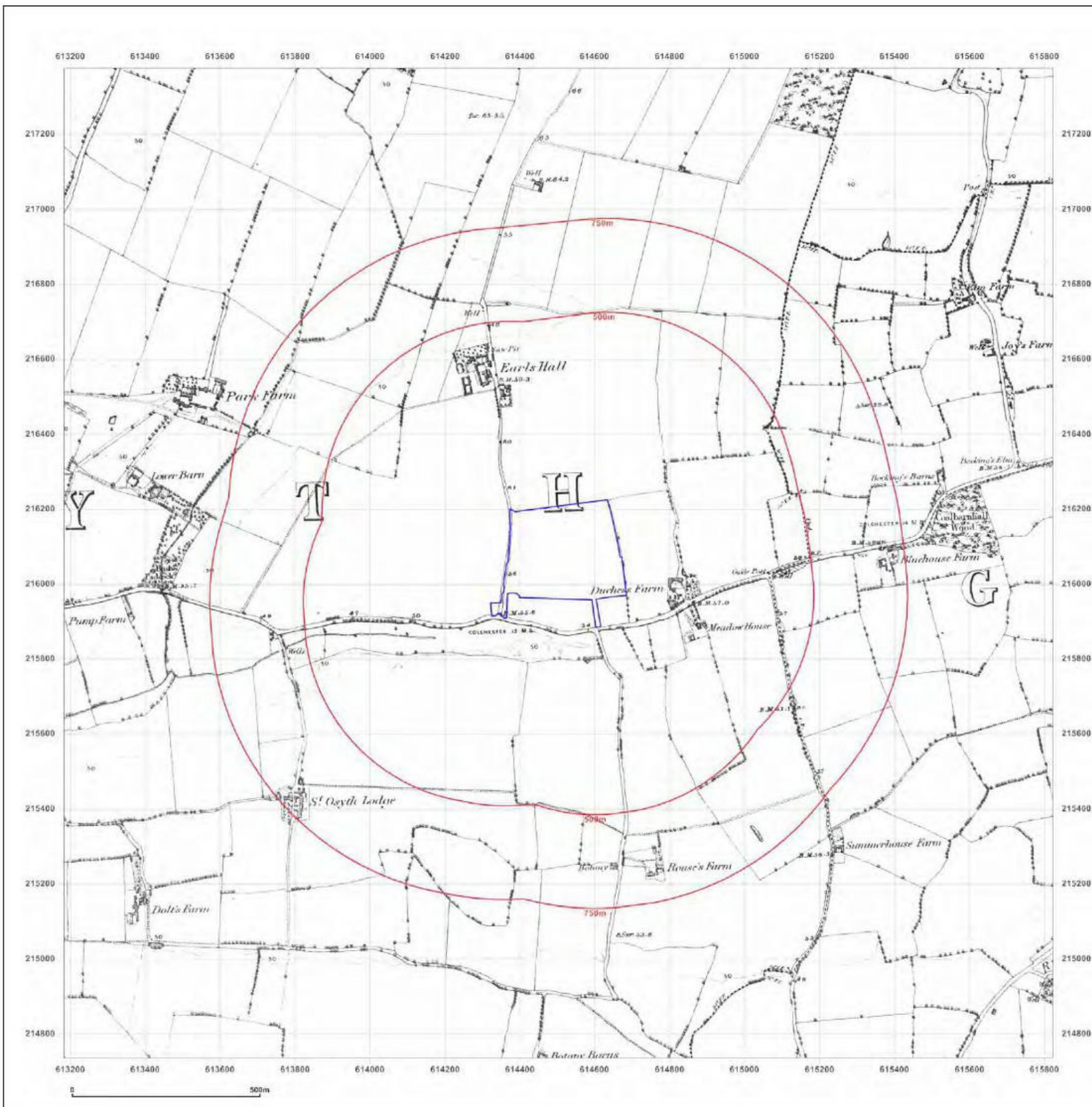
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Site Details:

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Client Ref: BJH_18_093
Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: County Series

Map date: 1896-1898

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1874
 Revised 1896
 Edition N/A
 Copyright N/A
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Surveyed 1874
 Revised 1896
 Edition N/A
 Copyright N/A
 Levelled N/A

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 Revised 1896
 Edition N/A
 Copyright N/A
 Levelled N/A



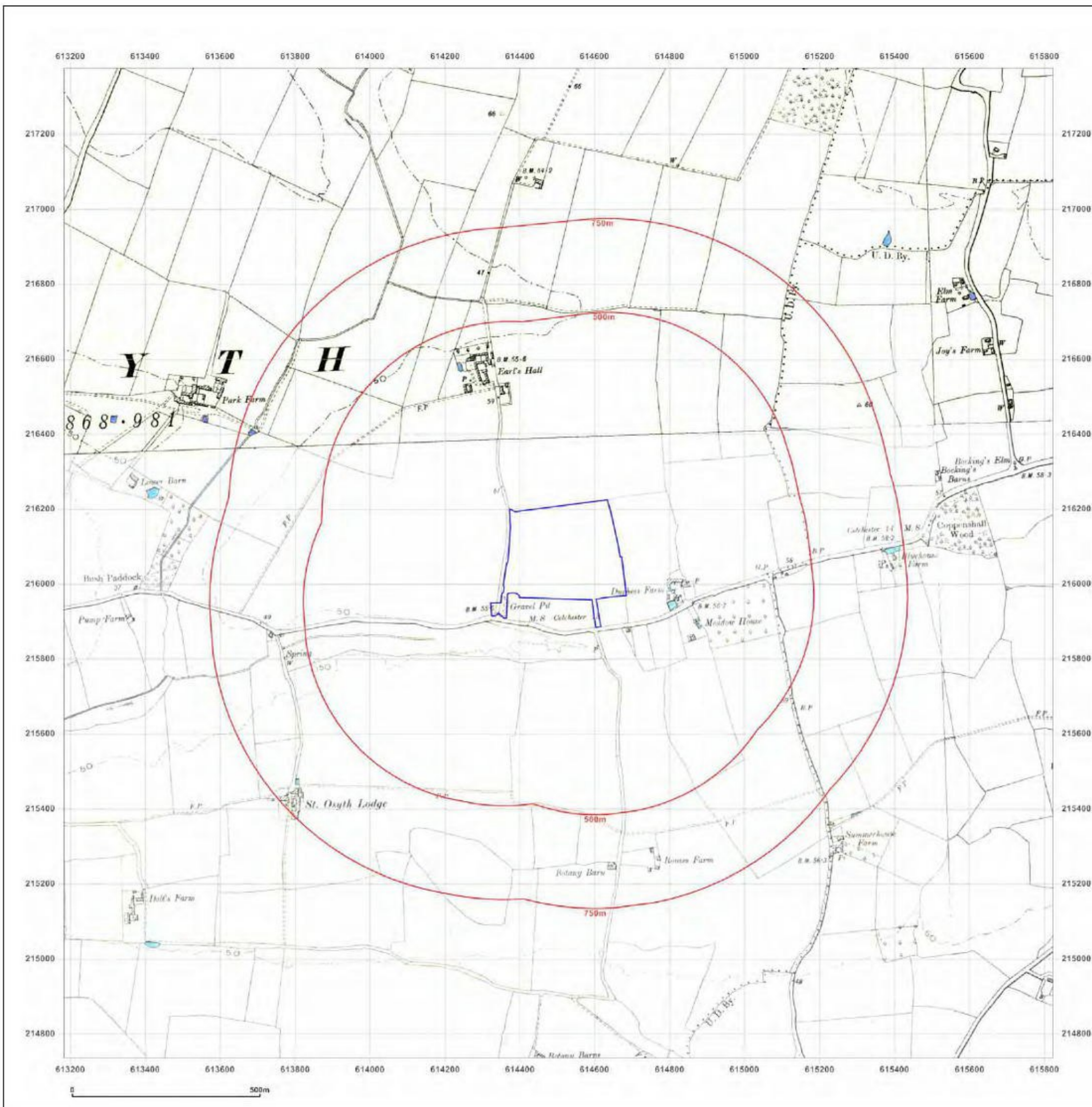
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Map legend available at:
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Client Ref: BJH_18_093
Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: County Series

Map date: 1921-1925

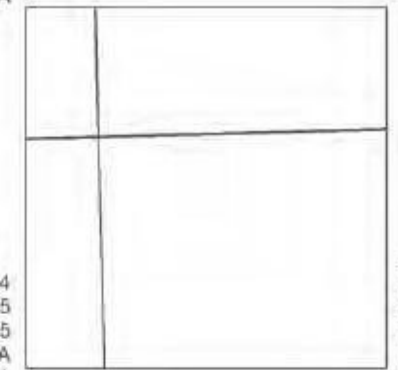
Scale: 1:10,560

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Surveyed 1874
 Revised 1921
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1874
 Revised 1925
 Edition 1925
 Copyright N/A
 Levelled N/A



Surveyed 1874
 Revised 1925
 Edition 1925
 Copyright N/A
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Surveyed 1874
 Revised 1925
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 Copyright N/A
 Levelled 1922



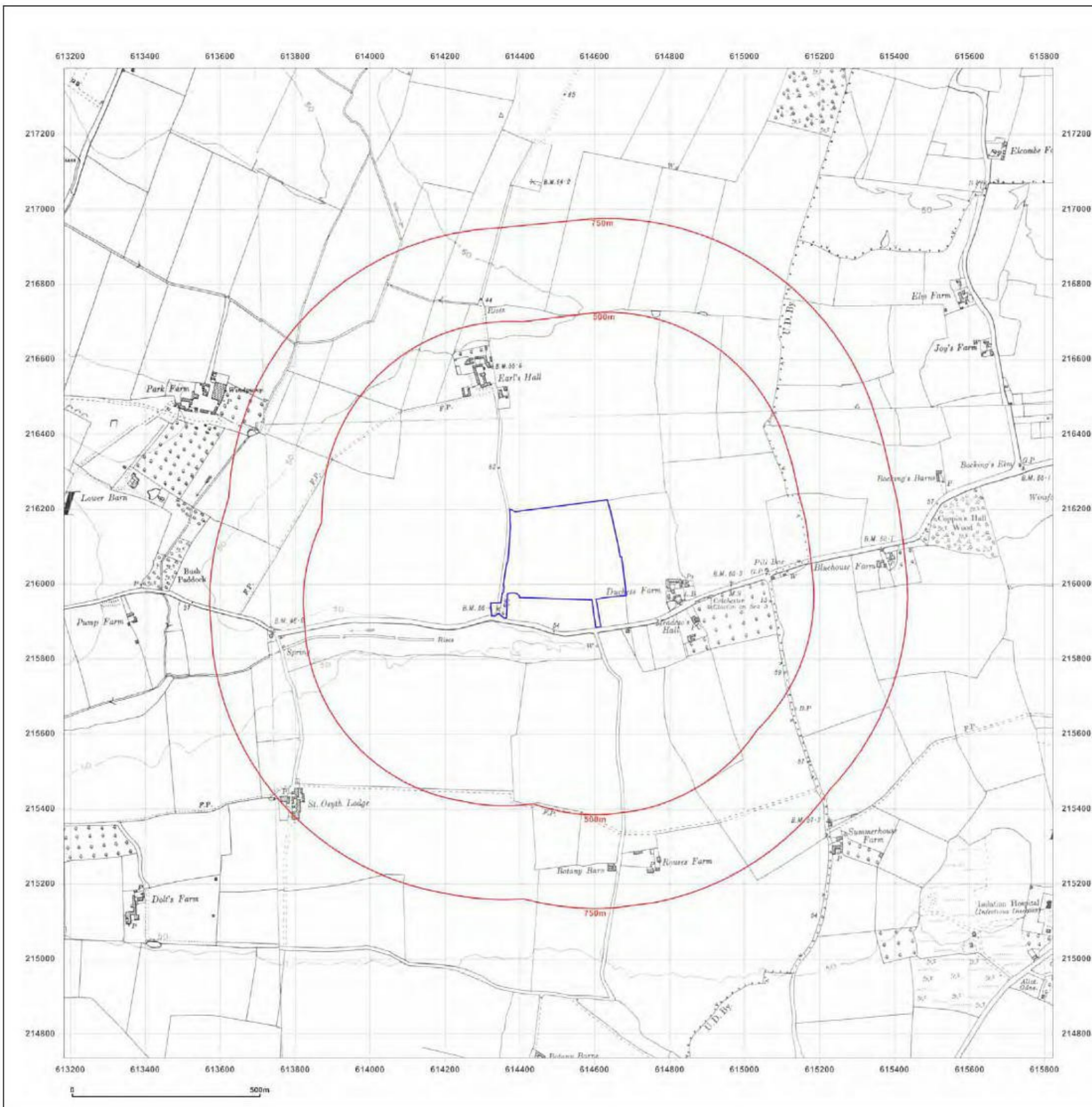
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Map legend available at:
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Site Details:

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Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: County Series

Map date: 1938

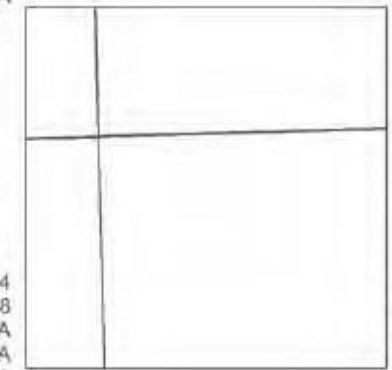
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 Revised 1938
 Edition 1938
 Copyright N/A
 Levelled N/A

Surveyed 1874
 Revised 1938
 Edition N/A
 Copyright N/A
 Levelled N/A



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 Edition N/A
 Copyright N/A
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 Revised 1921
 Edition N/A
 Copyright N/A
 Levelled 1922



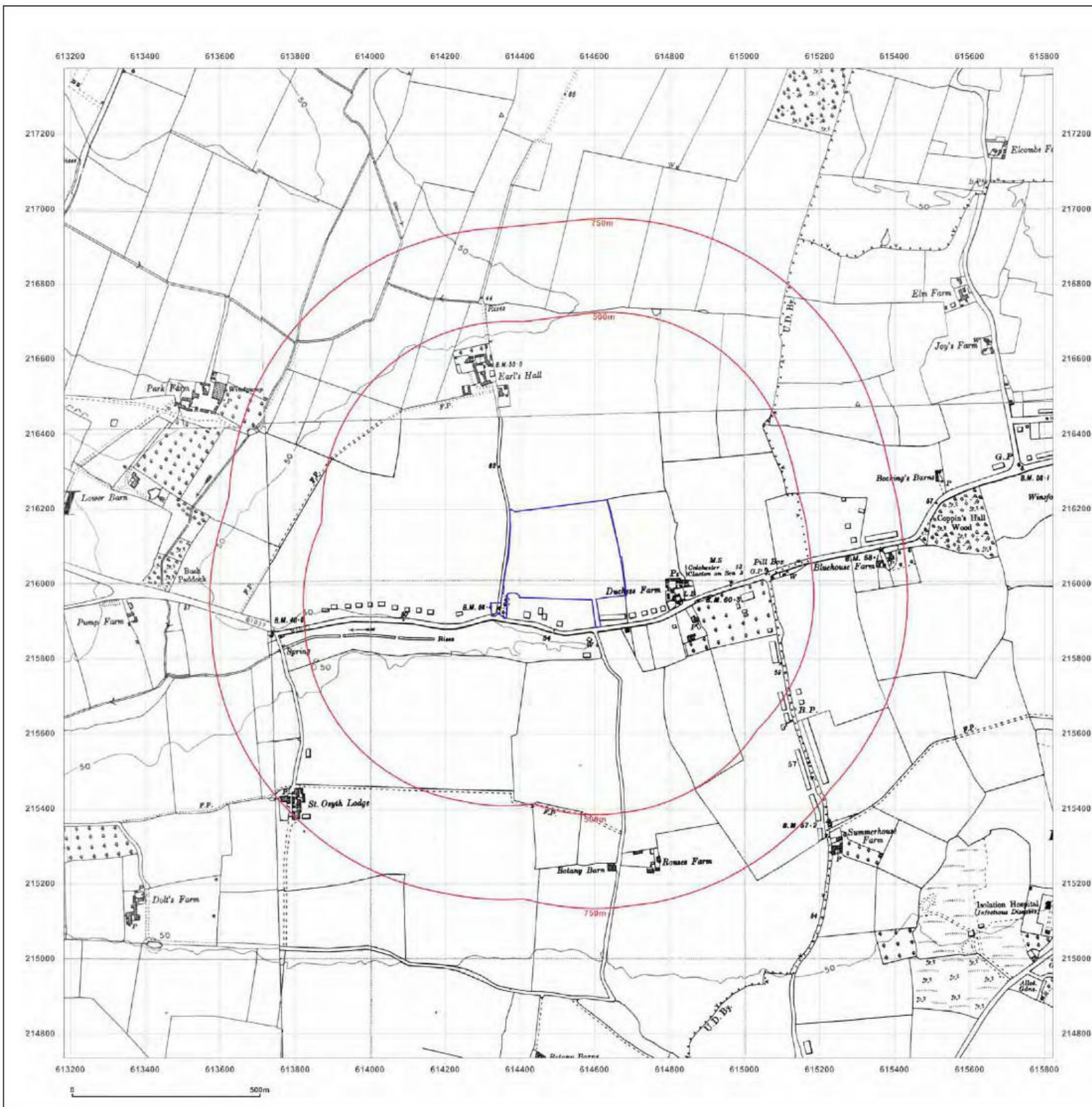
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Client Ref: BJH_18_093
Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: Provisional

Map date: 1953

Scale: 1:10,560

Printed at: 1:10,560



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 Revised 1953
 Edition N/A
 Copyright N/A
 Levelled N/A

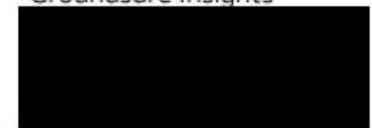
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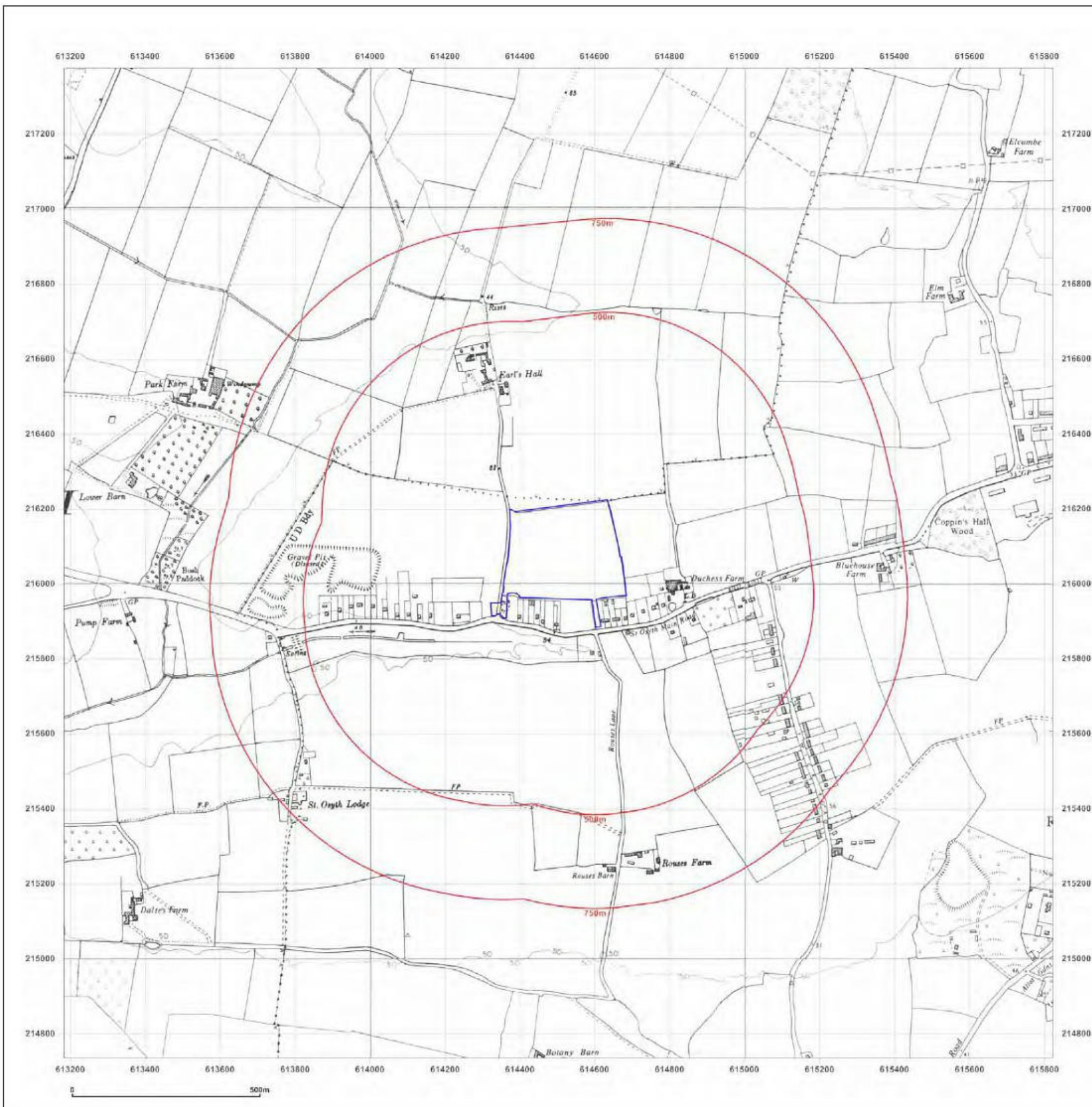
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Map legend available at:
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Site Details:

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Client Ref: BJH_18_093
Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: Provisional

Map date: 1967

Scale: 1:10,560

Printed at: 1:10,560



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 Revised 1967
 Edition N/A
 Copyright N/A
 Levelled N/A

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 Revised 1967
 Edition N/A
 Copyright N/A
 Levelled N/A

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 Levelled N/A



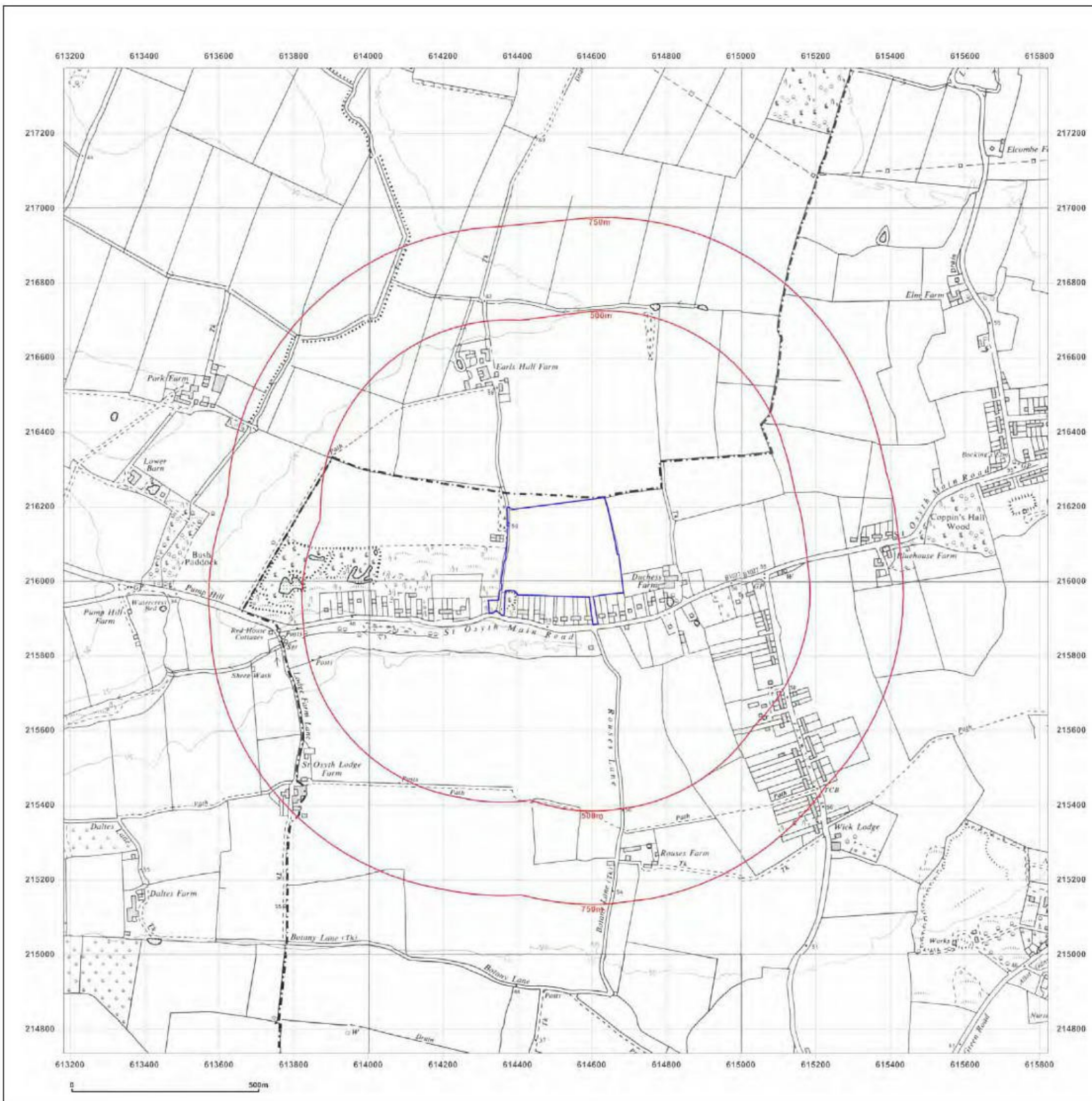
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Production date: 08 March 2018

Map legend available at:
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Site Details:

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Client Ref: BJH_18_093
Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: National Grid

Map date: 1973-1978

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1973
 Revised 1978
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1973
 Revised 1973
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1974
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 Copyright N/A
 Levelled N/A

Surveyed 1971
 Revised 1974
 Edition N/A
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 Levelled N/A



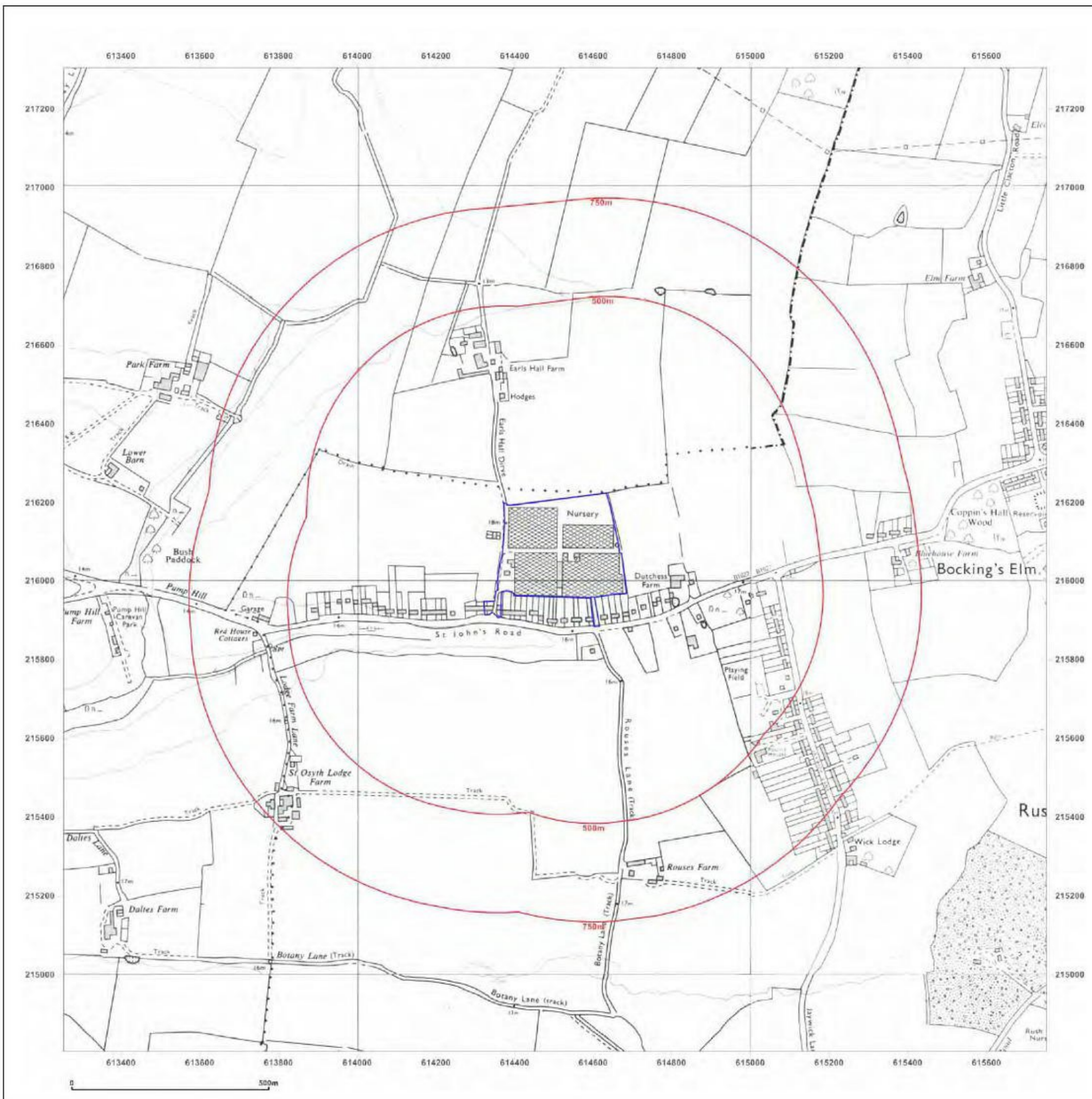
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Site Details:

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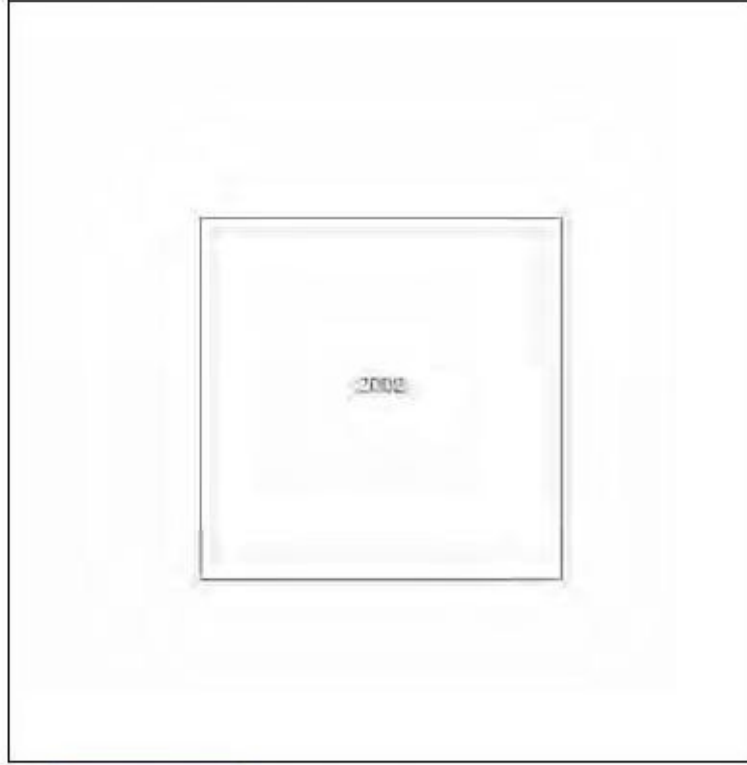
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Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



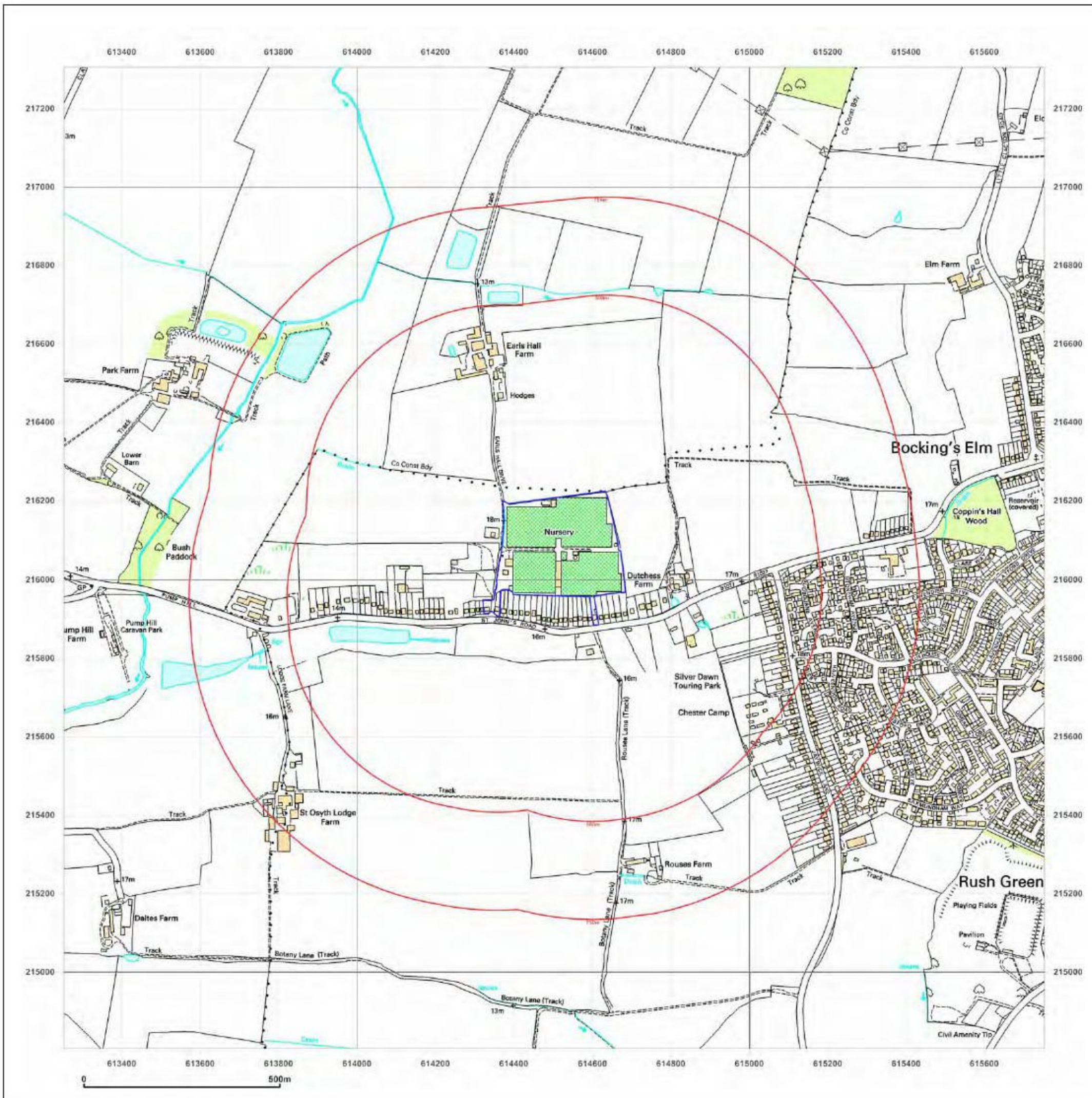
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Production date: 08 March 2018

Map legend available at:
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Site Details:

ST John's Nursery, Clacton on Sea, CO16 8BP

Client Ref: BJH_18_093
Report Ref: GS-4790681
Grid Ref: 614502, 216055

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



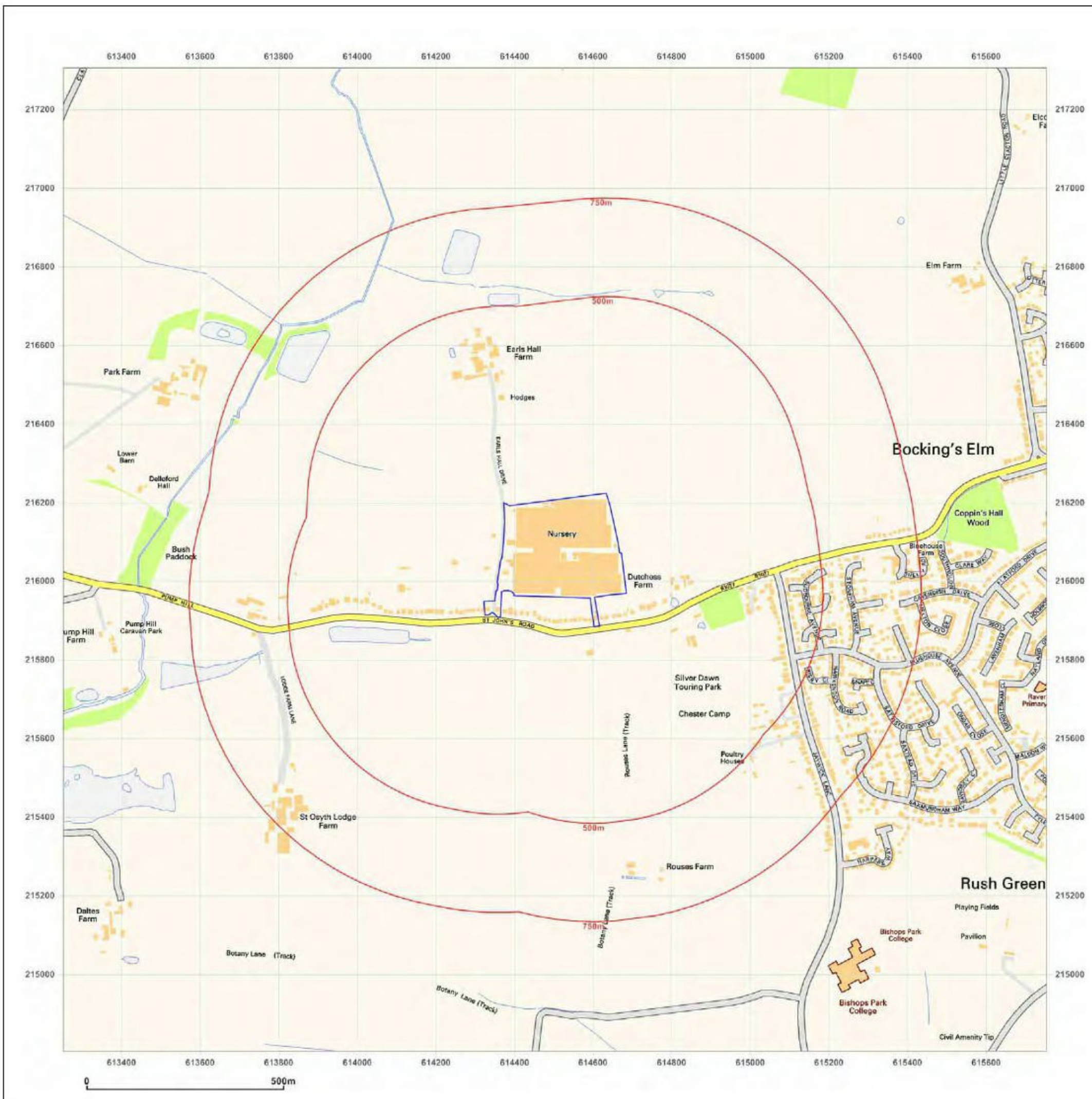
Produced by
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Production date: 08 March 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

ST John's Nursery, Clacton on Sea, CO16 8BP

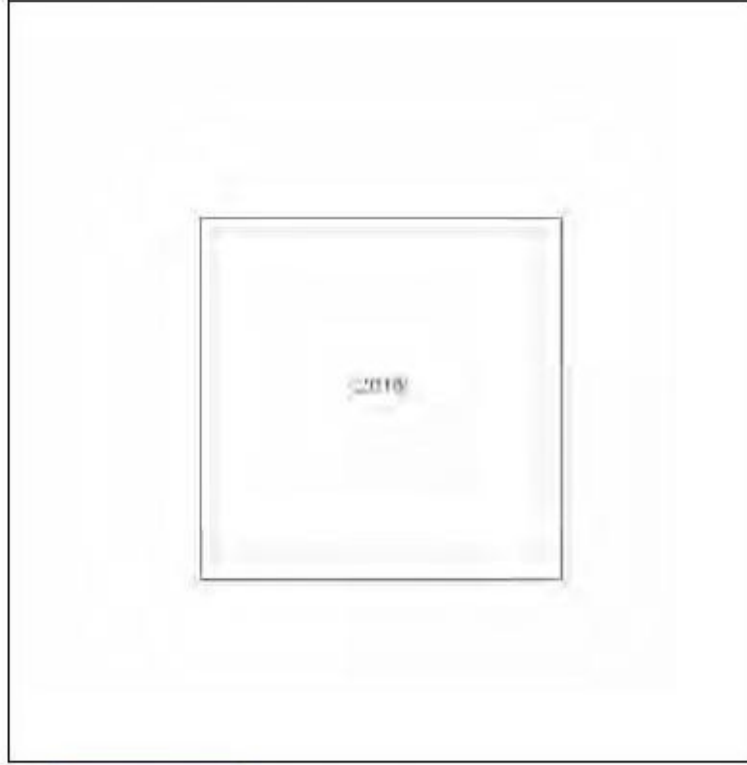
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Grid Ref: 614502, 216055

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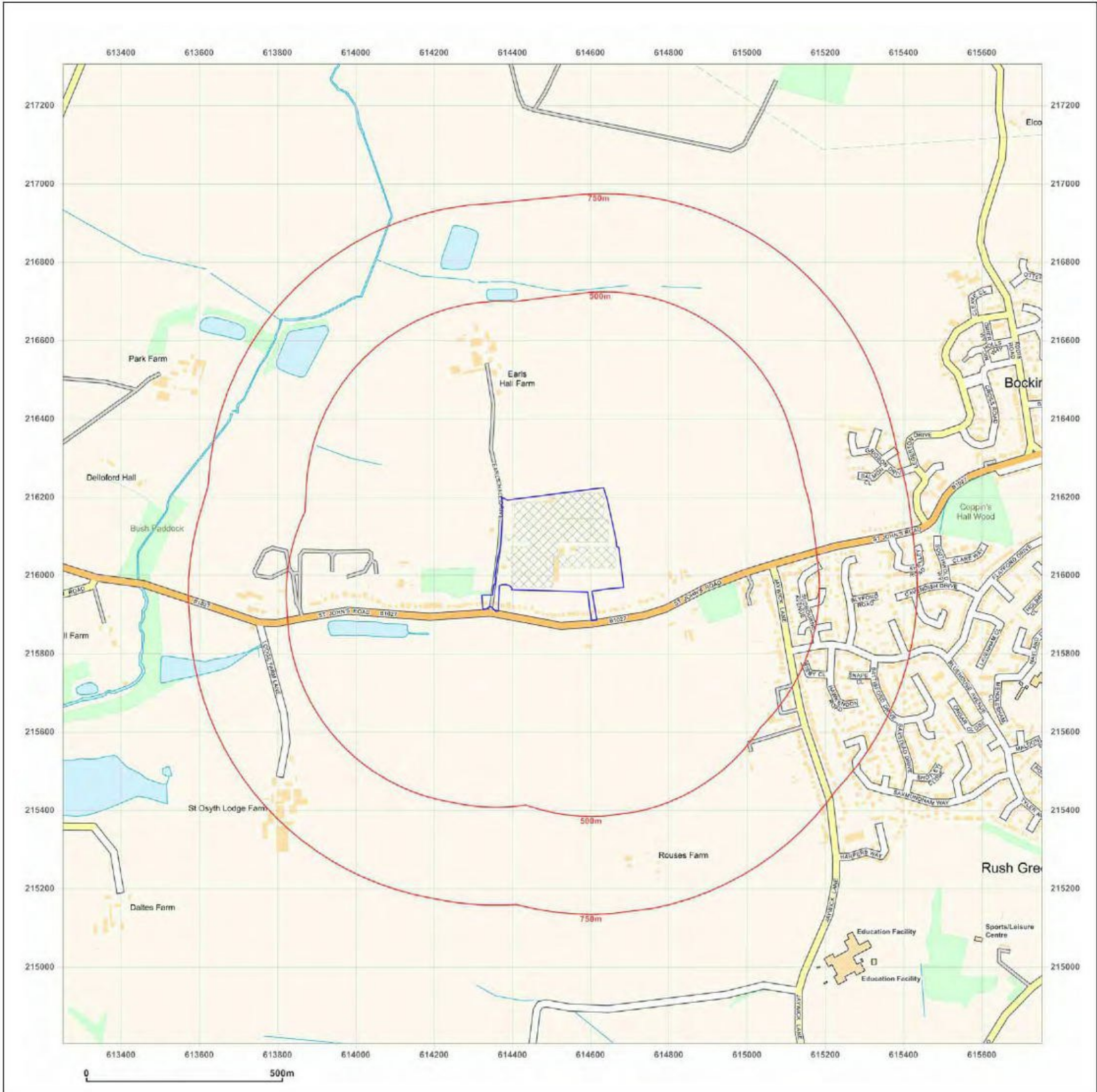


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Production date: 08 March 2018

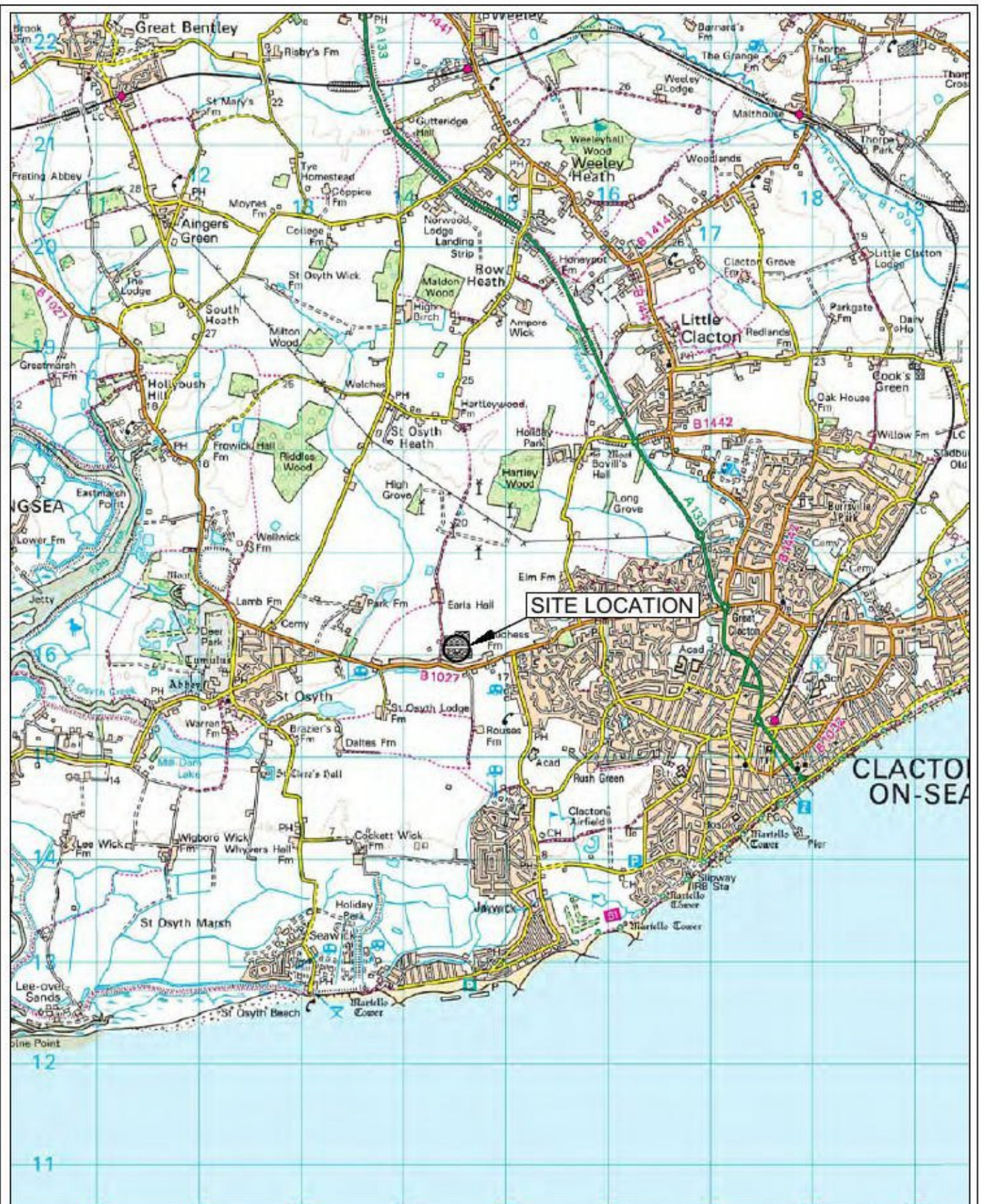
Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



APPENDIX D: DRAWINGS

Drawing 18.093/Phasel/1	Site Location Plan
Drawing 18.093/Phasel/2a	Relevant Feature Plan – External views
Drawing 18.093/Phasel/2b	Relevant Feature Plan – Internal views
Drawing 18.093/Phasel/2c	Relevant Feature Plan – Area of fuel tanks
Feasibility Test Plan by E3 Design Planning and Design Consultants	





North



Circle indicates approximate location of site



A F Howland Associates
Geotechnical Engineers

Site: St John's Nursery, Clacton-on-Sea, Essex, CO16 8BP

SITE LOCATION PLAN

Client : E3 Planning and Design Consultants Limited

Date : March 2018

Dwg : 18.091/Phase1/1

Scale 1: 50,000 @ A4

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Photo 1 – car park



Photo 2 – building (with suspected ACM)



Photo 3 – area of demolished greenhouses



Photo 4 – gas valve



Photo 8 – garden centre entrance



Photo 9 – storage area



Photo 10 – view east from north west corner



Photo 5 – ditch along eastern boundary



Photo 6 – storage area near workshop



Photo 7 – water storage tanks



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The Old Exchange
Newmarket Road
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NR4 6UF

Client: E3 Planning and Design Consultants Limited
Site: St John's Nursery, Clacton-on-Sea, Essex, CO16 8BP
Job No.: 18.093
Drawing title: Relevant Feature Plan – External views
Drawing No.: 18.093/Phase1/2a
Date: March 2018



Photo 1 – retail area, plants



Photo 2 – greenhouse, east



Photo 3 – greenhouse, west



Photo 4 – shop floor



Photo 8 – building



Photo 9 – heating system



Photo 10 – pipe insulation



Photo 5 – warehousing



Photo 6 – greenhouse



Photo 7 – leaky pipe





Photo 1 – water tank / fuel tanks



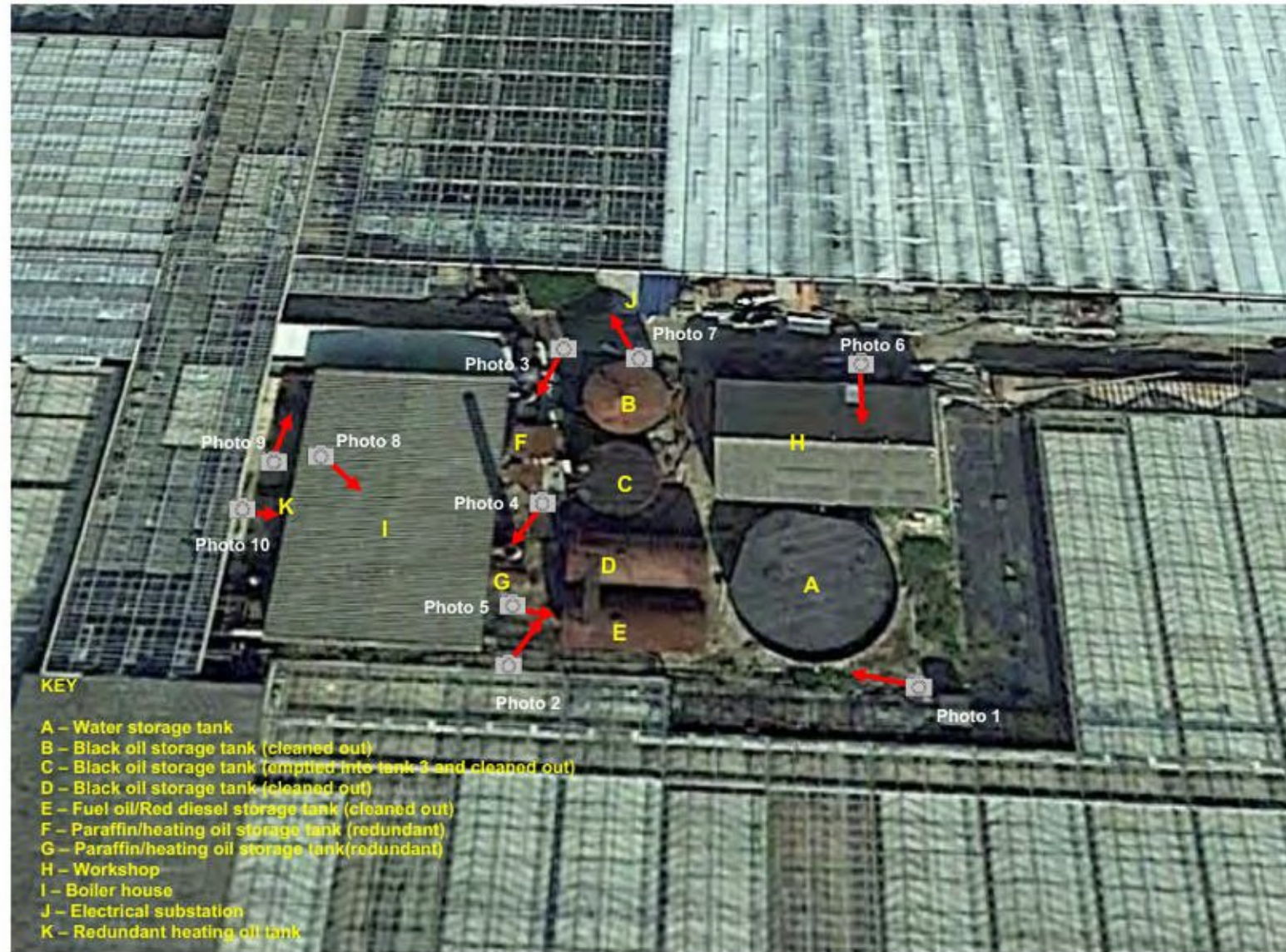
Photo 2 – former fuel tanks



Photo 3 – redundant tank



Photo 4 – redundant tank



KEY

- A – Water storage tank
- B – Black oil storage tank (cleaned out)
- C – Black oil storage tank (emptied into tank 3 and cleaned out)
- D – Black oil storage tank (cleaned out)
- E – Fuel oil/Red diesel storage tank (cleaned out)
- F – Paraffin/heating oil storage tank (redundant)
- G – Paraffin/heating oil storage tank(redundant)
- H – Workshop
- I – Boiler house
- J – Electrical substation
- K – Redundant heating oil tank



Photo 8 – boiler room



Photo 9 – former tank bases?



Photo 10 – fuel tank



Photo 5 – staining on gravel



Photo 6 – interior of workshop

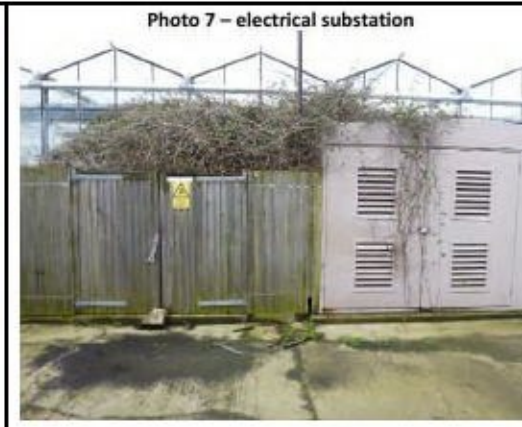


Photo 7 – electrical substation



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Client: E3 Planning and Design Consultants Limited
Site: St John's Nursery, Clacton-on-Sea, Essex, CO16 8BP
Job No.: 18.093
Drawing title: Relevant Feature Plan – Area of fuel tanks
Drawing No.: 18.093/Phase1/2c
Date: March 2018

St. John's Nursery - feasibility test plan



Key

- 01 new vehicular and pedestrian access from St John's Road
- 02 primary estate road
- 03 secondary roads to include shared surface design principles
- 04 parking courts
- 05 potential under 10s playing pitch
- 06 central public open space
- 07 local equiped area for play
- 08 pedestrian routes through site
- 09 cycle route and emergency access from St Johns Road
- 10 existing bus stops on St John's Road
- 11 small business / potential live work units with screened parking
- 12 residential development
- 13 lower density residential development to north, east and south boundaries
- 14 potential apartment block

1 and 2 bed apartments	31
2 bed houses	46
3 bed houses	81
4 bed houses	47
5 bed houses	10
total dwellings	215
residential parking	452 (inc visitor)
business units	1064 sqm
bussiness parking	36
site area	7.49 hectares
public open space	0.75 hectares
bussiness use	0.27 hectares
residential density	33 dwellings / hectare

APPENDIX E: RISK ASSESSMENT CLASSIFICATION

Classification	Definition	Examples
High Likelihood	There is a pollution linkage and an event which would either appear very likely in the short term and almost inevitable over the long term, or, there is evidence at the receptor of harm or pollution.	Free product visible on surface of sensitive water body or in the soil. On site or adjacent gassing 'landfill site'.
Likely	There is a pollution linkage and all the elements are present and in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.	Potentially contaminative land use i.e. 'Brownfield' site, fuel storage depot, factory, petrol station etc. Sensitive receptors to be introduced as part of site redevelopment. Potentially infilled land identified on site or off-site with credible migration pathway.
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.	Potential source of contamination identified i.e. historical land use as allotments or domestic above ground fuel storage tanks, areas of burning garden waste. Possible off-site infilled land.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.	No significant potential sources of contamination identified e.g. 'Greenfield' site. No potential sources of ground gas.

TABLE E1: CLASSIFICATION OF PROBABILITY

Classification	Definition	Examples
Severe	Short term (acute) risk to human health. Short term risk of pollution of sensitive water resource. Catastrophic damage to buildings/property. A short term risk to a particular ecosystem.	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Credible source of ground gas.
Medium	Chronic damage to Human Health. Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.	Concentrations of a contaminant from site exceeds the generic, or site specific assessment criteria. Leaching of contaminants from a site to a Secondary or Principal aquifer.
Mild	Pollution of non-sensitive water resources. Significant damage to buildings/structures and crops ("significant harm" as defined in the Circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures or the environment.	Concentrations of a contaminant do not exceed the generic, or site specific assessment criteria. Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as Personal Protective Equipment, etc).	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme.

TABLE E2: CLASSIFICATION OF CONSEQUENCE



APPENDIX E: RISK ASSESSMENT CLASSIFICATION (CONTINUED)

Classification	Definition
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard or there is evidence that severe harm is occurring. The risk, if realised, is likely to result in a substantial liability. Urgent investigation and remediation will be required.
High Risk	Harm or chronic damage is likely to arise to a designated receptor from an identified hazard. Investigation is required and remediation is likely to be required to ensure the site is suitable for a proposed use.
Moderate Risk	It is possible that harm or chronic damage could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe. Investigation and remediation are likely to be required to ensure the site is suitable for a proposed use.
Low/Moderate Risk	It is possible that harm or chronic damage could arise to a designated receptor from an identified hazard. Investigation is likely to be required. However, circumstances are such that investigation may prove the consequence to be mild and the site suitable for use without remediation.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard but it is likely that this harm, if realised, would at worst be mild. Investigation is unlikely to be required.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe. Investigation is not required.

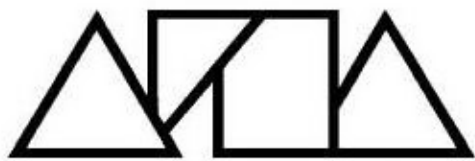
TABLE E3: DESCRIPTION OF RISK

		CONSEQUENCE			
		Severe	Medium	Mild	Minor
PROBABILITY	High likelihood	Very High	High	Moderate	Low/Moderate
	Likely	High	Moderate	Low/Moderate	Low
	Low likelihood	Moderate	Low/Moderate	Low	Very Low
	Unlikely	Low/Moderate	Low	Very Low	Very Low

TABLE E4: DETERMINATION OF RISK

Risk assessment classification v1.0 dated 21/02/2018





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