

GROUND ENGINEERING

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DESK STUDY REPORT

METHODIST CHAPEL
LITTLEWORTH DROVE
HOP POLE
DEEPING ST. NICHOLAS
LINCOLNSHIRE

Report Reference No. C14541

On behalf of:-

**Mr & Mrs Brennan
c/o Status Design
2 Edinburgh Walk
Holbeach
Spalding
Lincolnshire
PE12 7AP**

August 2018

MR & MRS BRENNAN

STATUS DESIGN

REPORT ON A DESK STUDY

AT

METHODIST CHAPEL

LITTLEWORTH DROVE

HOP POLE

DEEPING ST. NICHOLAS

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INTRODUCTION

The clients, Mr & Mrs Brennan, are proposing to convert the existing former Methodist Chapel to a residential dwelling, at Littleworth Drove, Hop Pole, Deeping St. Nicholas, Lincolnshire.

Ground Engineering Limited was commissioned by the client, under the direction of Status Design to undertake a Phase 1 desk study. The study has been compiled from historical map and internet research, reference to environmental database information and a site walkover.

This report summarises the findings of the desk study and develops a conceptual model with an evaluation relating to the likelihood of ground contamination being present beneath the site together with comments on the likely suitability of different types of foundations.

LOCATION, TOPOGRAPHY AND GEOLOGY OF THE SITE

The site is located at the Methodist Chapel, Littleworth Drove (A1175), Hop Pole, Deeping St. Nicholas, Lincolnshire. The site is centred at National Grid Reference TF 1902 1409 and its location is shown on the site location plan.

At the time of writing this report in August 2018, the site contained the Methodist Chapel, with a gravelled drive to the side (west) providing access to Littleworth Drove to the south. At the rear of the property was a modern rearward extension and gravelled courtyard garden, with plants in pots, and an above ground fish tank. Red brick walls were present along the southern, eastern and northern boundaries of the site. A hedge was present along the western site boundary with the neighbouring Chapel Bungalow.

To the front of the chapel there was a shrub, and at the rear there was a silver birch tree in a pot, as well as other plants in pots. A site walkover plan is presented following the site location plan. Photographs of the site are presented following the plans.

A gravel track was present to the east and north of the site, which provided access from Littleworth Drove to the rear of properties to the south-west of the site. The track was approximately 0.5m higher than the neighbouring fields to the east and north.

The site stands at an elevation of about 2mOD on level ground within the Lincolnshire Fens. Littleworth Drove and the properties along it are at a slightly higher elevation than the adjacent fields.

The 1984 geological map for the area shows the site covered by superficial Older Marine Alluvium (Barroway Drove Beds, now named Tidal Flat Deposits), and underlain by the solid geology of the Oxford Clay. Approximately 200m south-west of the site Nordelph Peat is shown to cover the Tidal Flat Deposits.

HISTORY OF THE SITE

Research into the site history involved reference to historical Ordnance Survey (OS) maps, aerial photographs, plans and information obtained from the internet. The map and photograph extracts studied are presented in the desk study map section, Appendix 1, and are described below. Distances are approximate.

<i>OS Map Extract Studied</i>	<i>Description</i>
1887 Lincolnshire Sheet 147NE Scale 1:10,560 Figure A	The site is developed with a Methodist Chapel (primitive) and school, built in 1867. The site is on the north-western side of Littleworth Drove, aligned north-east/south-west, and immediately north-east of housing fronting the road. Fields are shown to the east and north of the site, and drains are present along the field boundaries. A drain is also shown flanking the other side of the road. Blue Bell public house, and a smithy are denoted 150m and 170m south-west of the site.
1888 Lincolnshire Sheet 147.7 Scale 1:2500 Figure B	The site and the immediate surrounding area appear generally unchanged. Small outbuildings and enclosures are shown at the rear, northern, end of the site.
1904 Lincolnshire Sheet 147.7 Scale 1:2500 Figure C	A well is shown on the site to the rear of the chapel. The fields north and east of the site are denoted as allotment gardens. A new house is shown 100m east of the site on the other side of the road.
1950 Lincolnshire Sheet 147NE Scale 1:10,560 Figure D	The chapel is denoted on the site, which was re-erected in 1922. The chapel now has a central front porch, replacing two former porches. Housing with out-buildings remain to the south-west of the site, and fields to the north and east. A new house is shown 70m east of the site on the other side of the road.
1958 Sheet TF11SE Scale 1:10,560 Figure E	The site and its immediate surroundings appear unchanged.
1973 Sheets TF1813, TF1814, TF1913 & TF1914 Scale: 1:2500 Figure F	The site has the chapel on the site, however the well, outbuildings and enclosures are no longer shown. Hop Pole Row and new houses are shown adjacent the site to the south-west, including Chapel Bungalow denoted. A track is shown in the field edge adjacent the eastern and northern boundaries of the site. Jubilee Hall is shown 110m south-west of the site. The smithy is no longer shown adjacent the Blue Bell public house 150m to the south-west. A Joinery Works is shown 230m north-east of the site.

<i>OS Map Extract Studied</i>	<i>Description</i>
1979-82 Sheet TF11SE Scale 1:10,000 Figure G	The site and its immediate surroundings appear generally unchanged. A sewage pumping station is denoted 250m west of the site.
1995 Sheets TF1813, TF1814, TF1913 & TF1914 Scale: 1:2500 Figure H	The site and its immediate surroundings appear unchanged.
2002 Raster Map Scale 1:10,000 Figure I	The site and its immediate surroundings appear unchanged.
2010 Sheet TF11SE Scale 1:10,000 Figure J	The site area appears unchanged. A new building is shown to the rear of the Blue Bell public house to the south-west.
2014 Sheet TF11SE Scale 1:10,000 Figure K	The site and its immediate surroundings appear unchanged.
2016 GroundSure Aerial Photograph of Site (Appendix 2)	The chapel is shown on the site, surrounded by hardstanding. A new outbuilding is shown to the rear of a house to the south-west of the site.
2018 Sheets TF1813, TF1814, TF1913 & TF1914 Not to Scale Figure L	The site and its immediate surroundings appear unchanged.

Summary of Historical Information

A chapel and school was built on the site in 1867, which was re-erected in 1922, and has remained on the site to the present day. A well was shown to the rear of the chapel on the 1904 to 1958 Ordnance Survey extracts. Small outbuildings and enclosures were also shown at the rear of the site on the 1904 to 1958 map extracts.

Housing was shown to the south-west of the site in the 1880s, which had been redeveloped between 1958 and 1973, and remains to the present day. Fields have bounded the site to the north and east, which were denoted as allotment gardens on the 1904 map extract. A smithy was shown 170m south-west of the site in the 1880s, which had been demolished between 1958 and 1973.

SUMMARY OF ENVIRONMENTAL DATA

Appendix 2 contains information derived from Environmental Databases for a radius of up to 2,000m from the site. The information covers datasets held by the Groundsure with contributors including the local authority, the Environment Agency (EA), British Geological Survey, Ordnance Survey and the Coal Authority and the results, within a radius of 250m, are summarised below:

1. Historical Industrial Sites	On-Site	0 - 250m
Potentially Contaminative Uses (1:10,000 mapping)	0	7
Historical Tank Database	0	0
Historical Energy Features Database	0	0
Historical Petrol & Fuel Site Database	0	0
Historical Garage & Motor Vehicle Repair Database	0	0
Potentially Infilled Land	0	0
2. Environmental Permits, Incidents and Registers	On-Site	0 - 250m
Sites Holding Environmental Permits/Authorisations	0	1
Records of COMAH and NIHHS Sites	0	0
Environment Agency Recorded Pollution Incidents	0	0
Sites Determined as Contaminated Land under Part IIA EPA 1990	0	0
3. Landfill and Other Waste Sites	On-Site	0 - 250m
Landfill Sites	0	0
Landfill and Other Waste Sites	0	0
4. Current Land Use	On-Site	0 - 250m
Current Industrial Sites Data	0	5
Records of Petrol and Fuel Sites	0	0
Underground High Pressure Oil and Gas Pipelines	0	0
5. Geology		
Artificial Ground or Made Ground records	No	
Superficial Ground and Drift Geology records	Yes	
6. Hydrogeology and Hydrology	On-Site	0 - 250m
Productive strata within superficial geology	No	
Productive strata within solid geology	No	
Groundwater Abstraction Licences	0	0
Surface Water Abstraction Licences	0	3
Potable Water Abstraction Licences	0	0
Source Protection Zones	0	0
River Quality Data	No	No
Water Network Entries	0	26
Surface Water Features	No	Yes

7. Flooding					
Environment Agency indicative Zone 2 floodplains within 250m of site				Yes	
Environment Agency indicative Zone 3 floodplains within 250m of site				Yes	
Risk of flooding from rivers & the sea (RoFRaS) rating				Low	
Flood defences within 250m of site				No	
Any areas benefitting from flood defences within 250m of site				No	
Flood storage areas within 250m of site				No	
Maximum BGS groundwater flooding susceptibility within 50m of site				Not Prone	
BGS confidence rating for groundwater susceptibility areas				Not applicable	
8. Designated Environmentally Sensitive Sites				On Site	0 - 250m
Environmentally sensitive sites (Nitrate Vulnerable Zone)				1	0
9. Natural Hazards (on site)					
Hazard	Negligible	Very Low	Low	Moderate	High
Shrinking or Swelling Clay	-	-	On-site	-	-
Landslides	-	On-site	-	-	-
Soluble rocks	On-site	-	-	-	-
Compressible Ground	-	-	-	On-site	-
Collapsible Rocks	On-site	-	-	-	-
Running Sand	-	-	-	On-site	-
9.2. Radon					
The property is not in a Radon Affected Area, as less than 1% of properties are above the action level. No Radon Protective Measures are required for new properties or extensions.					
10. Mining					
Coal mining areas within 75m of site			No		
Non-coal mining areas within 50m of site			No		
Brine affected areas within 75m of study site			No		

Database Summary

The unspecified tank recorded 41m south-west of the site is actually a well. Potentially contaminative historical uses around the site included the smithy to the south-west, Joinery Works to the north-east, and Sewage Pumping Station to the west of the site. There are no historical energy features within 250m of the site. There are no historical petrol, fuel or garage sites recorded on, or within 250m of the site. There are no areas of potentially infilled land on, or within 250m of the site.

There is a discharge consent for final/treated effluent at the sewage pumping station 235m west of the site. There are no dangerous or hazardous sites, or landfills recorded on, or within 250m of the site. No pollution incidents have been recorded on, or within 250m of the site. The current industrial land uses registered closest to the site relate to the works to the

east; a silo at a farm to the north-east; and the sewage pumping station to the west. There are no petrol or fuel sites, underground high pressure oil or gas pipelines on, or within 250m of the site.

The site is underlain by superficial Tidal Flat Deposits (clay and silt), which is designated by the Environment Agency (EA) as an 'unproductive' stratum. The site is underlain by solid geology Oxford Clay Formation, which is also designated by the EA as an 'Unproductive' stratum. The site is not within a Source Protection Zone. There are no groundwater abstraction licences on, or within 250m of the site, however there is a surface water abstraction from a drain 117m south-west of the site. There are drains recorded along field boundaries around the site, the closest is 97m east. The site is within a Zone 2 and Zone 3 floodplain. The EA risk of flooding from rivers and the sea is 'very low' to 'low' for the site. There are no flood defences within 250m of the site.

The site is assessed as having a 'moderate' hazard from compressible ground and running sand; a 'very low' hazard from landslides; a 'low' hazard from shrinking or swelling clay; and a 'negligible' hazard from soluble rocks and collapsible rocks. No radon protection measures are required for new residential properties. The site is located within a nitrate vulnerable zone. The site is not within a coal mining area, other mining area or brine affected area.

PRELIMINARY RISK ASSESSMENT

Potential sources of contamination present on or beneath the site would relate primarily to; the historical use of the site; the presence of contaminated soil or groundwater; and the potential presence of hazardous or ground gas beneath the site.

In order to assess the risks associated with the presence of ground contamination the linkages between the sources and potential receptors to contamination need to be established and evaluated. This is in accordance with the Environmental Protection Act 1990, which provides a statutory definition of Contaminated Land. To fall within this definition it is necessary that, as a result of the condition of the land, substances may be present on or under the land such that

- *Significant harm is being caused or there is a significant possibility of such harm being caused; or*
- *Pollution of controlled waters is being, or is likely to be, caused*

There are three principal factors that are assessed whilst undertaking a qualitative risk assessment for any site. These are the presence of a contamination source, the existence of migration pathways and the presence of a sensitive target(s). It should be noted that it is necessary for each element of source, pathway and target to be present in order for exposure of a human or environmental receptor to occur.

UK Government guidance on the assessment of contaminated land, requires risk to human health and the environment to be reviewed using source i pathway i target relationships. If each of these elements is present, the linkage provides a potential risk to the identified targets.

Contaminants or ***potential pollutants*** identified as ***sources*** in relation to the identified previous uses are listed overleaf in Table 1.

Table 1: Identified Potential Contaminant Sources

<i>Contaminant Source</i>	<i>Comments</i>
Drainage/Buildings	Effluent from leaking drains would provide a contaminant source. The Chapel may have asbestos containing materials (ACM).
Soil Beneath Site	Contamination may be present within any made ground materials on the site.
Soil Gas	Potential soil gas generated from made ground or underlying geology.
Ground Contamination Outside Site Boundary	Ground contamination migrating from adjoining sites.

A **Pathway** is defined as one or more routes through which a receptor is being, or could be, exposed to, or affected by, a given contaminant.

Potential **Target or Receptors** fall within the categories of Human Health, Water Environment, Flora and Fauna, and Building Materials.

There are a number of possible pathways for the contaminants identified on the site to impact human and/or environmental receptors and these are summarised in Tables 2 and 3.

Table 2: Human Receptors and Pathways

<i>Human Receptor-Mechanism</i>	<i>Typical Exposure Pathway</i>
Human Inhalation	Breathing Dust and Fumes Breathing Gas emissions
Human Ingestion	Eating -contaminated soil, for example by small children -produce grown on contaminated soil Ingesting dust or soil on vegetables Drinking contaminated water
Human Contact	Direct skin contact with contamination Direct skin contact with contaminated liquids

Table 3: Water Receptors and Pathways

<i>Receptor-Water Environment</i>	<i>Typical Exposure Pathway</i>
Groundwater The superficial Tidal Flat Deposits and the solid geology Oxford Clay are indicated to be 'Unproductive' strata. The site is not within a Source Protection Zone.	Surface infiltration of atmospheric waters into the soils beneath the site could wash or dissolve potential contaminants and migrate to underlying groundwater. Contamination leads to restriction/prevention of use as a resource, for example, drinking water, and can have secondary impacts on other resources, which depend on it.
Surface Water The nearest surface water feature is a drain 97m east of the site. The site is within a Zone 2 and Zone 3 floodplain.	Surface infiltration of atmospheric waters into the soils beneath the site could wash or dissolve potential contaminants and laterally migrate. Contamination leads to a restriction/prevention of use: -as drinking water resource -for amenity use Effects on aquatic life.

Preliminary Conceptual Model

Assessment of the potential linkage between ground contamination sources, human and environmental receptors have been assessed based on the desk study research documented in the preceding sections of this report.

A generalised preliminary conceptual model is presented below in Table 4.

Table 4: Preliminary Conceptual Model Relative to Proposed Residential Development

Receptors	Pathway	Estimated Potential for Linkage with Contaminant Sources			
		Drainage & Buildings	Soil Beneath Site	Soil Gas	Ground Contamination Outside Site Boundary
Human Health i ground or demolition workers	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Likely	Low likelihood	Low likelihood	Unlikely
Human Health i end users	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Unlikely	Low likelihood	Low likelihood	Unlikely
Water Environment	Migration through ground into surface water or surrounding groundwater	Low likelihood	Low likelihood	Low likelihood	Low likelihood
Flora	Vegetation on site growing on contaminated soil	Low likelihood	Low likelihood	Unlikely	Unlikely
Building Materials	Contact with contaminated soil	Low likelihood	Low likelihood	Unlikely	Low likelihood
Key to Table 4 Estimated Potential for Linkage with Contaminant Source		Definition			
High likelihood		There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.			
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.			
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 an event would take place, and is less likely in the shorter term.			
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.			
N/A		Not Applicable.			

CONCLUSIONS

The site was occupied by a chapel and school built in 1867, which was ére-
erectedôin 1922, and remains to the present day with a modern extension to the rear. At the time
of the site walkover in August 2018, the chapel was being converted to a residential dwelling.
The site is anticipated to be underlain by superficial Tidal Flat Deposits, covering the solid
geology Oxford Clay Formation.

Drainage and Well

Any redundant foul drain runs should be removed from beneath the site. The
integrity of existing drainage should be checked, and damaged sections replaced prior to re-use
within the development. The former well was approximately at the location of a manhole cover
at the rear of the property, the construction of the well is unknown and care will be needed if any
extensions are proposed to encroach on this area.

Buildings

It is recommended that an asbestos survey of the building is conducted prior to
any demolition or extension works. Suitable precautions, in line with current best practice,
should be put in place to protect workers from the effects of asbestos containing materials,
during demolition or building works.

Contaminated Soil and Proposed Residential Usage

It is expected that any contaminants present would primarily be within any made
ground. It is understood that the only heating for the building was electrical. There is a low
likelihood that the underlying near surface soils are contaminated and therefore a low likelihood
that future residential occupiers of the site would be affected.

Ground Gas

There are no historic landfills or infilled ground on, or within 250m of the site. The site is anticipated to be underlain by superficial Tidal Flat Deposits, covering the solid geology Oxford Clay Formation. There is a low likelihood that any ground gas would affect future users of the site in the context of a residential development. There is a low likelihood that ground gas would affect groundworkers during the construction phase, such as during any excavations.

The property is not in a Radon Affected Area, as less than 1% of properties are above the action level. No Radon Protection Measures are required for new residential properties.

Water Environment

Groundwater is unlikely to be impacted by any contamination in the near-surface soils. Based on the available evidence, it is considered a low likelihood that there would be any sources of contamination on the site which would affect the surrounding groundwater environment.

Foundations

It is understood that the client is proposing to convert the existing chapel to a dwelling. The chapel was rebuilt in 1922 and its foundations are assumed to bear within the superficial Tidal Flat Deposits anticipated at shallow depth. These would have limited bearing properties and care should be taken to assess them if loads supported by the existing foundations are to be increased.

Further Works

It is understood that the existing chapel is to be converted to a residential dwelling, with the driveway to the side retained and a 'courtyard' garden retained at the rear with above ground planters. Based on the history of the site and on-site observations, soil and groundwater contamination is not anticipated to be of concern, however appropriate professional advice should be sought if subsequent site work reveals materials that may appear to be contaminated.

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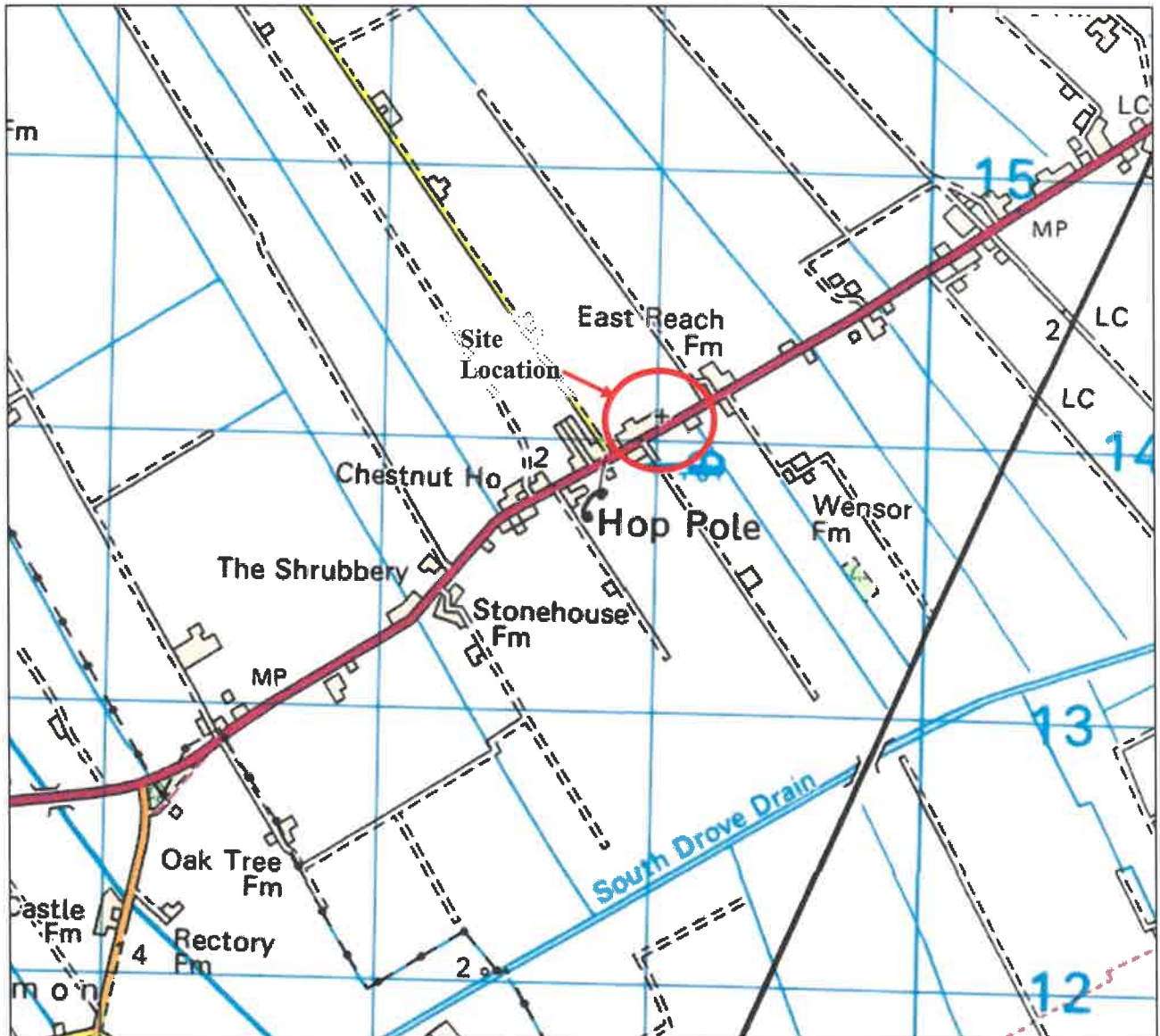
M.Sc.(Eng.), M.A.E.G.,

C.Geol., F.G.S.

Director

Site Location Plan

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Not To Scale



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Client : Mr & Mrs Brennan

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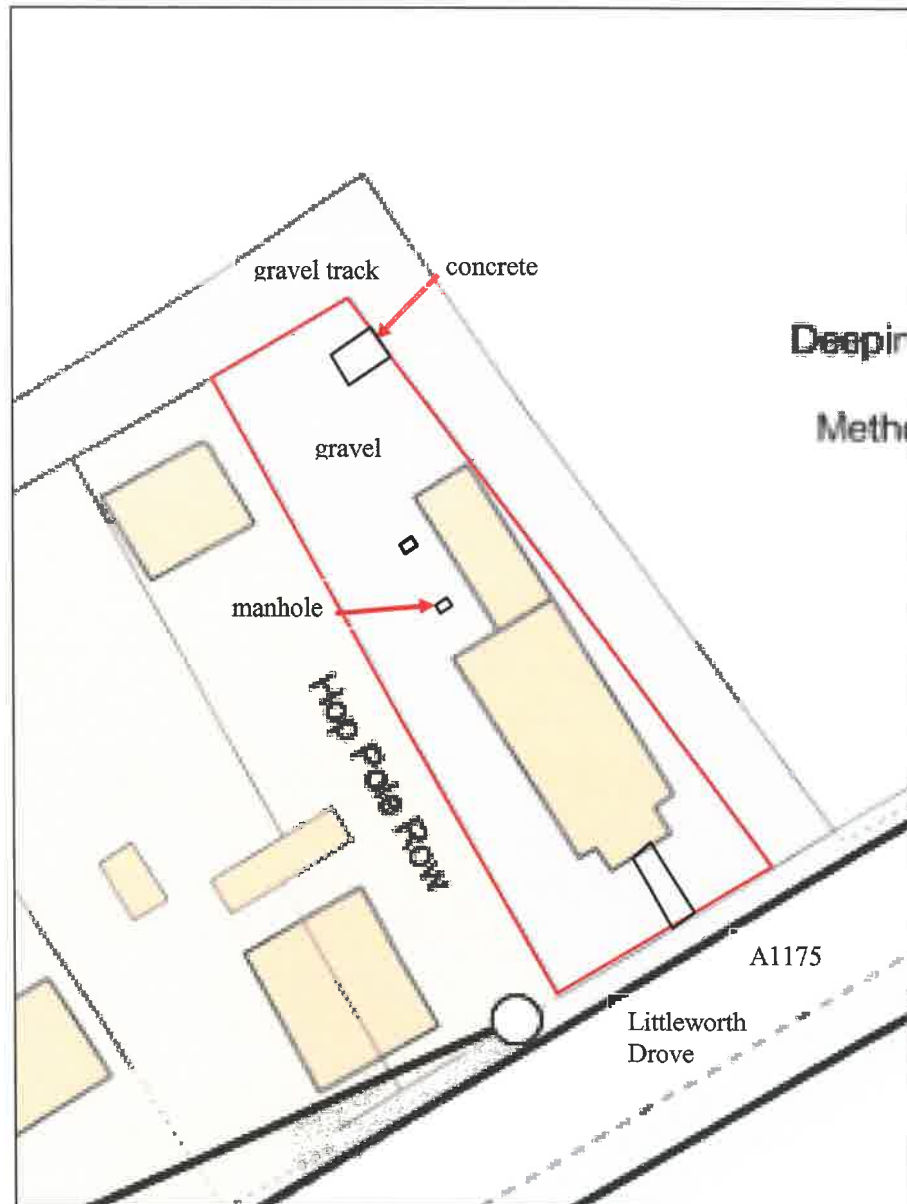
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Site Walkover Plan

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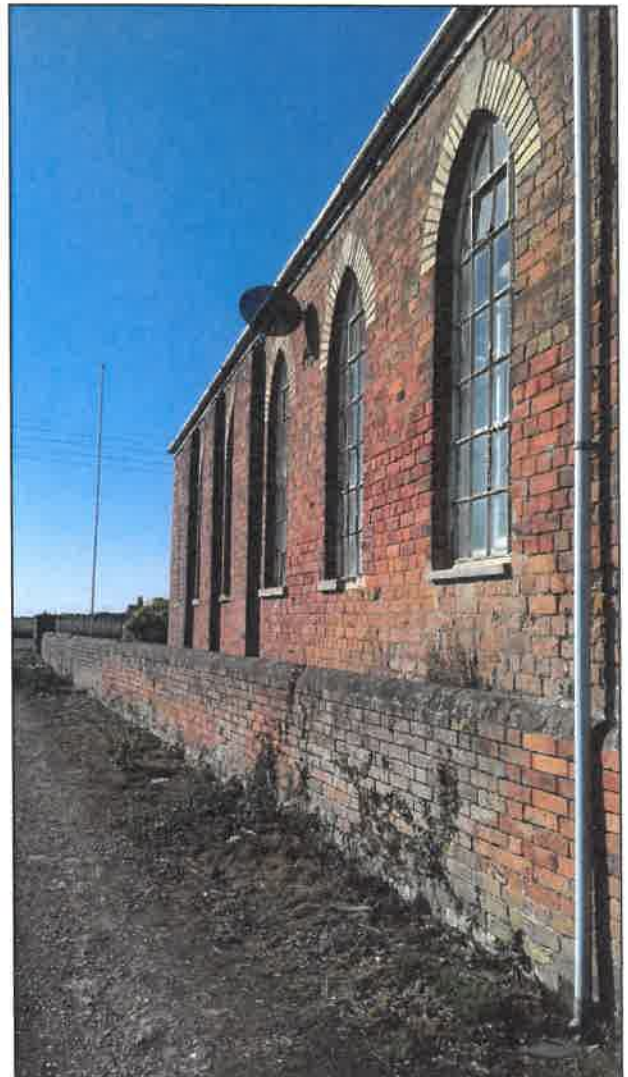
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Site Photographs

Site Walkover 3rd August 2018



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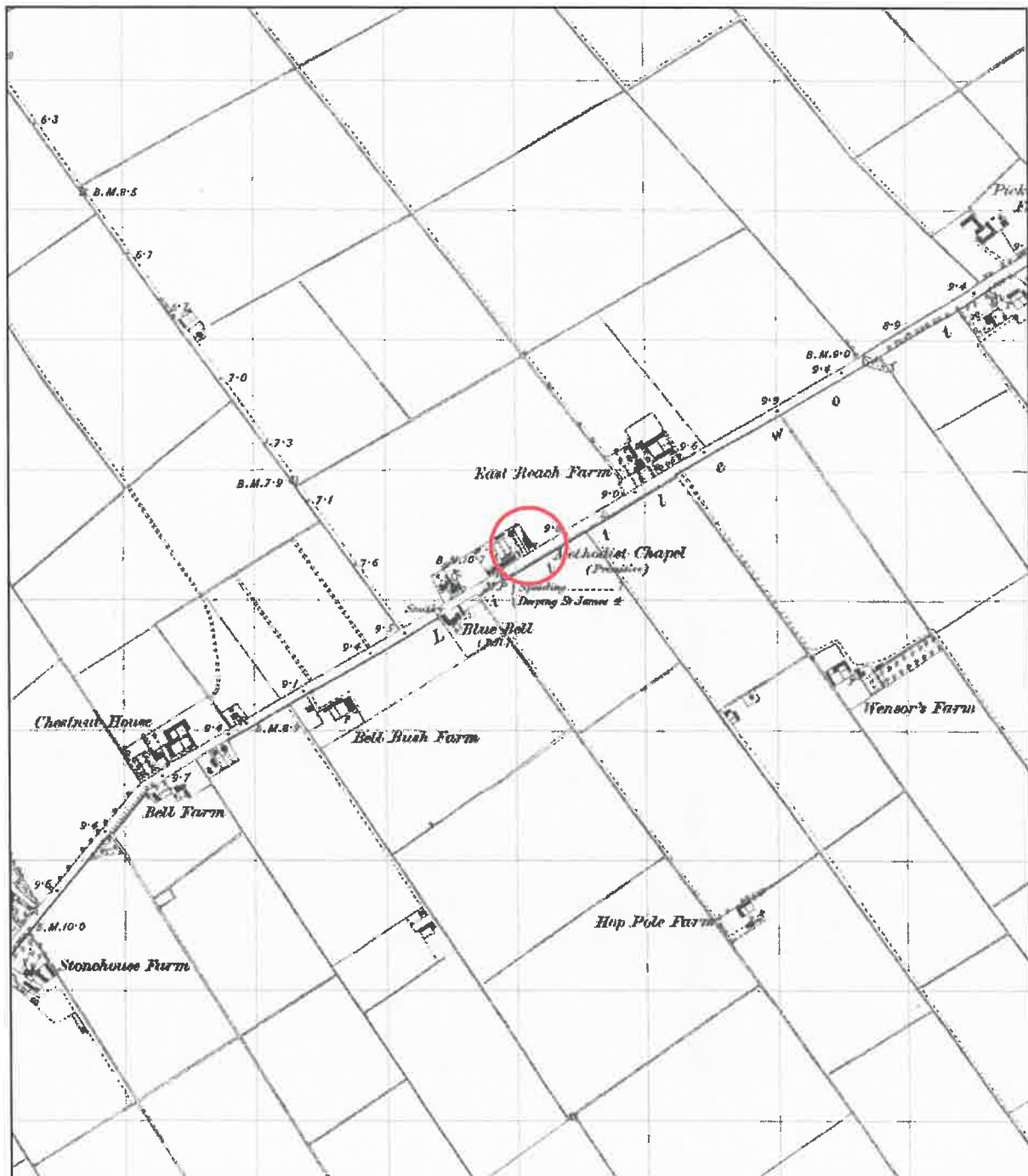
APPENDIX 1

HISTORICAL MAP EXTRACTS

Site History

Figure A

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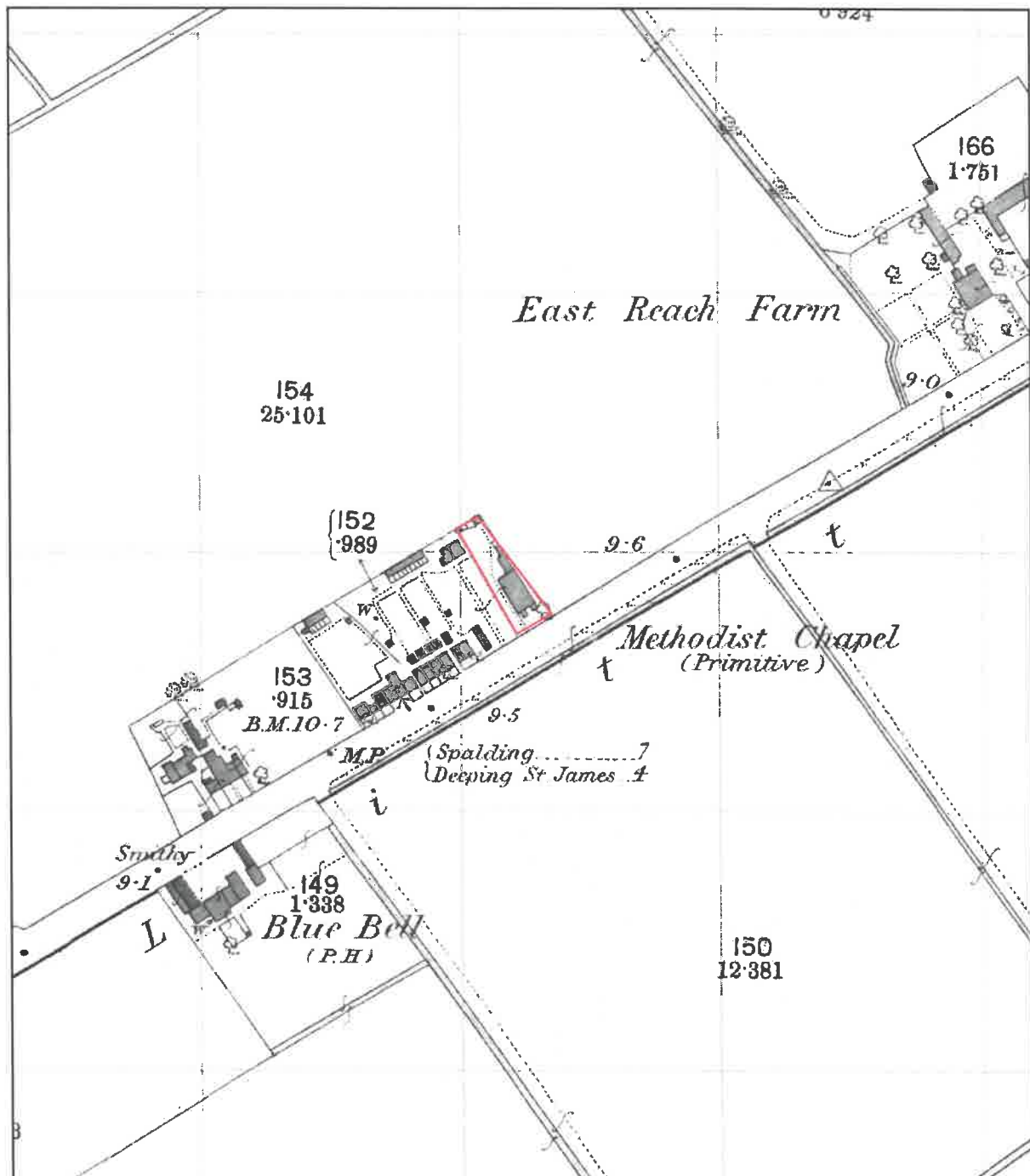
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Site History

Figure B

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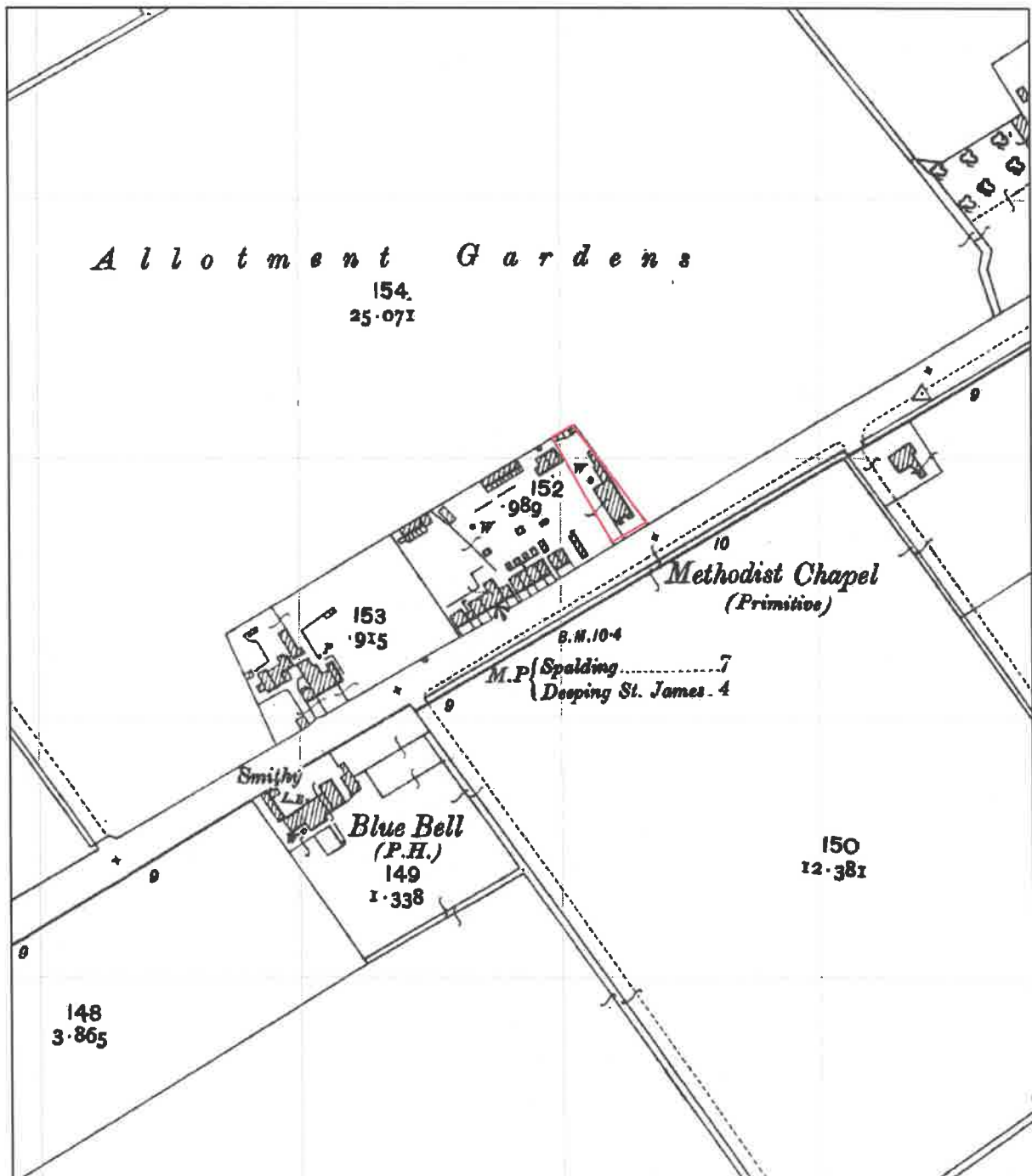
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Figure C

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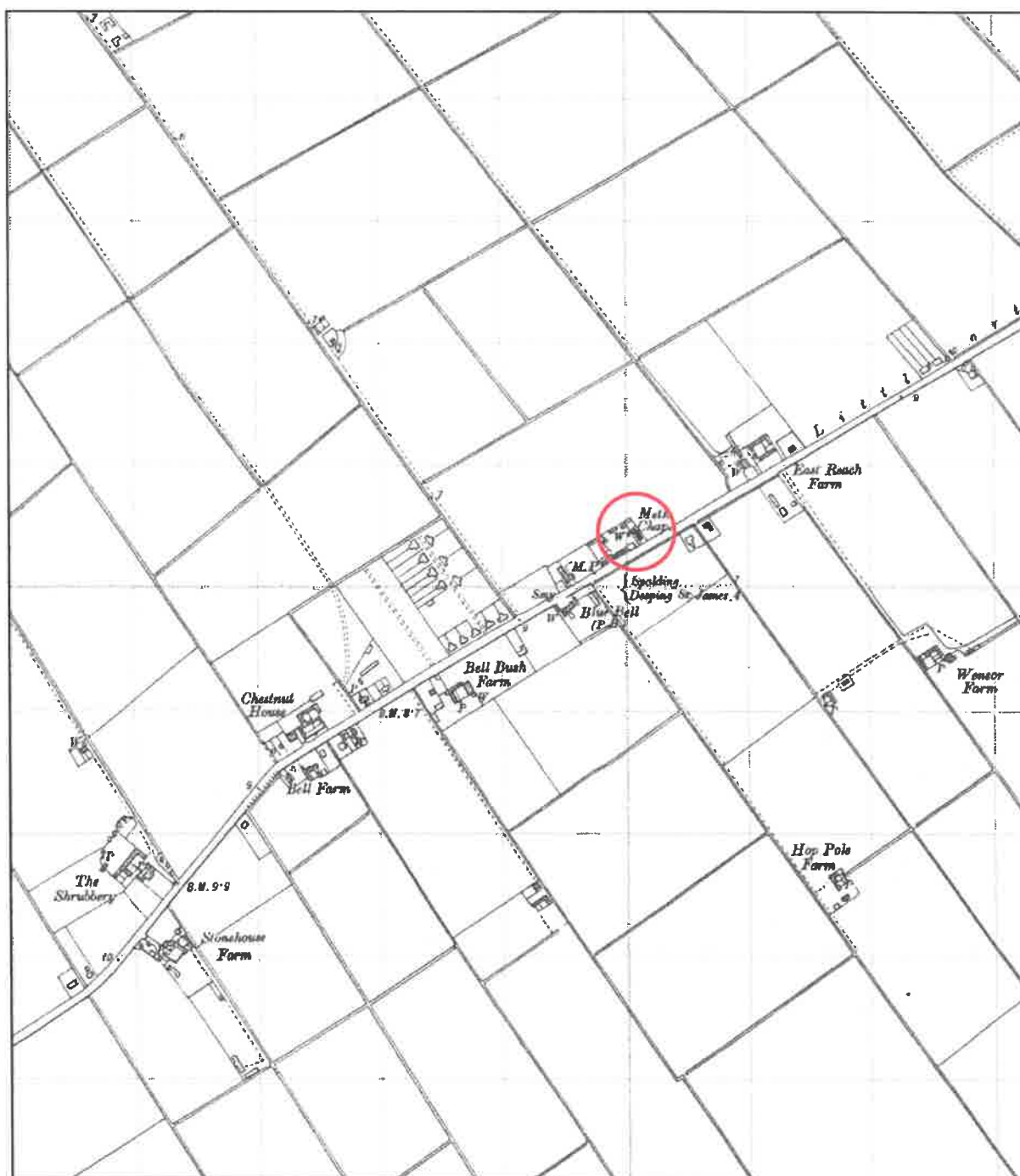
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Site History

Figure D

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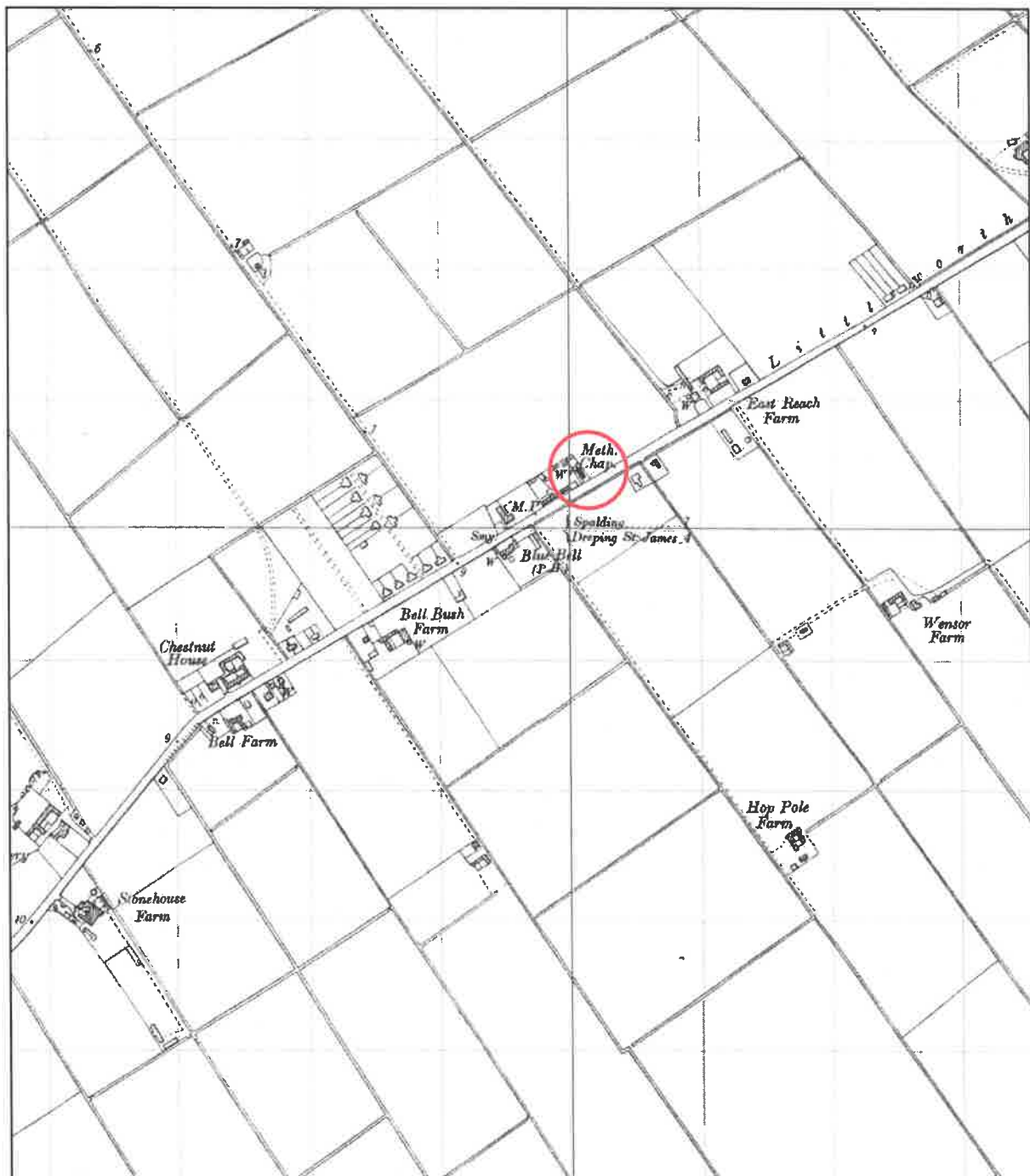
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Site History

Figure E

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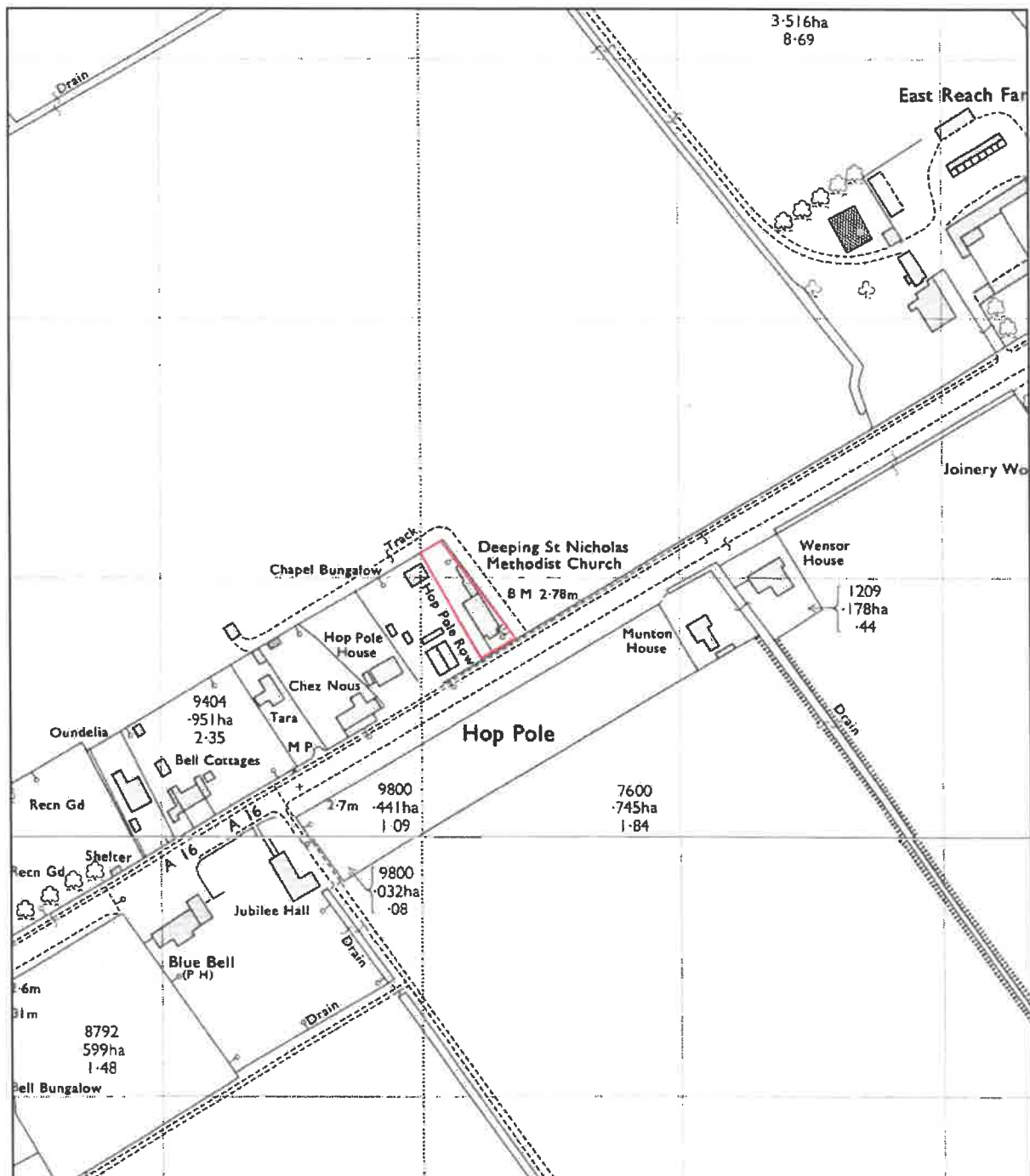
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Figure F

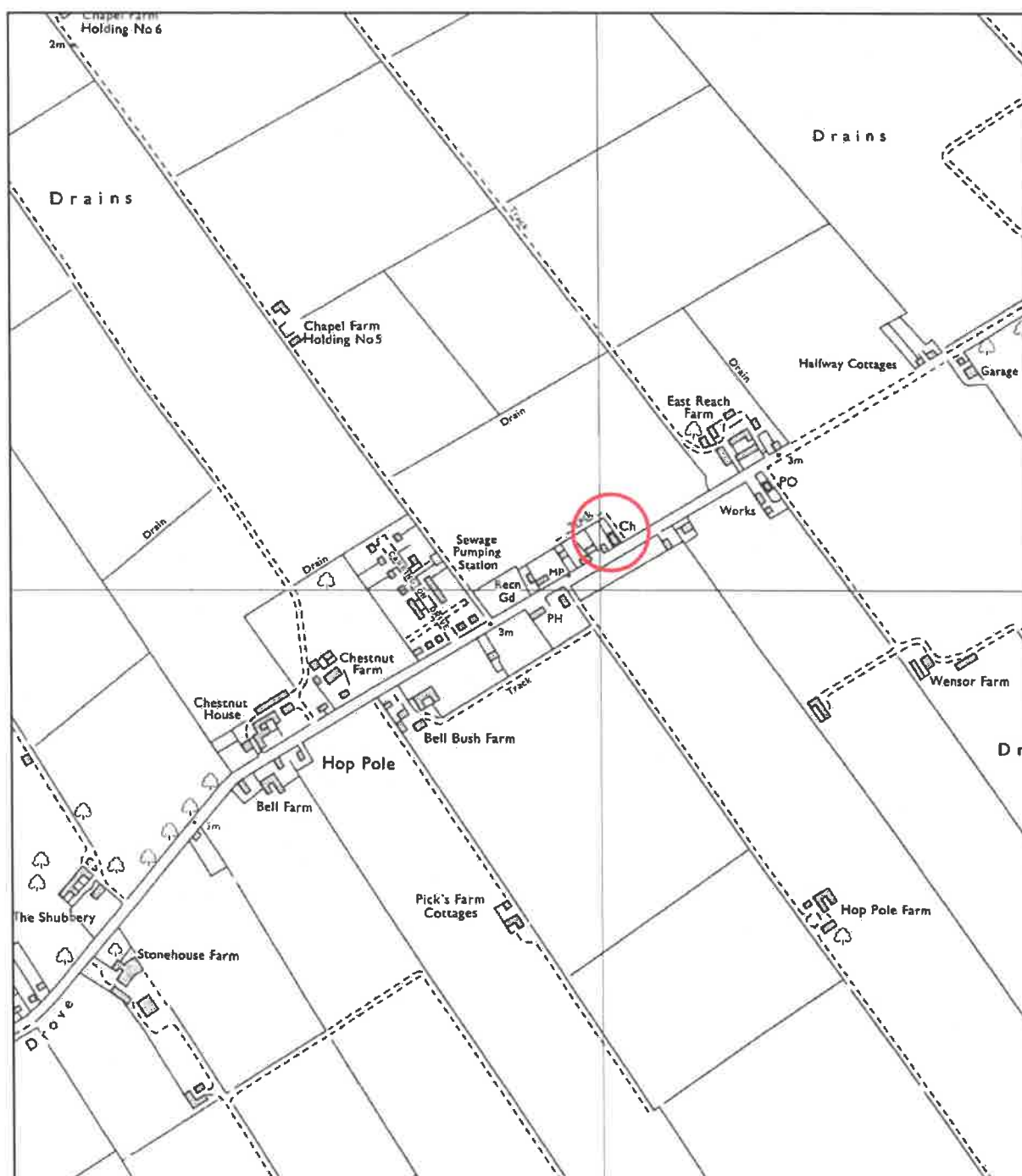


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Figure G

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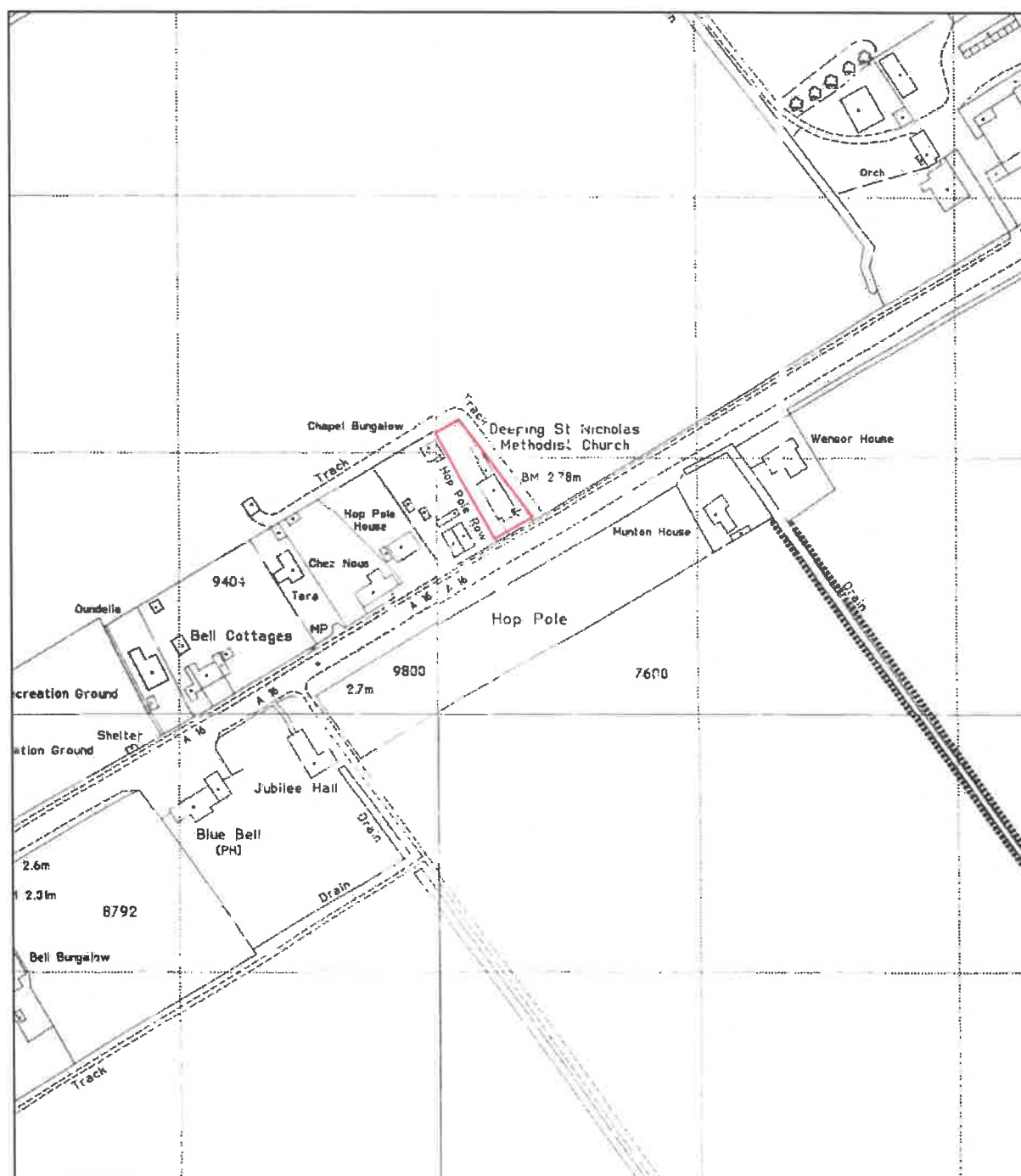
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Site History

Figure H

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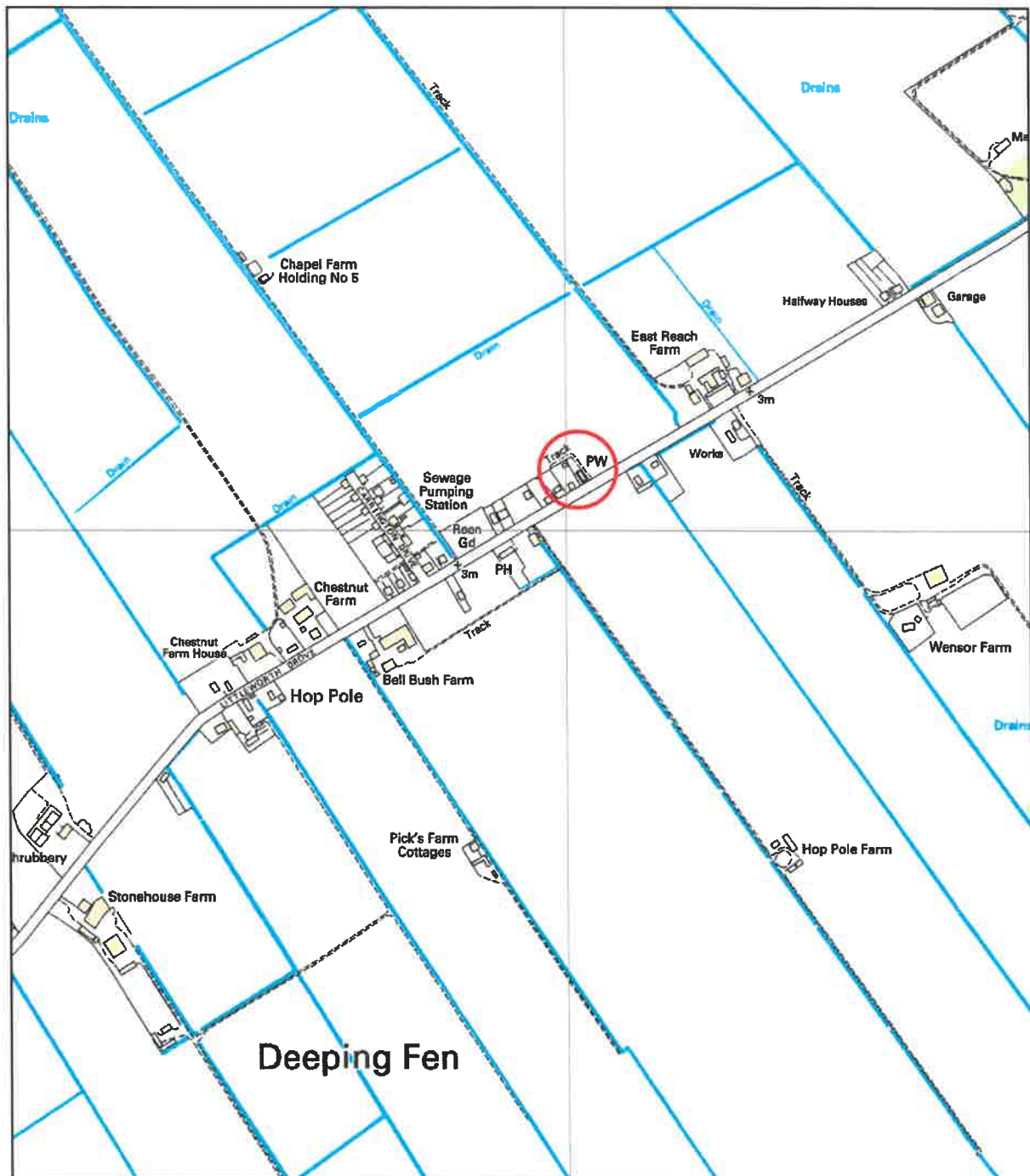
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Site History

Figure I

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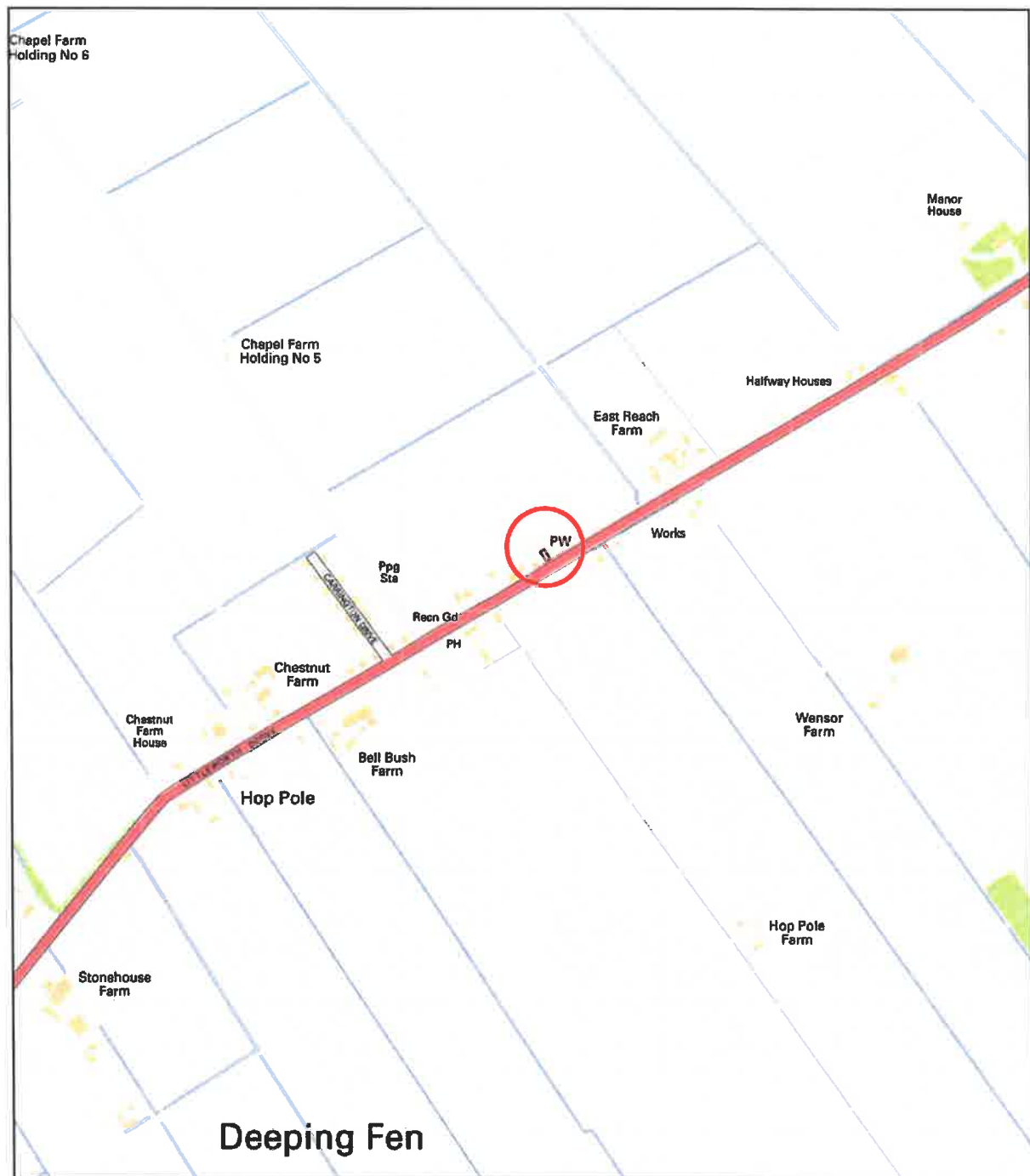
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Site History

Figure J

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**Project : Methodist Church, Littleworth Drive,
Hop Pole, Deeping St. Nicholas**
Client : Mr & Mrs Brennan

**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

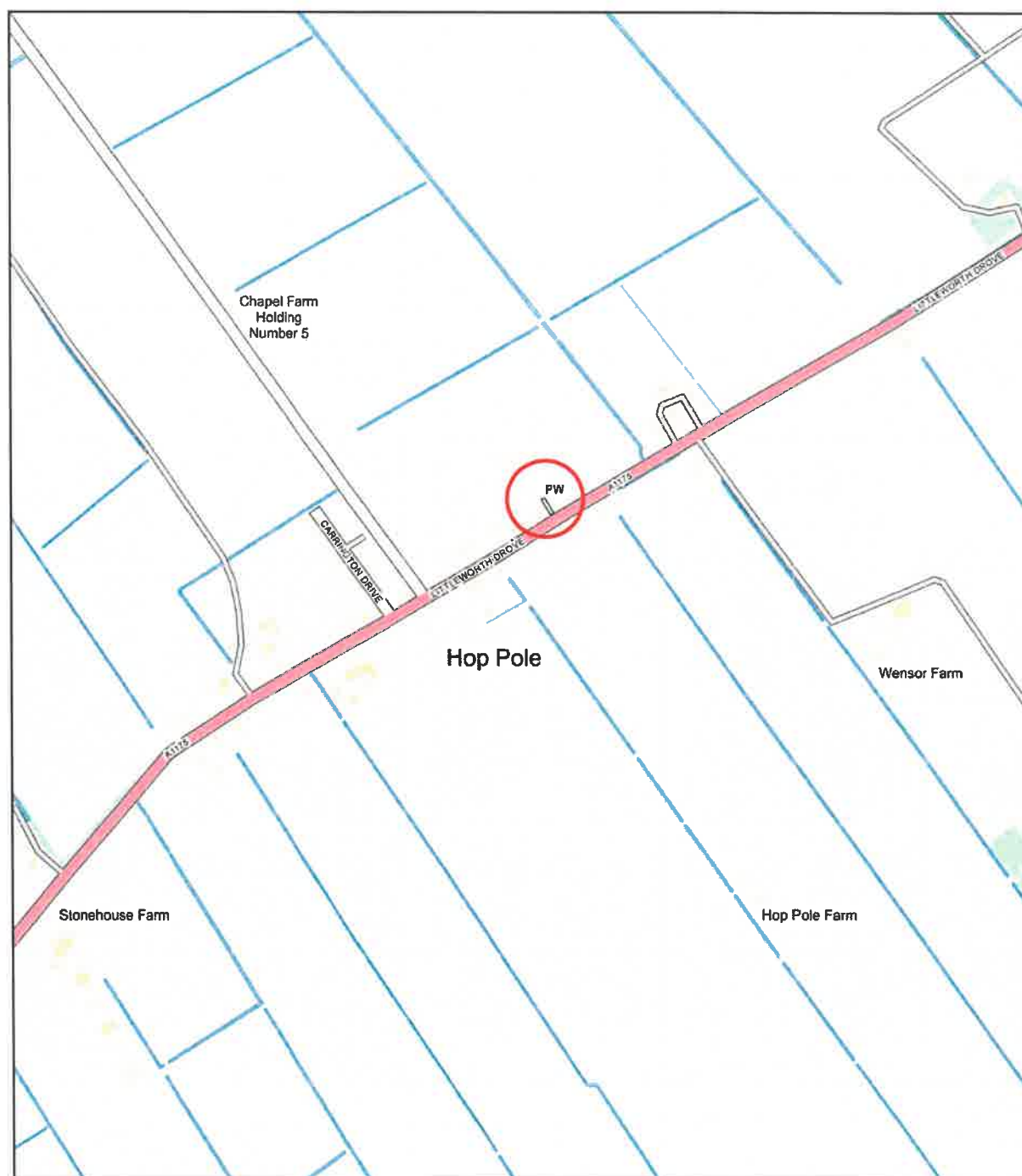
Project No.

C14541

Site History

Figure K

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**Project : Methodist Church, Littleworth Drove,
Hop Pole, Deeping St. Nicholas**
Client : Mr & Mrs Brennan

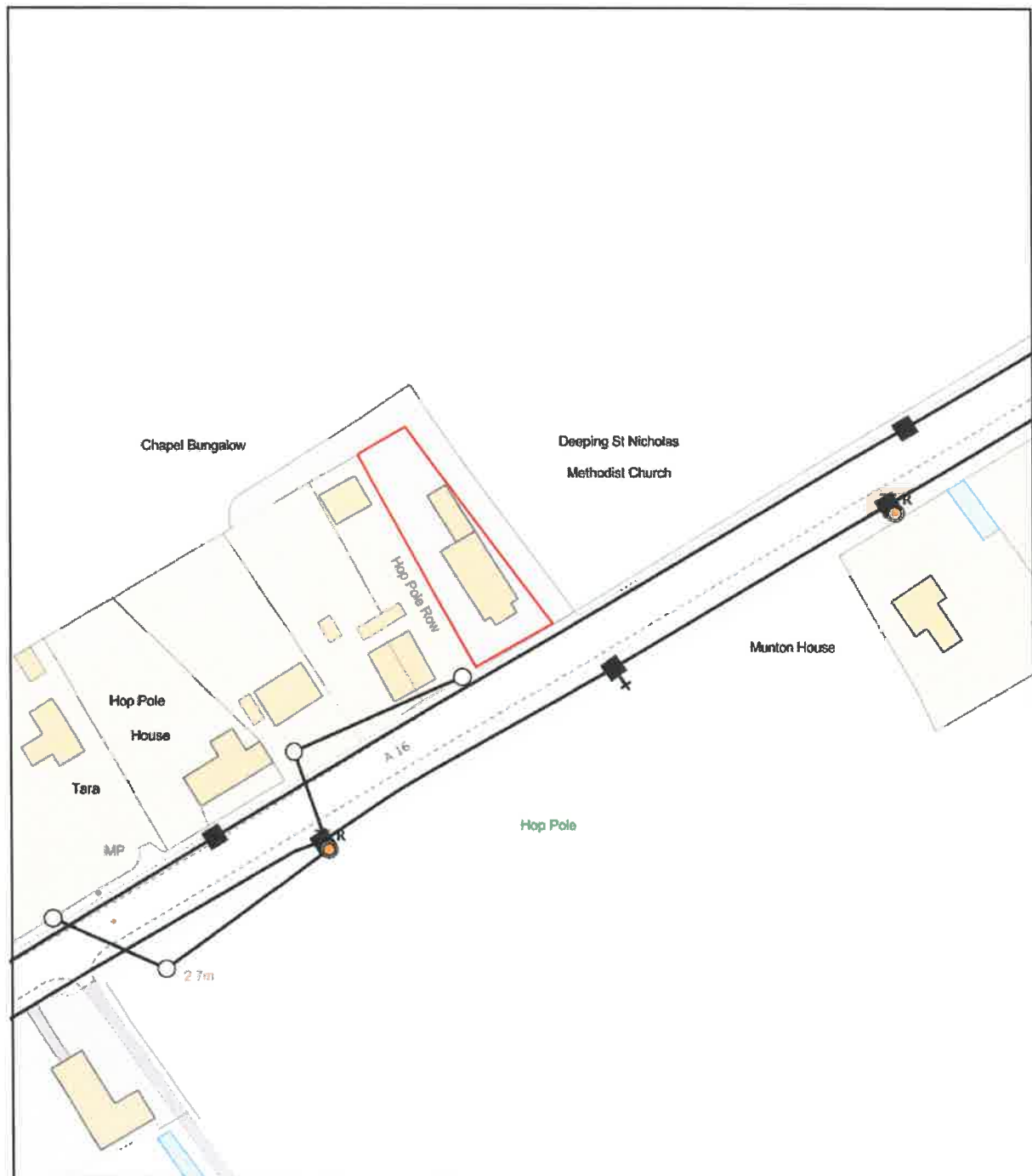
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Project No.
C14541

Site History

Figure L

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Project : Methodist Church, Littleworth Drive,
Hop Pole, Deeping St. Nicholas
Client : Mr & Mrs Brennan

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Project No.

C14541

APPENDIX 2

ENVIRONMENTAL DATABASE SEARCH

Address: DEEPING ST NICHOLAS METHODIST CHAPEL, MAIN ROAD, DEEPING ST NICHOLAS, SPALDING, PE11 3HJ

Date: 30 Jul 2018

Reference: GS-5278035

Client: Ground Engineering Limited

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 03-May-2016

Grid Reference: 519016,314093

Site Size: 0.06ha

Report Reference: GS-5278035

Client Reference: SWC14541

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Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

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	0	1	6	0
1.2 Additional Information – Historical Tank Database	0	0	0	2
1.3 Additional Information – Historical Energy Features Database	0	0	0	0
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 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	0	0
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	1	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	0	0	0	0	0	0
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	0
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	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	0	5	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)	0	0	0	0	0	0
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	3	0	8	31
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)	0	0	#250GWV #	#500GWV #	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 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	26	38	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Environment Agency Zone 2 floodplains within 250m of the study site	Identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	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	Not Prone					
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Not Applicable					

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	0
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	0	0
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	0

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	0	1	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	Low
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	Moderate
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Negligible
9.1.6 Maximum Running Sand hazard rating identified on the study site	Moderate
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	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 licences, 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.

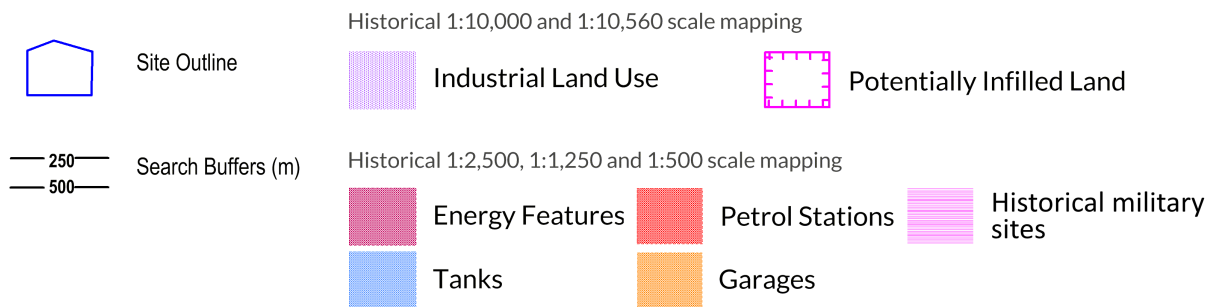
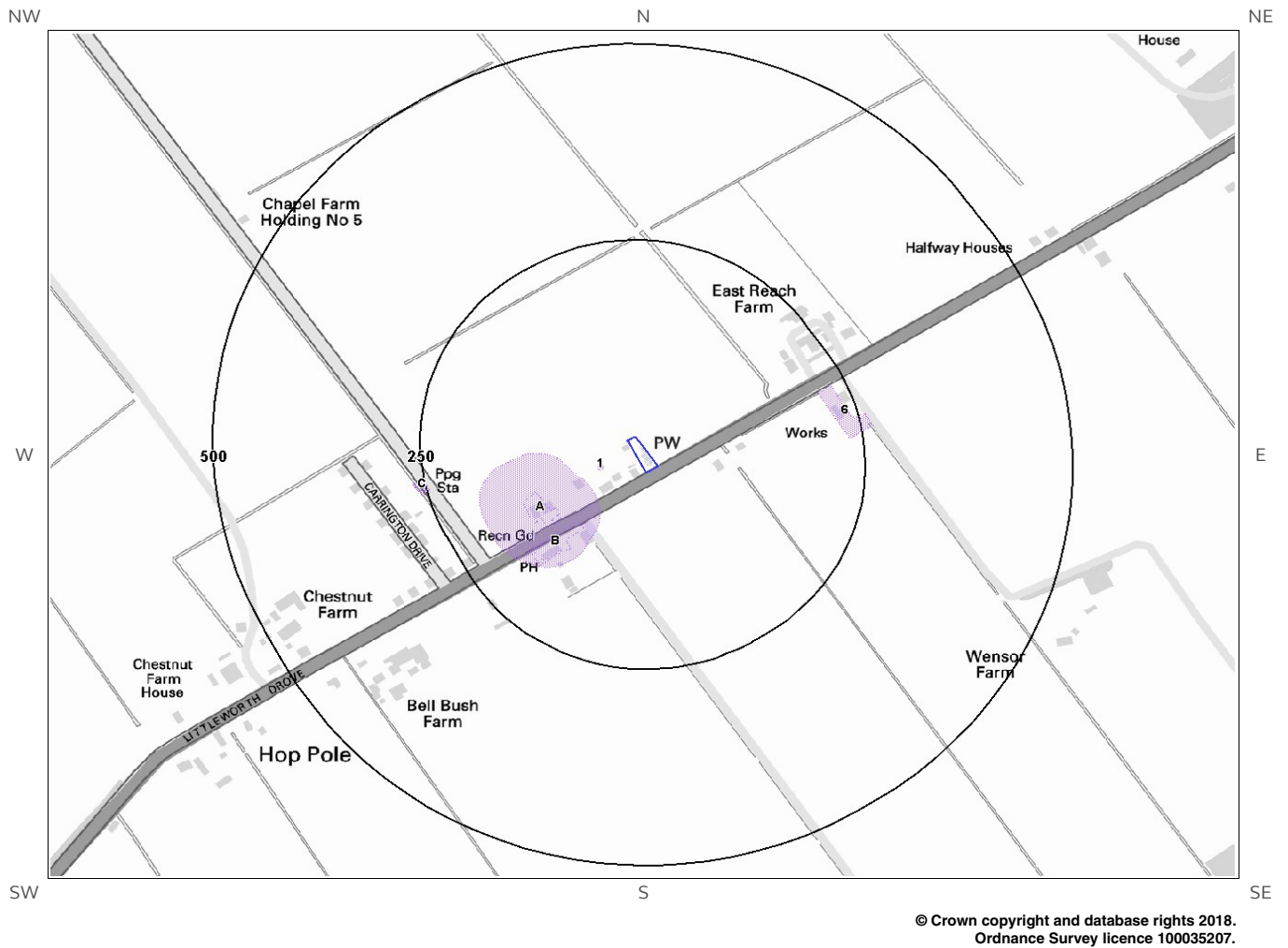
Note: Maps

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



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: 7

ID	Distance [m]	Direction	Use	Date
1	41	SW	Unspecified Tank	1950
2A	68	SW	Smithy	1950
3B	102	SW	Smithy	1887
4A	116	SW	Smithy	1906
5B	137	SW	Smithy	1950
6	214	NE	Unspecified Works	1977
7C	246	W	Sewage Pumping Station	1977

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: 2

ID	Distance (m)	Direction	Use	Date
8C	254	W	Unspecified Tank	1973
9C	254	W	Unspecified Tank	1995

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: 0

Database searched and no data found.

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 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

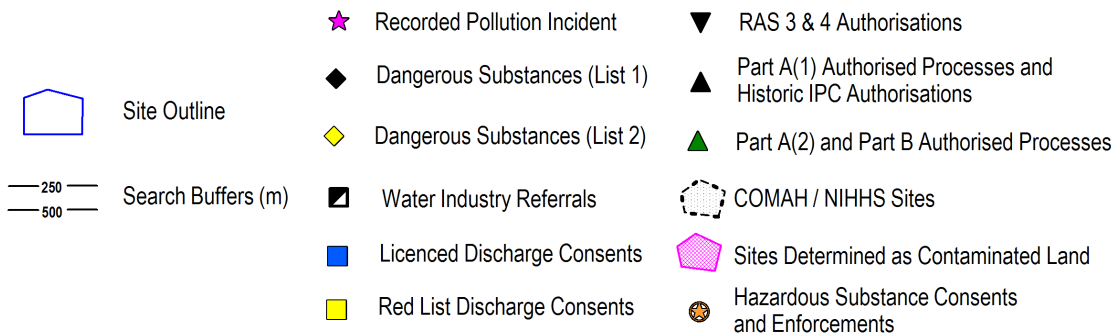
Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 0

Database searched and no data found.



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:

2

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	235	W	518770 314060	Address: CARRINGTON DRIVE, HOP POLE, SPALDING, Lincs, PE11 3HP Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: PR5NF452 Permit Version: 1 Receiving Water: Trib North Drove Drain Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 15/01/1969 Effective Date: 15-Jan-1969 Revocation Date: -
2	463	SW	518730 313710	Address: WOOD VIEW, LITTLEWORTH DROVE, DEEPING ST NICHOLAS, LINCOLNSHIRE, ., PE11 3HL Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: PRNNF18054 Permit Version: 1 Receiving Water: SOUTH DROVE DRAIN Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY Issue date: 24/10/2003 Effective Date: 14-Oct-2003 Revocation Date: -

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.

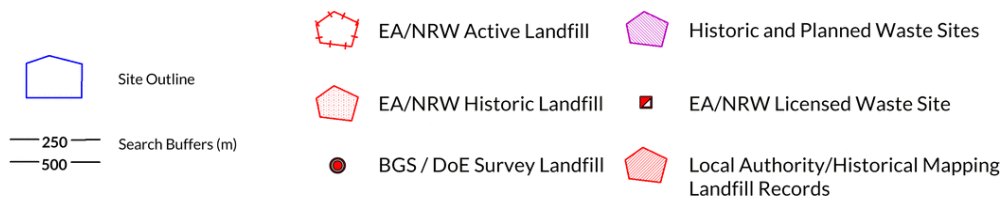
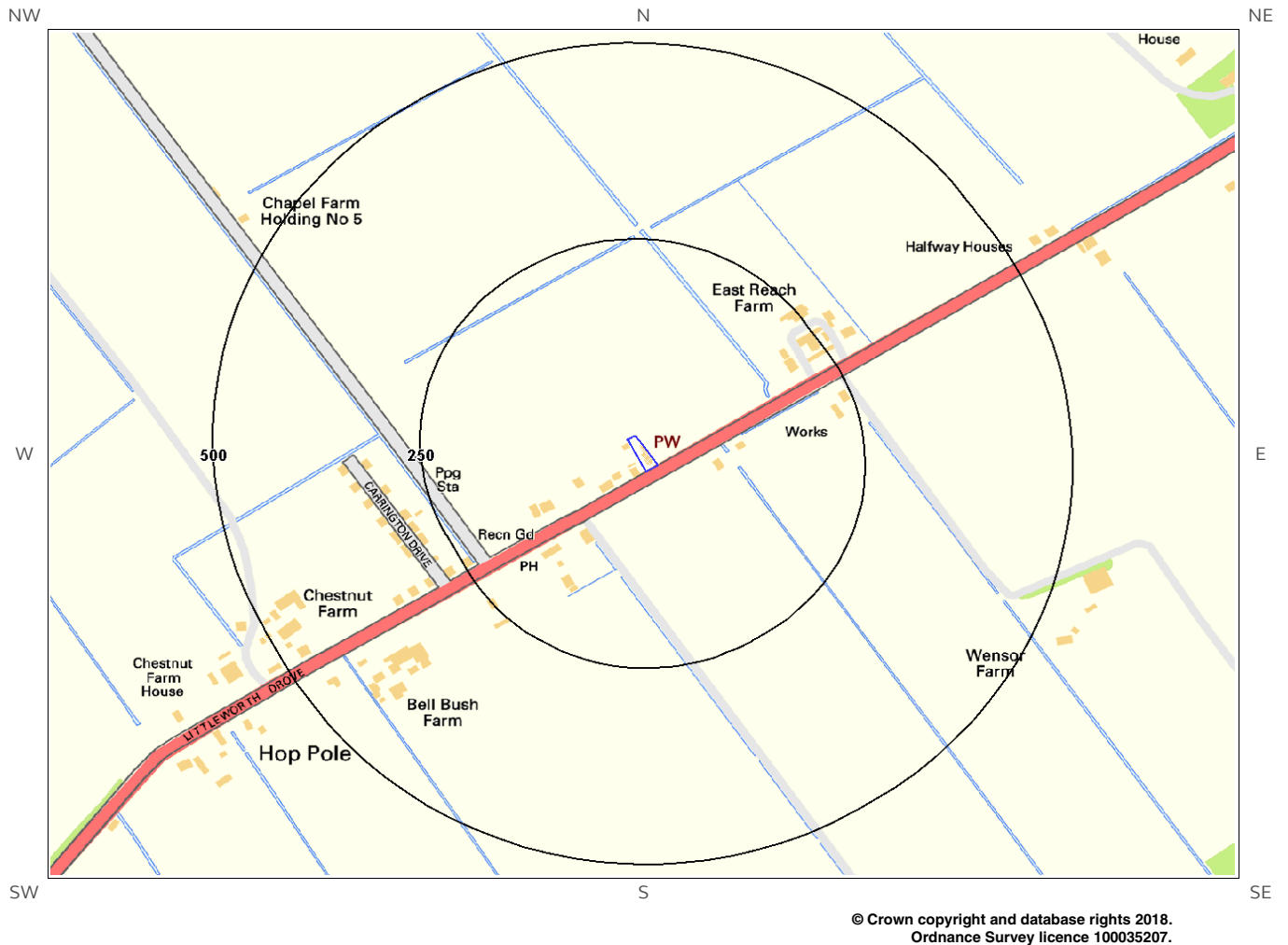
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

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



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:

0

Database searched and no data found.

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:

0

Database searched and no data found.

3.2 Other Waste Sites

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

0

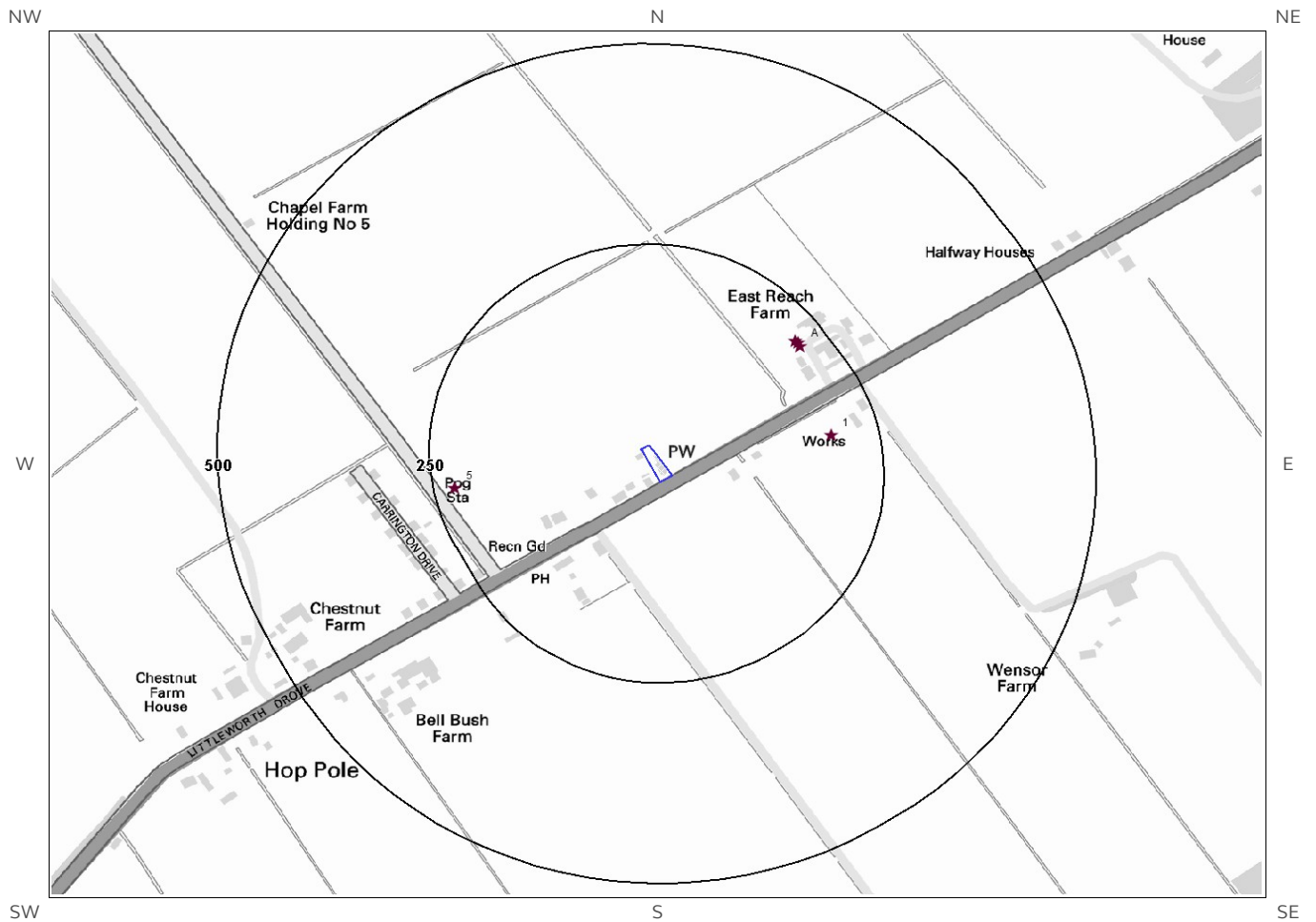
Database searched and no data found.

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

0

Database searched and no data found.

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

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

5

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	194	E	Works	519223 314128	PE11	Unspecified Works Or Factories	Industrial Features
2A	216	NE	Silo	519186 314239	PE11	Hoppers and Silos	Farming
3A	217	NE	Silo	519181 314246	PE11	Hoppers and Silos	Farming
4A	217	NE	Silo	519184 314243	PE11	Hoppers and Silos	Farming
5	225	W	Sewage Pumping Station	518779 314062	PE11	Waste Storage, Processing and Disposal	Infrastructure and Facilities

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
TFD1-XCZ	TIDAL FLAT DEPOSITS, 1	CLAY AND SILT

5.3 Bedrock and Solid Geology

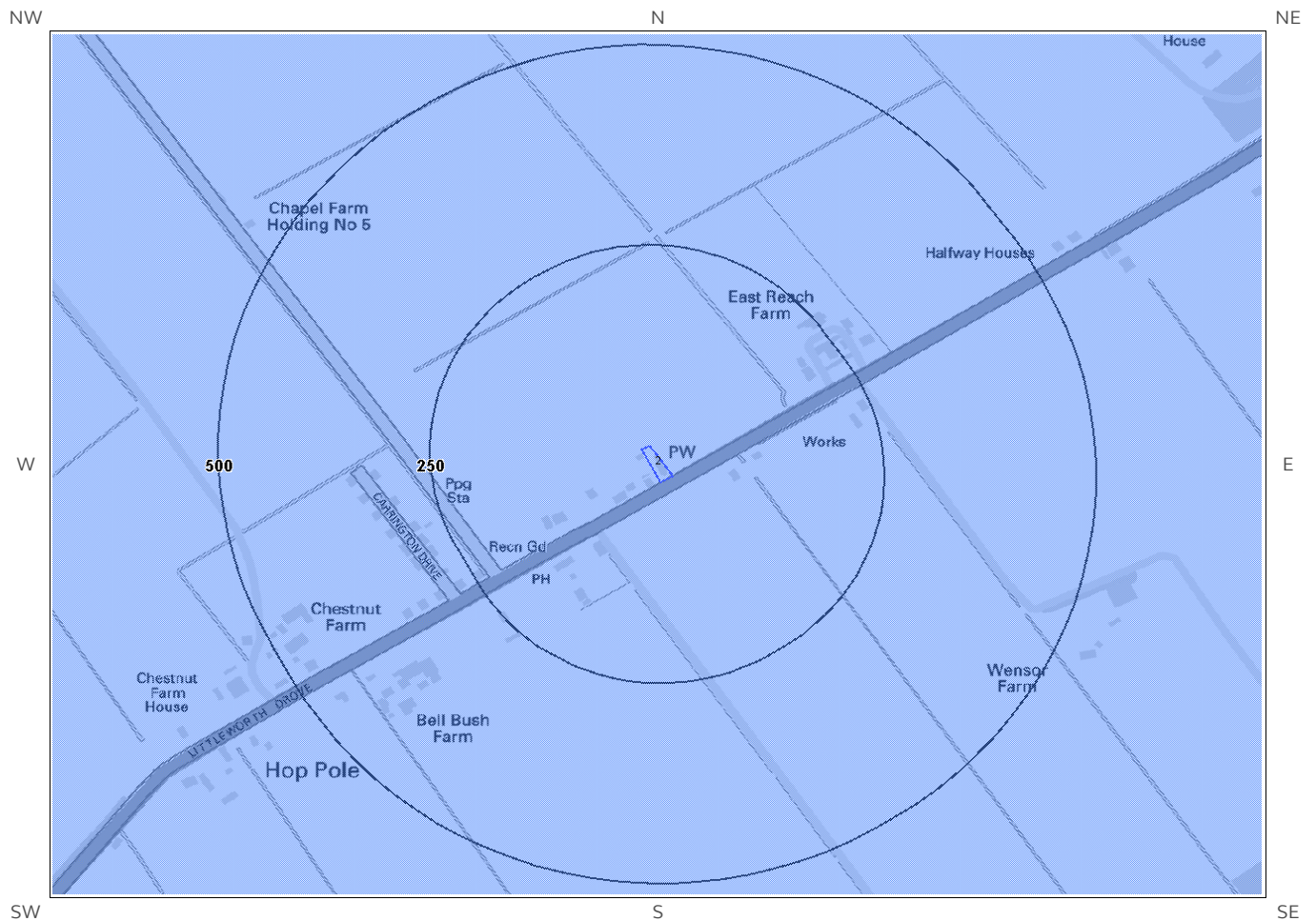
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
OXC-MDST	OXFORD CLAY FORMATION	MUDSTONE

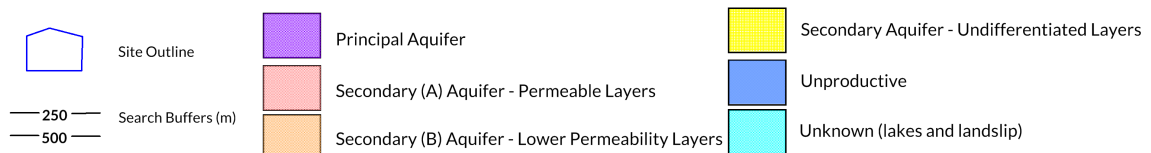
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

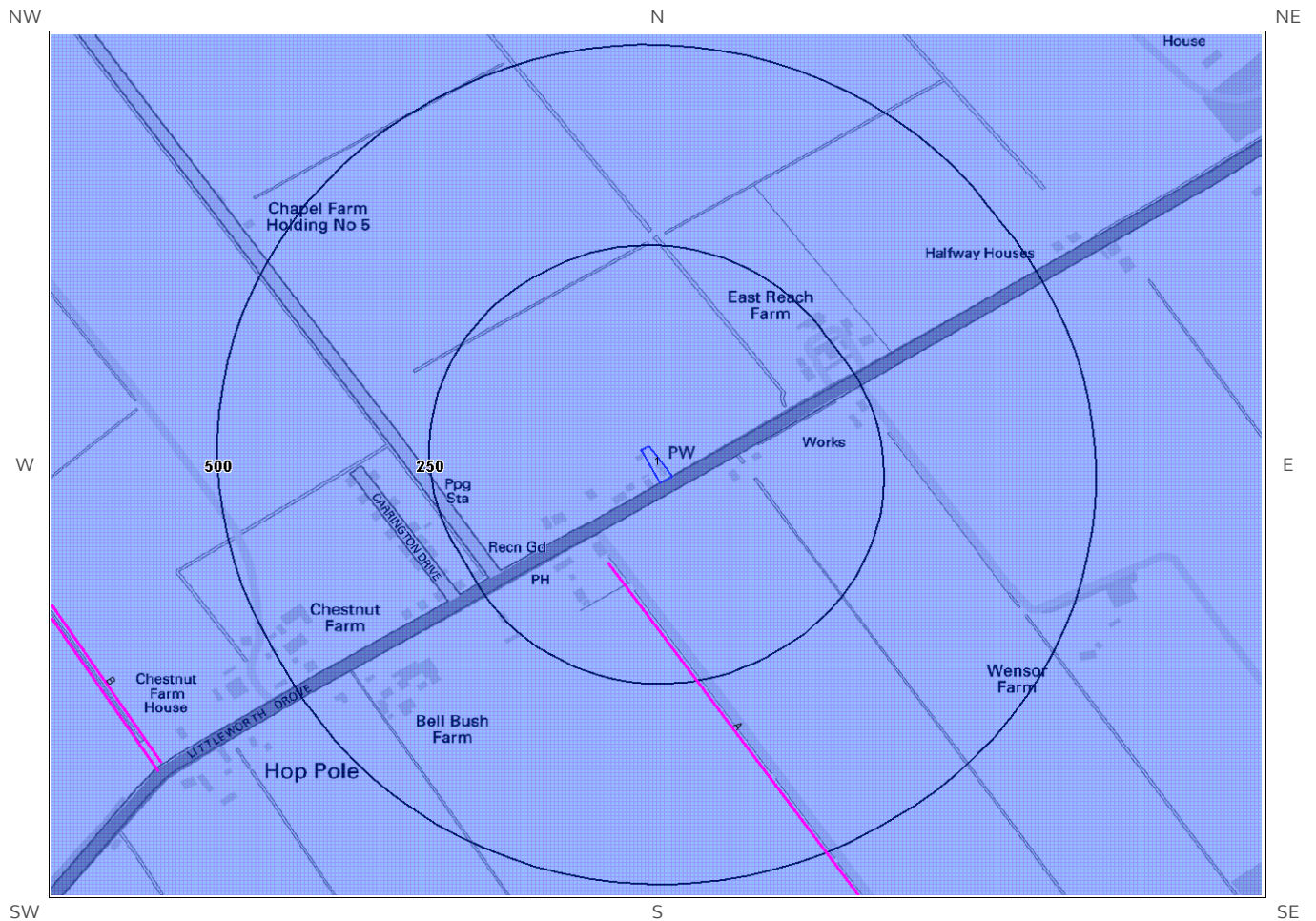
6a. Aquifer Within Superficial Geology



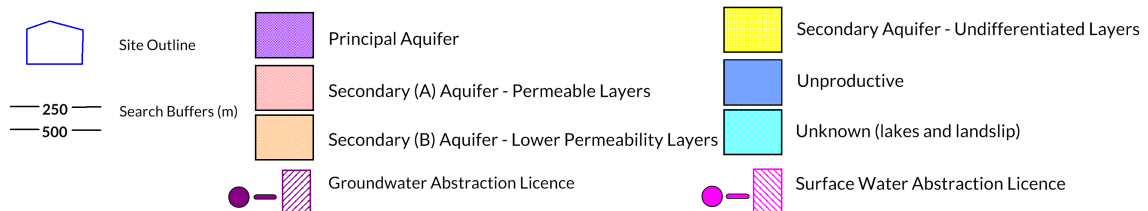
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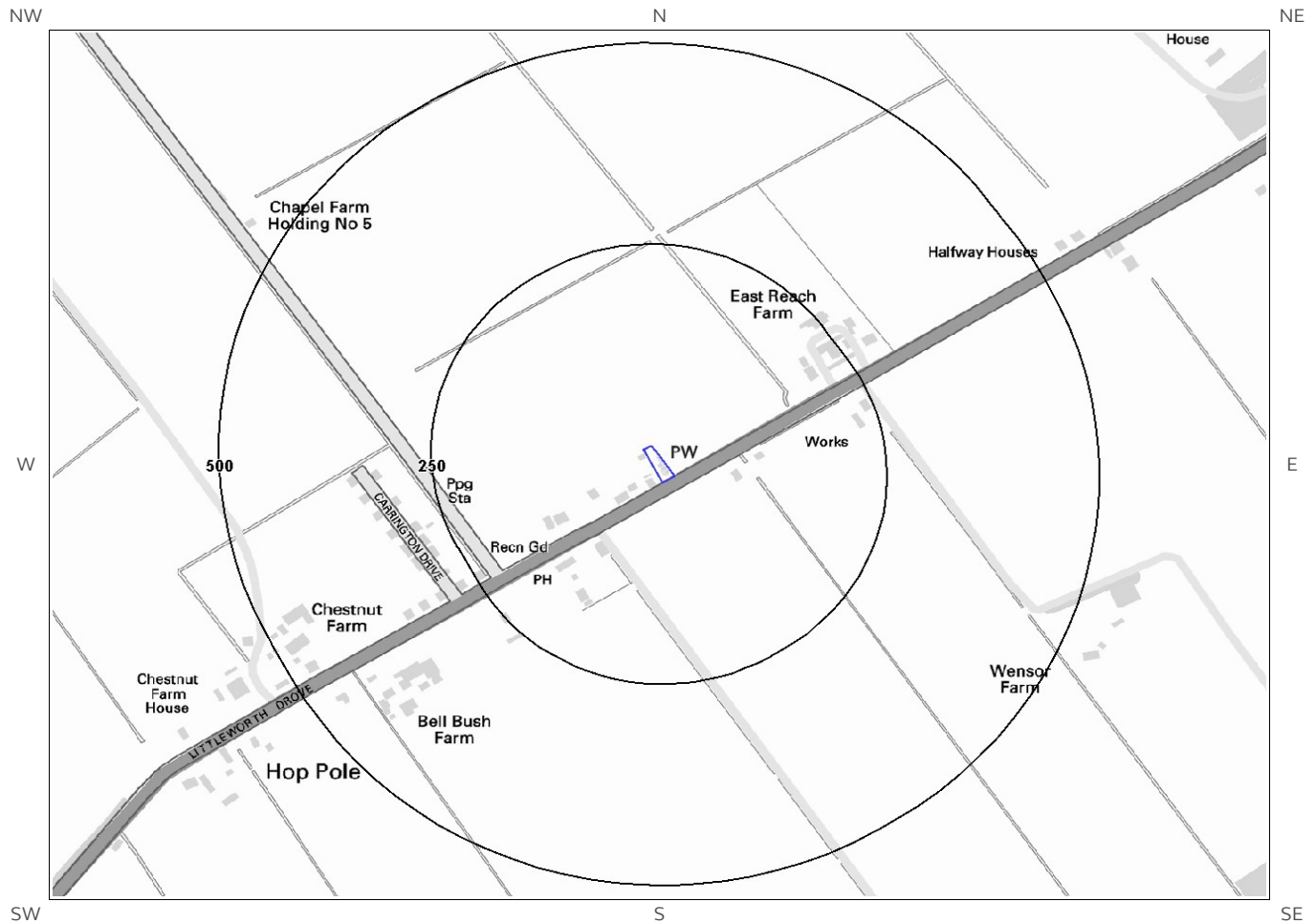
6b. Aquifer Within Bedrock Geology and Abstraction Licences



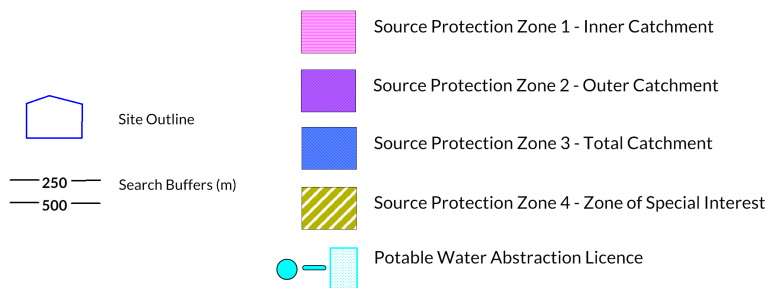
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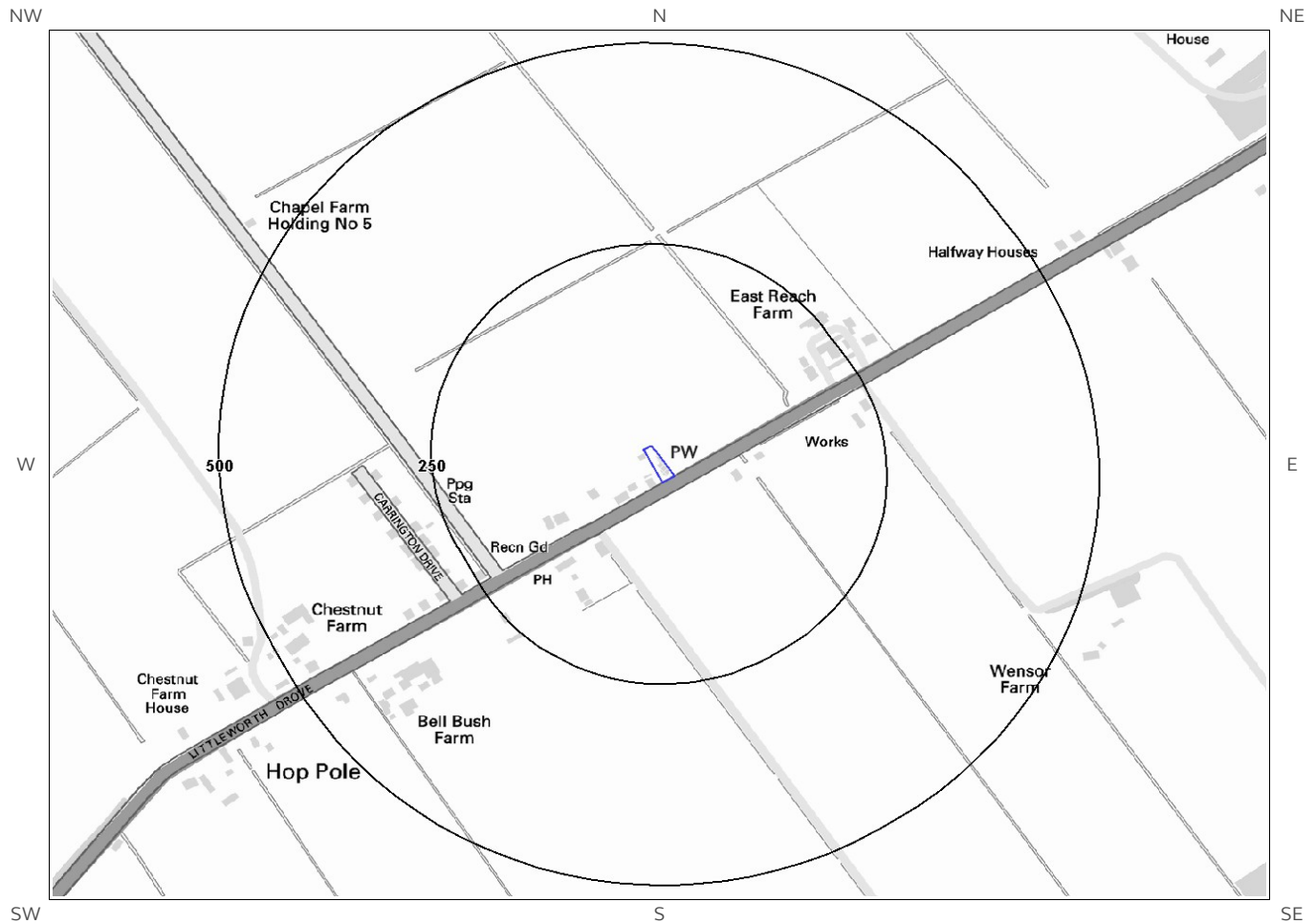
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



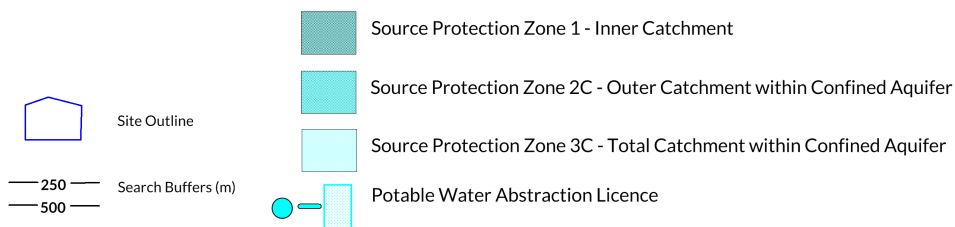
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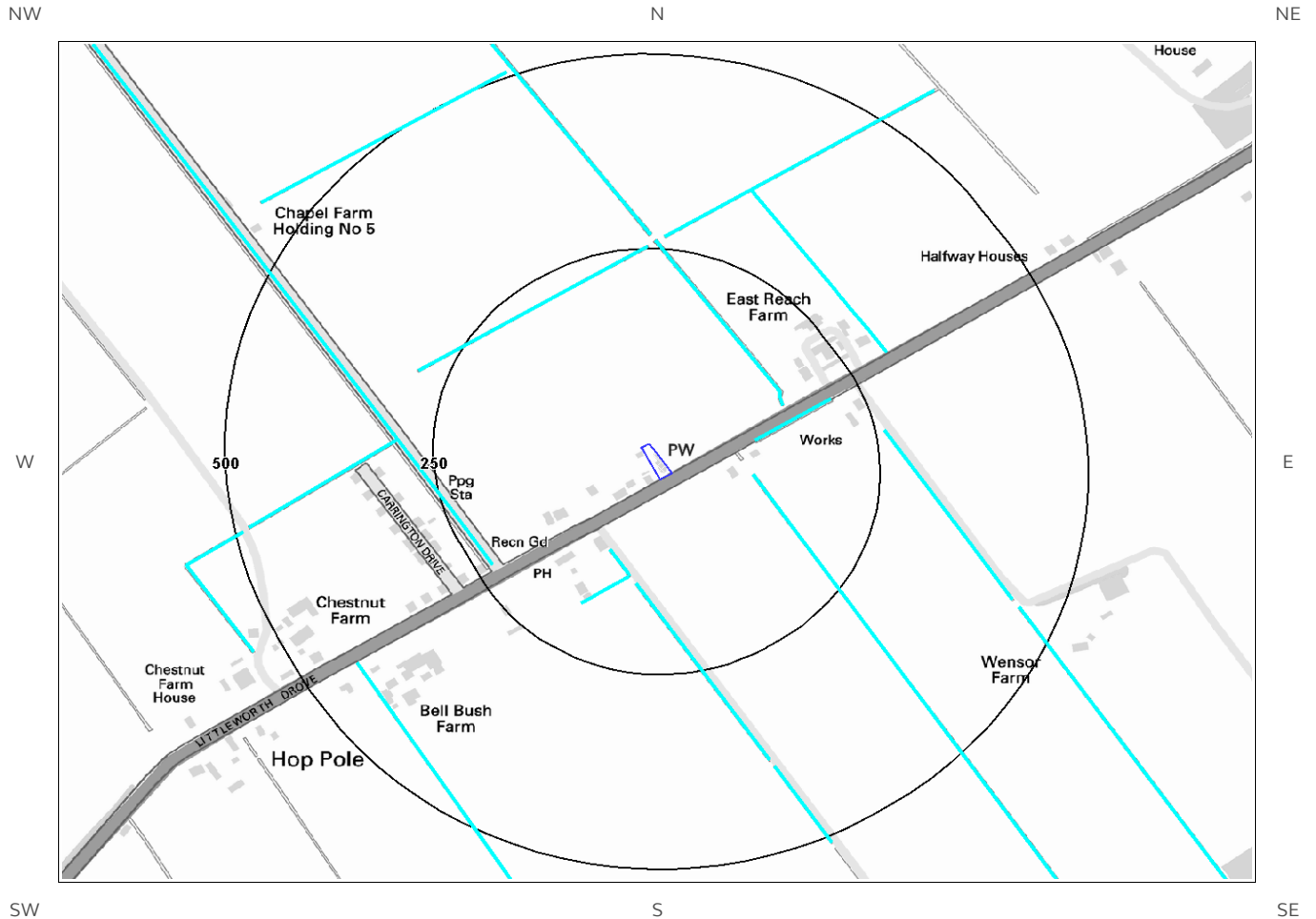
6d. Hydrogeology – Source Protection Zones within confined aquifer



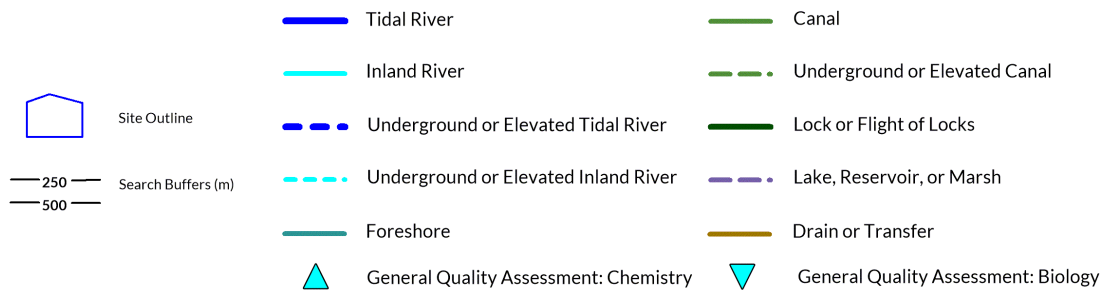
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6e. Hydrology – Watercourse Network and River Quality



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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
2	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

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

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site None identified

Database searched and no data found.

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
4A	117	SW	519760 312850	Status: Active Licence No: AN/031/0014/003 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Drain To South Drove Drain - Deeping St Nicholas Data Type: Line Name: N WOODROFFE & SONS Annual Volume (m³): 12000 Max Daily Volume (m³): 960 Application No: NPSWR001317 Original Start Date: 20/5/2009 Expiry Date: 31/3/2020 Issue No: 1 Version Start Date: 20/5/2009 Version End Date:
5A	117	SW	519760 312850	Status: Historical Licence No: 5/31/14/*S/0260 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Drain To South Drove Drain - Deeping St Nicholas Data Type: Line Name: J & J M & P E WOODHEAD Annual Volume (m³): 40000 Max Daily Volume (m³): 1600 Application No: N1277 Original Start Date: 26/3/2003 Expiry Date: 31/10/2008 Issue No: 1 Version Start Date: 1/4/2004 Version End Date:
6A	117	SW	519760 312850	Status: Historical Licence No: 5/31/14/*S/0276 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Drain To South Drove Drain - Deeping St Nicholas Data Type: Line Name: JOHN WOODHEAD Annual Volume (m³): 20000 Max Daily Volume (m³): 1600 Application No: N1521 Original Start Date: 17/12/2008 Expiry Date: 31/3/2020 Issue No: 1 Version Start Date: 17/12/2008 Version End Date:
7B	684	SW	516599 316487	Status: Active Licence No: 5/31/14/*S/0152 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Farm Drain - Baston Data Type: Line Name: P N WATTS Annual Volume (m³): 100000 Max Daily Volume (m³): 2000 Application No: NPS/WR/017671 Original Start Date: 1/8/1979 Expiry Date: - Issue No: 102 Version Start Date: 9/3/2015 Version End Date:
8B	692	SW	516590 316480	Status: Historical Licence No: 5/31/14/*S/0152 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Farm Drain - Baston Data Type: Line Name: WATTS Annual Volume (m³): 100000 Max Daily Volume (m³): 2000 Application No: N1109 Original Start Date: 1/8/1979 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2000 Version End Date:
Not shown	871	S	519080 313200	Status: Active Licence No: 5/31/14/*S/0161 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Riparian Drain - Deeping St Nicholas Data Type: Line Name: G A CHAPPELL & SONS Annual Volume (m³): 15500 Max Daily Volume (m³): 1041 Application No: NS766 Original Start Date: 27/1/1999 Expiry Date: - Issue No: 1 Version Start Date: 1/1/2011 Version End Date:
Not shown	872	S	519400 312700	Status: Historical Licence No: 5/31/14/*S/0161A Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain 2 Data Type: Line Name: T R PICK LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 1/1/1984 Expiry Date: - Issue No: 100 Version Start Date: 1/10/1990 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	877	NE	520740 313310	Status: Historical Licence No: 5/31/14/*S/0260 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Drain To South Drove Drain - Deeping St Nicholas Data Type: Line Name: J & J M & P E WOODHEAD Annual Volume (m³): 40000 Max Daily Volume (m³): 1600 Application No: N1277 Original Start Date: 26/3/2003 Expiry Date: 31/10/2008 Issue No: 1 Version Start Date: 1/4/2004 Version End Date:
Not shown	877	NE	520740 313310	Status: Active Licence No: AN/031/0014/002 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Drain To South Drove Drain - Deeping St Nicholas Data Type: Line Name: W D Branton Annual Volume (m³): 8000 Max Daily Volume (m³): 640 Application No: NPS/WR/004980 Original Start Date: 20/5/2009 Expiry Date: 31/3/2020 Issue No: 2 Version Start Date: 1/4/2014 Version End Date:
Not shown	877	NE	520740 313310	Status: Historical Licence No: 5/31/14/*S/0276 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Drain To South Drove Drain - Deeping St Nicholas Data Type: Line Name: JOHN WOODHEAD Annual Volume (m³): 20000 Max Daily Volume (m³): 1600 Application No: N1521 Original Start Date: 17/12/2008 Expiry Date: 31/3/2020 Issue No: 1 Version Start Date: 17/12/2008 Version End Date:
Not shown	979	NE	517400 317200	Status: Active Licence No: 5/31/14/*S/0146A Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Drains At Hospital Farm "a" Data Type: Line Name: SLY BROS (POTATOES) LTD Annual Volume (m³): 20184 Max Daily Volume (m³): 659 Application No: - Original Start Date: 1/1/1977 Expiry Date: - Issue No: 100 Version Start Date: 1/12/1986 Version End Date:
Not shown	1132	NE	520030 314620	Status: Active Licence No: 5/31/14/*S/0251 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Riparian Drain - Deeping St Nicholas Data Type: Line Name: J A WATTS (MAREHAM) LTD Annual Volume (m³): 7356 Max Daily Volume (m³): 636 Application No: NS904 Original Start Date: 1/4/2001 Expiry Date: - Issue No: 1 Version Start Date: 1/4/2001 Version End Date:
Not shown	1147	NE	520000 314700	Status: Historical Licence No: 5/31/14/*S/0150 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Land Drains, Blue House Farm Data Type: Line Name: H E TINSLEY LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 1/4/1977 Expiry Date: - Issue No: 100 Version Start Date: 1/4/1993 Version End Date:
Not shown	1257	SW	517400 314400	Status: Active Licence No: 5/31/14/*S/0186 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Calthrop Drain, Deeping St Nic Data Type: Line Name: GROOBY Annual Volume (m³): 30000 Max Daily Volume (m³): 1000 Application No: - Original Start Date: 1/8/1986 Expiry Date: - Issue No: 100 Version Start Date: 1/8/1986 Version End Date:
Not shown	1389	E	520420 314200	Status: Active Licence No: 5/31/14/*S/0252 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Riparian Drain - Deeping St Nicholas Data Type: Line Name: SLY BROS (POTATOES) LTD Annual Volume (m³): 15371 Max Daily Volume (m³): 1328 Application No: NS908 Original Start Date: 1/4/2001 Expiry Date: - Issue No: 1 Version Start Date: 1/4/2001 Version End Date:
Not	1420	S	519300	Status: Historical Annual Volume (m³): -

ID	Distance (m)	Direction	NGR	Details	
shown			312500	Licence No: 5/31/14/*S/0161A Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain 1 Data Type: Line Name: T R PICK LTD	Max Daily Volume (m³): - Application No: - Original Start Date: 1/1/1984 Expiry Date: - Issue No: 100 Version Start Date: 1/10/1990 Version End Date:
Not shown	1425	SE	519470 312660	Status: Active Licence No: AN/031/0014/003 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain - Deeping St Nicholas Data Type: Line Name: N WOODROFFE & SONS	Annual Volume (m³): 12000 Max Daily Volume (m³): 960 Application No: NPSWR001317 Original Start Date: 20/5/2009 Expiry Date: 31/3/2020 Issue No: 1 Version Start Date: 20/5/2009 Version End Date:
Not shown	1425	SE	519470 312660	Status: Historical Licence No: 5/31/14/*S/0276 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain - Deeping St Nicholas Data Type: Line Name: JOHN WOODHEAD	Annual Volume (m³): 20000 Max Daily Volume (m³): 1600 Application No: N1521 Original Start Date: 17/12/2008 Expiry Date: 31/3/2020 Issue No: 1 Version Start Date: 17/12/2008 Version End Date:
Not shown	1425	SE	519470 312660	Status: Historical Licence No: 5/31/14/*S/0260 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain - Deeping St Nicholas Data Type: Line Name: J & J M & P E WOODHEAD	Annual Volume (m³): 40000 Max Daily Volume (m³): 1600 Application No: N1277 Original Start Date: 26/3/2003 Expiry Date: 31/10/2008 Issue No: 1 Version Start Date: 1/4/2004 Version End Date:
Not shown	1448	SE	519720 312800	Status: Active Licence No: 5/31/14/*S/0269 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain, Stowgate Farm Data Type: Line Name: C C JOHNSON & SON	Annual Volume (m³): 13200 Max Daily Volume (m³): 1200 Application No: NS1064 Original Start Date: 15/1/2008 Expiry Date: 31/3/2020 Issue No: 1 Version Start Date: 15/1/2008 Version End Date:
Not shown	1451	SE	519810 312850	Status: Historical Licence No: 5/31/14/*S/0274 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Farm & S Drove Drain R Welland Data Type: Line Name: DENNIS ESTATES	Annual Volume (m³): 105000 Max Daily Volume (m³): 6000 Application No: N1510 Original Start Date: 23/6/2008 Expiry Date: - Issue No: 1 Version Start Date: 23/6/2008 Version End Date:
Not shown	1453	SE	518500 312060	Status: Historical Licence No: 5/31/14/*S/0170 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: S Drove Drain, Stowgate Farm Data Type: Line Name: BROWN	Annual Volume (m³): 22000 Max Daily Volume (m³): 2000 Application No: - Original Start Date: 1/10/1984 Expiry Date: - Issue No: 100 Version Start Date: 1/10/1996 Version End Date:
Not shown	1480	SE	519800 312800	Status: Historical Licence No: 5/31/14/*S/0009 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Farm & S Drove Drain R Welland Data Type: Line Name: DENNIS ESTATES	Annual Volume (m³): 105000 Max Daily Volume (m³): 6000 Application No: - Original Start Date: 1/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/4/1989 Version End Date:
Not shown	1487	SE	519800 312800	Status: Active Licence No: 5/31/14/*S/0011	Annual Volume (m³): 50000 Max Daily Volume (m³): 6000

ID	Distance (m)	Direction	NGR	Details
				Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain, Wensor Farm Data Type: Line Name: R C TINSLEY LTD Application No: - Original Start Date: 1/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/1/2011 Version End Date:
Not shown	1495	S	519460 312640	Status: Active Licence No: 5/31/14/*S/0161 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain - Deeping St Nicholas Data Type: Line Name: G A CHAPPELL & SONS Annual Volume (m³): 15500 Max Daily Volume (m³): 1041 Application No: NS766 Original Start Date: 27/1/1999 Expiry Date: - Issue No: 1 Version Start Date: 1/1/2011 Version End Date:
Not shown	1527	W	517500 314400	Status: Historical Licence No: 5/31/14/*S/0181C Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Calthrops Drain, Six Score Fm Data Type: Line Name: E D & A D COOKE LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 1/4/1985 Expiry Date: - Issue No: 100 Version Start Date: 1/7/1988 Version End Date:
Not shown	1528	SE	519700 312700	Status: Active Licence No: 5/31/14/*S/0171 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Stowgate North Drain Data Type: Line Name: JOHNSON Annual Volume (m³): 17000 Max Daily Volume (m³): 2000 Application No: - Original Start Date: 1/10/1984 Expiry Date: - Issue No: 100 Version Start Date: 1/1/1998 Version End Date:
Not shown	1543	W	517480 314380	Status: Active Licence No: 5/31/14/*S/0181C Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Calthrops Drain, Six Score Fm Data Type: Line Name: E D & A D COOKE LTD Annual Volume (m³): 32000 Max Daily Volume (m³): 2000 Application No: NA461 Original Start Date: 1/4/1985 Expiry Date: - Issue No: 101 Version Start Date: 22/12/2005 Version End Date:
Not shown	1544	S	518800 312240	Status: Active Licence No: 5/31/14/*S/0200 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain-deep St.nich Data Type: Line Name: G A CHAPPELL & SONS Annual Volume (m³): 25000 Max Daily Volume (m³): 1500 Application No: - Original Start Date: 1/5/1988 Expiry Date: - Issue No: 100 Version Start Date: 1/5/1988 Version End Date:
Not shown	1560	S	519280 312530	Status: Active Licence No: 5/31/14/*S/0269 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Raisens Dike, Stowgate Farm Data Type: Line Name: C C JOHNSON & SON Annual Volume (m³): 13200 Max Daily Volume (m³): 1200 Application No: NS1064 Original Start Date: 15/1/2008 Expiry Date: 31/3/2020 Issue No: 1 Version Start Date: 15/1/2008 Version End Date:
Not shown	1590	S	519280 312500	Status: Historical Licence No: 5/31/14/*S/0170 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Raisens Dyke, Stowgate Farm Data Type: Line Name: BROWN Annual Volume (m³): 22000 Max Daily Volume (m³): 2000 Application No: - Original Start Date: 1/10/1984 Expiry Date: - Issue No: 100 Version Start Date: 1/10/1996 Version End Date:
Not shown	1602	NE	517900 317400	Status: Active Licence No: 5/31/14/*S/0146A Details: Spray Irrigation - Direct Annual Volume (m³): 20184 Max Daily Volume (m³): 659 Application No: -

ID	Distance (m)	Direction	NGR	Details
				Direct Source: Surface Water Source Of Supply Point: Drains At Hospital Farm "b" Data Type: Line Name: SLY BROS (POTATOES) LTD Original Start Date: 1/1/1977 Expiry Date: - Issue No: 100 Version Start Date: 1/12/1986 Version End Date:
Not shown	1622	SE	520400 313200	Status: Active Licence No: 5/31/14/*S/0160 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Farm Drain, Crowland Data Type: Line Name: WHEAT Annual Volume (m³): 30000 Max Daily Volume (m³): 2000 Application No: NPS/WR/013689 Original Start Date: 1/9/1983 Expiry Date: - Issue No: 101 Version Start Date: 18/10/2013 Version End Date:
Not shown	1622	SE	520400 313200	Status: Active Licence No: 5/31/14/*S/0160 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain Data Type: Line Name: WHEAT Annual Volume (m³): 30000 Max Daily Volume (m³): 2000 Application No: NPS/WR/004980 Original Start Date: 1/9/1983 Expiry Date: - Issue No: 101 Version Start Date: 18/10/2013 Version End Date:
Not shown	1630	SE	520390 313170	Status: Active Licence No: AN/031/0014/002 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain - Deeping St Nicholas Data Type: Line Name: WD Branton Annual Volume (m³): 8000 Max Daily Volume (m³): 640 Application No: NPS/WR/004980 Original Start Date: 20/5/2009 Expiry Date: 31/3/2020 Issue No: 2 Version Start Date: 1/4/2014 Version End Date:
Not shown	1630	SE	520390 313170	Status: Historical Licence No: 5/31/14/*S/0276 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain - Deeping St Nicholas Data Type: Line Name: JOHN WOODHEAD Annual Volume (m³): 20000 Max Daily Volume (m³): 1600 Application No: N1521 Original Start Date: 17/12/2008 Expiry Date: 31/3/2020 Issue No: 1 Version Start Date: 17/12/2008 Version End Date:
Not shown	1630	SE	520390 313170	Status: Historical Licence No: 5/31/14/*S/0260 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain - Deeping St Nicholas Data Type: Line Name: J & J M & P E WOODHEAD Annual Volume (m³): 40000 Max Daily Volume (m³): 1600 Application No: N1277 Original Start Date: 26/3/2003 Expiry Date: 31/10/2008 Issue No: 1 Version Start Date: 1/4/2004 Version End Date:
Not shown	1637	NE	517830 317490	Status: Historical Licence No: 5/31/14/*S/0152 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Farm Drain - Baston Data Type: Line Name: WATTS Annual Volume (m³): 100000 Max Daily Volume (m³): 2000 Application No: N1109 Original Start Date: 1/8/1979 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2000 Version End Date:
Not shown	1651	NE	517847 317508	Status: Active Licence No: 5/31/14/*S/0152 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Farm Drain - Baston Data Type: Line Name: P N WATTS Annual Volume (m³): 100000 Max Daily Volume (m³): 2000 Application No: NPS/WR/017671 Original Start Date: 1/8/1979 Expiry Date: - Issue No: 102 Version Start Date: 9/3/2015 Version End Date:
Not shown	1840	E	521600 313900	Status: Active Licence No: 5/31/14/*S/0146A Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Annual Volume (m³): 20184 Max Daily Volume (m³): 659 Application No: - Original Start Date: 1/1/1977

ID	Distance (m)	Direction	NGR	Details
				Point: Drains At Vergettes Farm Data Type: Line Name: SLY BROS (POTATOES) LTD Expiry Date: - Issue No: 100 Version Start Date: 1/12/1986 Version End Date:
Not shown	1842	S	518440 312030	Status: Active Licence No: 5/31/14/*S/0199 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain-deep.st.nich Data Type: Line Name: WD Branton Annual Volume (m³): 25000 Max Daily Volume (m³): 1500 Application No: NPS/WR/015291 Original Start Date: 1/5/1988 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2014 Version End Date:
Not shown	1899	SE	521360 313680	Status: Active Licence No: 5/31/14/*S/0252 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: South Drove Drain - Deeping St Nicholas Data Type: Line Name: SLY BROS (POTATOES) LTD Annual Volume (m³): 15371 Max Daily Volume (m³): 1328 Application No: NS908 Original Start Date: 1/4/2001 Expiry Date: - Issue No: 1 Version Start Date: 1/4/2001 Version End Date:

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 None identified

Database searched and no data found.

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 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	97 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.6
14	97 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.6
2	107 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.0

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
15	107 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.0
3	108 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.0
16	108 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.0
4	130 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
17	130 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
5	136 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.9
18	136 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.9
6	158 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.8
19	158 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.8
7	169 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
20	169 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
8	220 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.7
21	220 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.7
9	229 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.6
22	229 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.6

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
10	233 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
23	233 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
11	237 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.0
24	237 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.0
12	244 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
25	244 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
13	248 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.7
26	248 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.7
14	261 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.5
27	261 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.5
15	266 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.6
Not shown	266 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.6
16	268 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.3
Not shown	268 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.3
17	294 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.3

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
18	294 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.6
30	294 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.3
31	294 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.6
19	297 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
32	297 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
20	298 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
21	298 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
22	298 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
23	298 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
33	298 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
34	298 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
35	298 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
36	298 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
24	343 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	343 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
25	350 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.6
Not shown	350 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.6
26	392 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.8
Not shown	392 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.8
27	433 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.1
40	433 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.1
28	440 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	440 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
29	441 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.5
Not shown	441 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.5
30	450 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.1
Not shown	450 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.1
31	490 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.3
Not shown	490 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.3
32	499 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.3

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Not shown	499 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.3

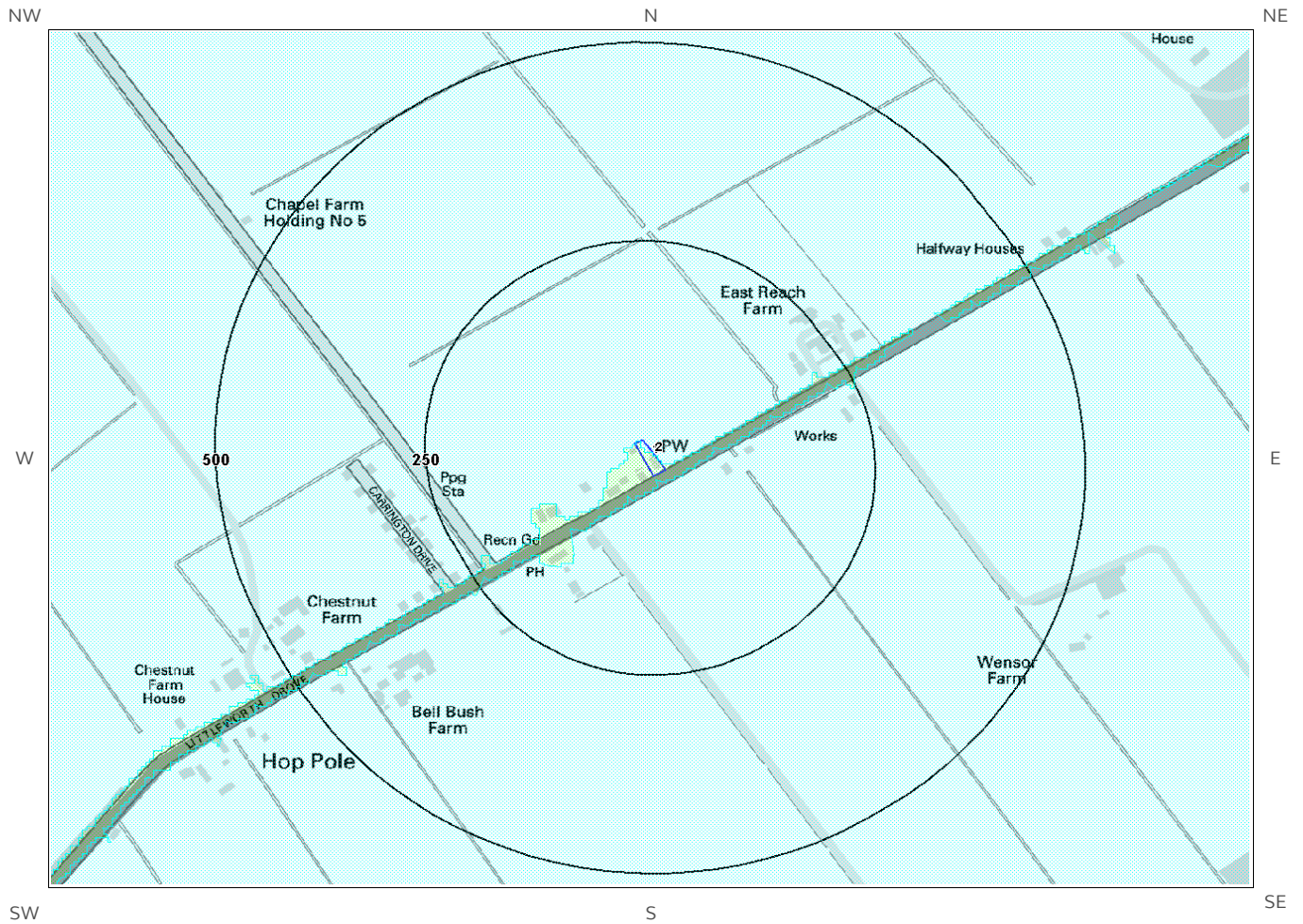
6.11 Surface Water Features

Surface water features within 250m of the study site Identified

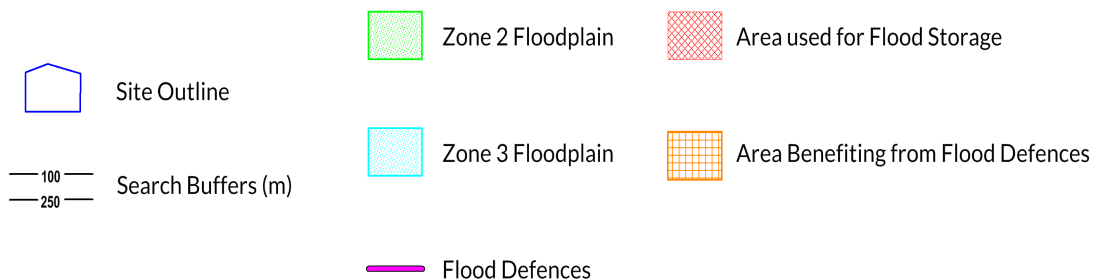
The following surface water records are not represented on mapping:

Distance (m)	Direction
96	E
106	SW
107	NE
130	S
135	S
157	NE
219	NW
227	SW

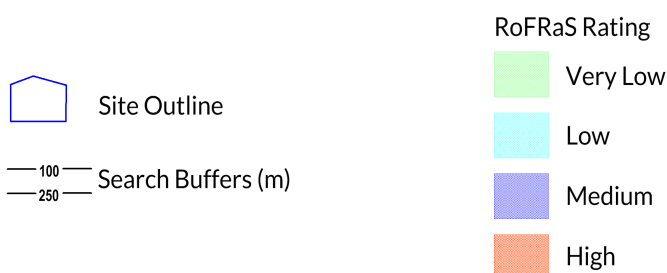
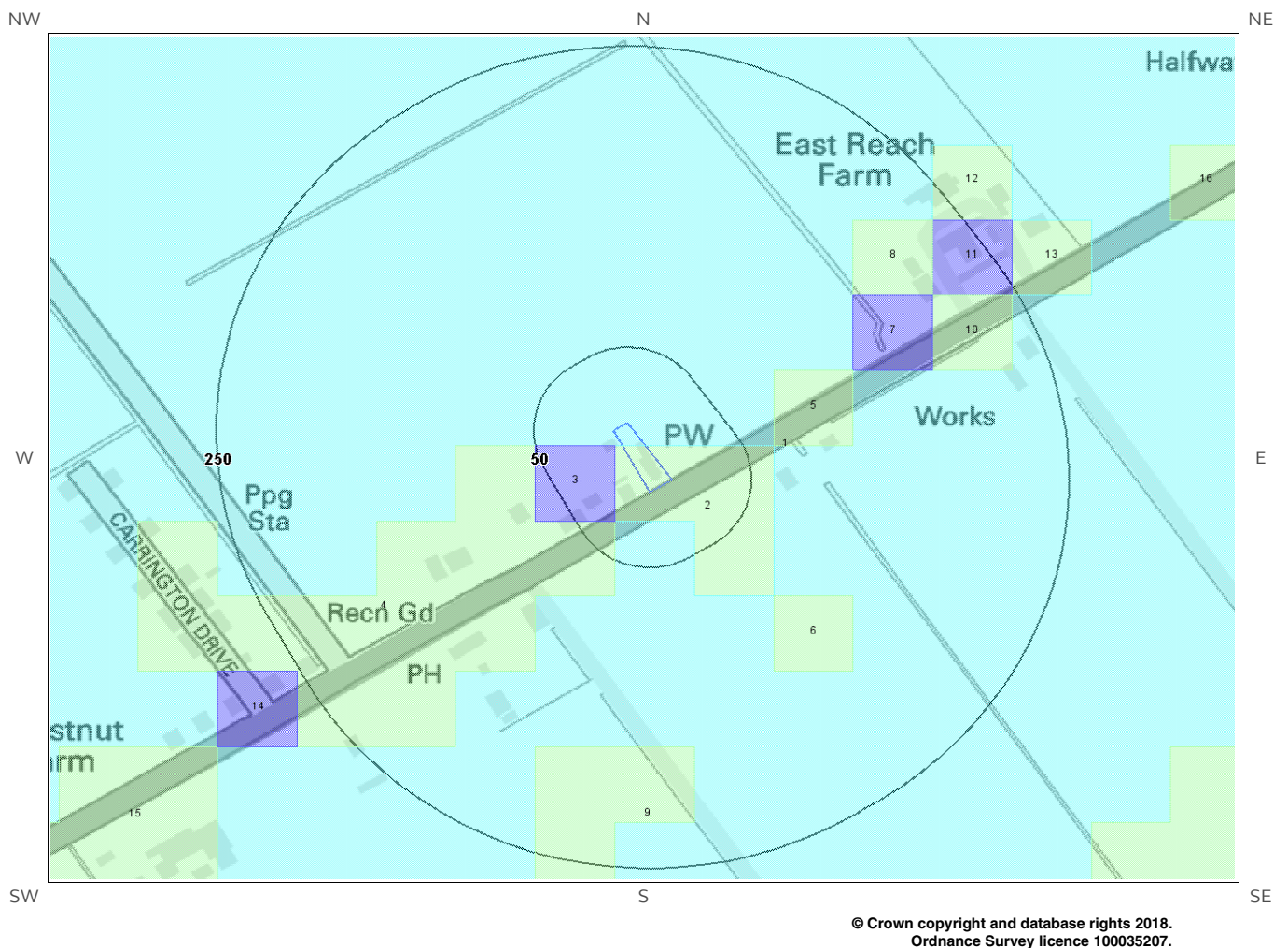
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



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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

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:

ID	Distance (m)	Direction	Update	Type
1	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m

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.

ID	Distance (m)	Direction	Update	Type
1	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)

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

Highest risk of flooding onsite

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 Low (greater than 1 in 1000 but less than 1 in 100) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRaS flood Risk
1	0.0	On Site	Low
2	0.0	On Site	Very Low

3	4.0	SW	Medium
4	29.0	SW	Very Low

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 None identified

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

Not Prone

The area is not considered to be prone to groundwater flooding based on rock type.

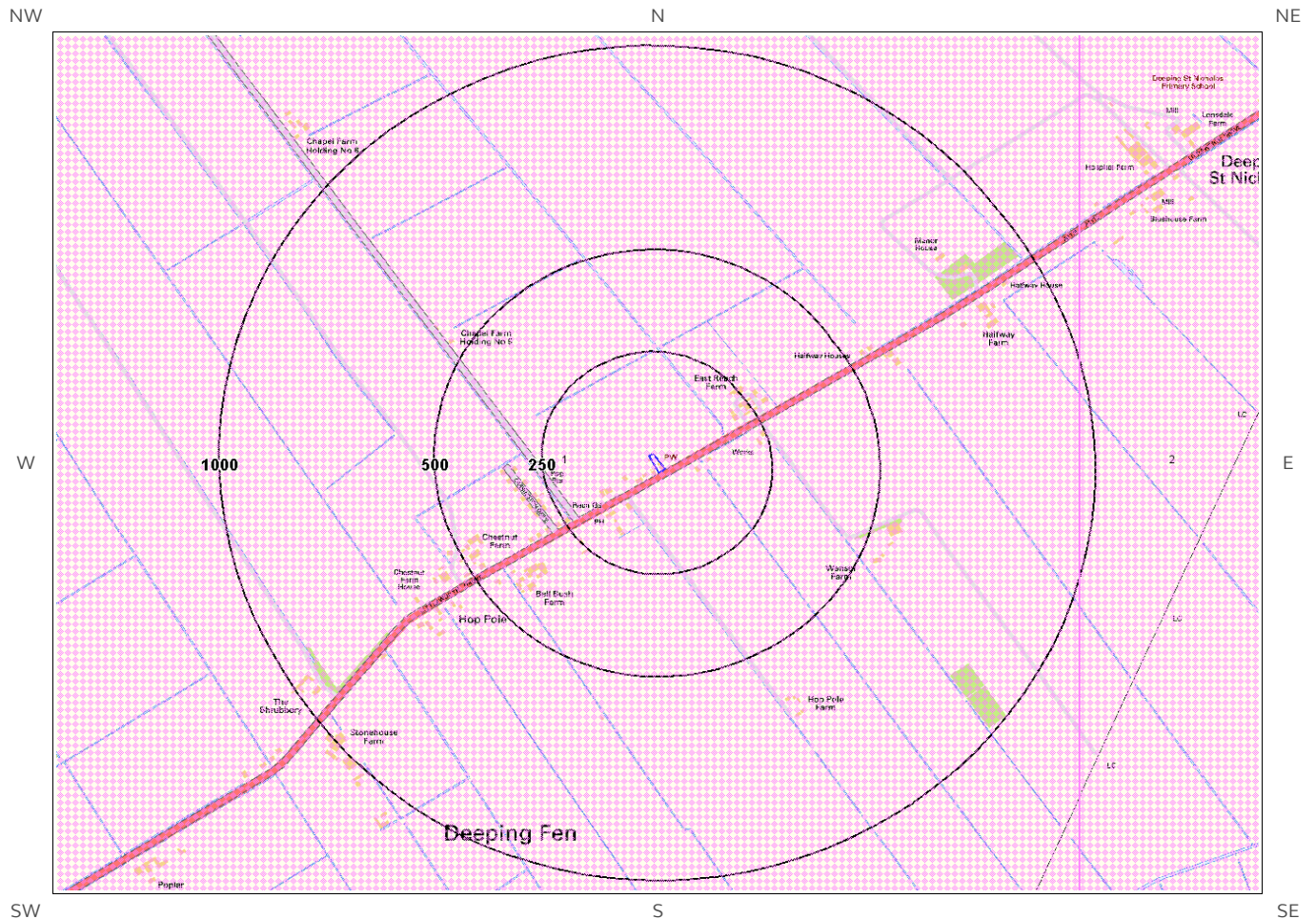
7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result Not Applicable

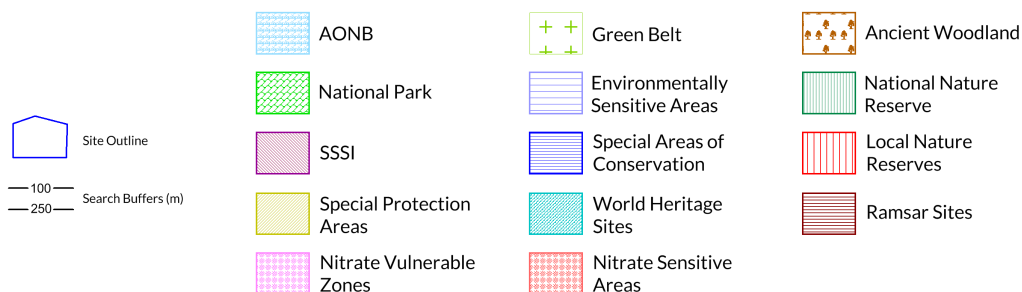
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

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

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:

0

Database searched and no data found.

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:

0

Database searched and no data found.

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:

0

Database searched and no data found.

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
1	0	On Site	Existing	DEFRA
2	964	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 Low

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

Hazard
Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. 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 possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially 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

Moderate

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

Hazard
Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

9.1.5 Collapsible Rocks

Maximum Collapsible 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
No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. 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

Moderate

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

Hazard
Significant potential for running sand problems with relatively small changes in ground conditions. Avoid large amounts of water entering the ground (for example through pipe leakage or soak-aways). Do not dig (deep) holes into saturated ground near the property without technical advice. For new build consider the consequences of soil and groundwater conditions during and after construction. For existing property possible increase in insurance risk from running sand, for example, due to water leakage, high rainfall events or flooding.

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

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? 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

Is the property in an area where Radon Protection are required 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
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: www.environment-agency.gov.uk
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
www.gov.uk/phe
Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: South Holland District Council
Phone: 01775 761 161
Web: <http://www.sholland.gov.uk/>
Address: Council Offices, Priory Road, Spalding, Lincolnshire, PE11

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

