

GROUND ENGINEERING

Newark Road
Peterborough
PE1 5UA

Tel: 01733 566566

e: admin@groundengineering.co.uk

CONTAMINATION INVESTIGATION REPORT

DAVE COOK ENGINEERING LIMITED
QUADRING ROAD
DONINGTON
LINCOLNSHIRE

Report Reference C14984

On behalf of:-

Dave Cook Engineering Limited
Quadrang Road
Donington
Lincolnshire
PE11 4TB

February 2020

DAVE COOK ENGINEERING LIMITED

CONTAMINATION INVESTIGATION REPORT

FOR

PROPOSED RESIDENTIAL DEVELOPMENT

AT

DAVE COOK ENGINEERING LIMITED

QUADRING ROAD

DONINGTON

LINCOLNSHIRE

Report Reference No. C14984

February 2020

INTRODUCTION

The client, Dave Cook Engineering Limited, proposes to build a new residential development on their site at Quadring Road, Donington in Lincolnshire.

Ground Engineering Limited was commissioned by the client to carry out a contamination investigation to determine the nature and chemical properties of the underlying soils, and provide a contamination assessment report. A desk study including historical and environmental aspects of the site is included within this report. No foundation design recommendations were required within the scope of this report.

LOCATION, TOPOGRAPHY AND GEOLOGY OF THE SITE

The site is located at Dave Cook Engineering Limited, Quadring Road, Donington in Lincolnshire. The irregular shaped site is approximately 30m wide fronting Quadring Road to the south, and extends approximately 60m north. The National Grid Reference for the centre of the site is TF 2141 3558 and its location is shown on a plan following this report text.

At the time of the investigation in January 2020, the site contained the operational offices and yard of Dave Cook Engineering Limited. A large warehouse occupied the northern part of the site, with a single-storey office building in the west, a large concrete surfaced yard centrally on the site, and grassed area to the east. Cement bound asbestos corrugated panels were present along the sides and roof of the warehouse building, as well as cement bound asbestos downpipes.

Trees were present along the eastern boundary of the site, and trees were also present in neighbouring gardens which overhung the site boundary. A row of coniferous trees was present along the eastern boundary, and trees close by off-site included Silver Birch, Sycamore, Laurel and Copper Beech amongst others. The site was bounded by Quadring Road to the south, a pumping station to the east, housing fronting Crosslands to the north, and more housing to the west. The site had gated access from Quadring Road to the south. Photographs from a site walkover on 27th January 2020 are presented following the plans.

The site stands at about 4mOD, on level ground within the Lincolnshire Fens.

The geological map, sheet 128 (1995) at 1:50,000 scale, shows superficial Terrington Beds (now named Tidal Flat Deposits), overlying the solid geology of the Oxford Clay at depth. Previous investigations by Ground Engineering in the village found Barroway Drove Beds and Lower Peat covering Boulder Clay at approximately 5m depth.

HISTORY OF THE SITE

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

<i>Extract studied</i>	<i>Description</i>
1887 OS sheets Lincs. 116SE, 117SW, 125NE &126NW Scale 1:10,560 Figure A	The site is undeveloped within the south-eastern part of a field. The site is in a rural area on the eastern side of Donington. A pond is shown 100m south of the site.
1889 OS sheets Lincs. 116.16, 117.13, 125.4 & 126.1 Scale 1:2500 Figure B	The site and immediate surrounding area appear unchanged. Drains are evident along field boundaries 35m south-west and 60m east of the site.
1905 OS sheets Lincs. 116.16, 117.13, 125.4 & 126.1 Scale 1:2500 Figure C	The site and immediate surrounding area appear generally unchanged. Part of the drain has been infilled to the south-west of the site.
1938-48 OS sheets Lincs. 116SE, 117SW, 125NE &126NW Scale 1:10,560 Figure D	The site and immediate surrounding area appear unchanged.
1956 OS sheet TF23NW Scale 1:10,560 Figure E	The site remains undeveloped within a field. New buildings are shown to the south of the site, on the southern side of Quadring Road.
1972 OS sheet TF2135 Scale 1:2500 Figure F	The site is undeveloped, however a track leading to a new Store is shown crossing the south-western part of the site. The Store to the west of the site replaces former dwellings and outbuildings. A house to the west of the site has been extended. A sewage pumping station is shown immediately east of the site. New houses have been built to the north of the site. New drains are shown along field boundaries 25m north-east and 85m south-east of the site. The pond to the south has been infilled. Glasshouses are shown 60m south-west of the site. A works is shown 145m north of the site. An electricity sub-station is shown 155m north-west of the site.

<i>Extract studied</i>	<i>Description</i>
1977 OS sheet TF23NW Scale 1:10,000 Figure G	The site and immediate surrounding area appear unchanged.
1980 OS sheet TF2135 Scale 1:2500 Figure H	A rectangular building is shown in the northern part of the site. A new house is shown 70m north of the site.
1987 OS sheet TF2135 Scale 1:2500 Figure I	A new road, Crosslands, and new houses have been built to the north of the site.
1995 OS sheet TF2135 Scale 1:2500 Figure J	The site area appears unchanged. The Store to the west of the site has been cleared and the site developed with housing.
2003 OS sheets TF2135NW, NE, SW & SE Scale 1:1250 Figure K	A new rectangular building is shown within the western part of the site. A house and glasshouses to the south-west of the site have been cleared.
2010 OS Sheet TF23NW Scale 1:10,000 Figure L	The site and immediate surrounding area appear generally unchanged. A new large house is shown to the south-west of the site.
2018 GroundSure Aerial Photograph of Site (Appendix 2)	The two buildings, a large hardstanding area, and grassed areas are evident on the site. Mature trees are present along the eastern site boundary. The adjacent site to the west appears to have a hardstanding area, cars and possibly a garage (a caravan is evident on the 2011 streetview). New red-roofed houses and garages are evident on the former nursery site to the south-west. Tennis Courts are also evident to the south of the site.
2019 OS sheet TF2135 Not to Scale Figure M	The site and immediate surrounding area appear unchanged.

Summary of Historical Information

The Ordnance Survey map of 1887 showed that the site was undeveloped within a field. Buildings had been constructed on the site by 1980 and 2003 and the site has remained in the same arrangement to the present day.

By 1972 a pumping station had been built to the east of the site, and a store to the west. Crosslands to the north of the site and new housing had been built in the 1980s and 1990s.

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 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	6
Historical Tank Database	0	0
Historical Energy Features Database	0	5
Historical Petrol & Fuel Site Database	0	0
Historical Garage & Motor Vehicle Repair Database	0	0
Potentially Infilled Land	0	12
2. Environmental Permits, Incidents and Registers	On-Site	0 - 250m
Sites Holding Environmental Permits/Authorisations	0	0
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	1	6
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	0
Potable Water Abstraction Licences	0	0
Source Protection Zones	0	0
River Quality Data	No	No
Water Network Entries	0	16
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				Very 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

No historical industrial sites are recognised on the site. A corn windmill is identified 206m west of the site, and an unspecified works 230m west of the site. An electricity sub-station is recorded 150m north-west of the site. No historical garages, petrol or fuel sites are recorded within 250m of the site. Ponds are recognised 148m to the north, 183m west, and 242m south-east of the site, which are identified as areas of potentially infilled land. The pond 100m south of the site has not been identified. No environmental permits or registers are recorded on or within 250m of the site. No landfills or other waste sites are recorded within 250m of the site.

The current owner's agricultural business is recognised on the site. Current land uses around the site include the pumping station 4m east; a civil engineering company to the south-west; an electricity sub-station to the north-west; Greenaway Amenity Limited to the north.

No made ground is recorded beneath the site. Superficial Tidal Flat Deposits are recorded beneath the site, which is classified by the EA as an unproductive stratum. The underlying solid geology Oxford Clay is also classified by the EA as an unproductive stratum. There are no groundwater abstractions within 250m of the site. The site is not within a source protection zone.

The nearest surface water feature is a drain 82m to the south of the site. The site is not within a floodplain, and has a very low risk of flooding. The site is within a nitrate vulnerable zone, an environmentally sensitive area.

There is a moderate hazard from compressible ground and running sand; a low hazard from shrinking and swelling clay; a very low hazard from landslides; and a negligible hazard from soluble rocks and collapsible rocks. No mining areas are recognised within 250m of the site.

The site is not in a radon affected area and no radon protection measures are required for new dwellings on the site.

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; 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 – pathway – 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	Drains could provide a contaminant source. Existing buildings are indicated by signage to contain asbestos.
Soil Beneath Site	Contamination may be present within made ground materials on the site.
Soil Gas	Potential soil gas generated from made ground or natural soils.
Ground Contamination Outside Site Boundary	Ground contamination migrating from adjoining sites, such as the pumping station to the east.

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 Tidal Flat Deposits are indicated to be an unproductive stratum. The underlying solid geology Oxford Clay is also indicated to be an unproductive stratum. 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/Watercourses The nearest surface water feature is a drain 82m to the south of the site.	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 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 – ground or construction workers	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Low likelihood/ Likely	Low likelihood	Low likelihood	Low likelihood
Human Health – end users	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Unlikely	Low likelihood	Low likelihood	Low likelihood
Water Environment	Migration through ground into surface water or surrounding groundwater	Low likelihood	Unlikely	Unlikely	Unlikely
Flora	Vegetation on site growing on contaminated soil	Low likelihood	Low likelihood	Low likelihood	Unlikely
Building Materials	Contact with contaminated soil	Low likelihood	Low likelihood	Low likelihood	Low likelihood
<u>Key to Table 4</u> 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.			

SITE WORK

The site work conducted on 27th January 2020 comprised four hand augered boreholes (HA1 to HA4). The positions are shown on the exploratory hole location plan following this report text.

Limited public utility service drawings were consulted prior to determining the exploratory hole positions. Prior to excavation, a service scan was made at each position using a CAT (Cable Avoidance Tool) to check for the absence of detectable buried services that may otherwise have been damaged by the investigation.

The exploratory hole records, presented following the plans, give the descriptions and depths of the various strata encountered, details of all samples taken, and the groundwater conditions observed during and on completion of excavation.

Hand Augered Boreholes

Boreholes HA1, HA2, HA3 and HA4 were excavated using hand digging tools across the site in proposed rear garden areas. The exposed strata were logged and sampled by a Geoenvironmental Engineer, and samples collected for subsequent laboratory testing.

Representative disturbed samples were taken at regular intervals throughout the depth of the boreholes.

On completion, the boreholes were backfilled with arisings and the surfaces reinstated.

LABORATORY WORK

The samples were inspected in the laboratory and assessments of the soil characteristics have been taken into account during preparation of the exploratory hole records. The soil descriptions have been made in accordance with BS5930:2015. The chemical test results are presented following the exploratory hole records.

Chemical analysis of four soil samples recovered from the exploratory holes was undertaken by an independent laboratory, primarily for characterisation purposes. The samples were tested for a suite encompassing a wide range of potential contaminants outlined by the Environment Agency (EA) and National House Building Council (NHBC) document R&D 66; 2008 'Guidance for the Safe Development of Housing on Land Affected by Contamination'. In HA2 at 0.15m depth, a fragment of roof sheet suspected to contain asbestos containing material (ACM), was sent to the chemical laboratory to be identified by microscopy.

GROUND CONDITIONS

The ground conditions comprised made ground to between 0.45m and 0.70m depth, which was underlain by the expected superficial Tidal Flat Deposit soils, which were proved to at least the base of the exploratory holes and a maximum depth of 1.10m. No groundwater was met in the boreholes within 1.10m depth.

Made Ground

From the surface soft or firm, dark brown and brown, slightly sandy, slightly gravelly, silty clay varying to clayey silt fill was met to between 0.45m and 0.70m depth. The gravel fraction comprised flint, limestone, brick, mortar, glass, clinker and ash. A fragment of cement bound asbestos sheet was also found at 0.15m depth in HA2.

Tidal Flat Deposits

Beneath the made ground at between 0.45m and 0.70m depth, soft, brown and orange brown, slightly sandy to sandy, silty clay varying to clayey silt, considered to represent the expected Tidal Flat Deposits, was encountered to at least the base of all the holes, and to a maximum depth of 1.10m below ground level.

Groundwater

The boreholes were dry during excavation and on completion.

Observations

Live roots were observed in all of the holes, and to at least the base of HA3 at 1.10m below ground level.

Evidence of Contamination

The made ground encountered during this investigation was not noted to have olfactory or visual evidence of fuel contamination. The made ground contained fragments of brick, mortar, glass, clinker and ash. A fragment of cement bound asbestos sheet was also found at 0.15m depth in HA2, which following examination in the laboratory was determined to be Chrysotile in a hard cement type material.

COMMENTS ON THE SOIL CHEMICAL TEST RESULTS

The results of the laboratory chemical testing on near surface soil samples have primarily been compared to soil screening values (SSVs) produced by Land Quality Management Limited (LQM) and the Chartered Institute for Environmental Health (CIEH) presented in their document ‘The LQM/CIEH S4ULs for Human Health Risk Assessment: 2015 (Publication Number S4UL3608)’. The LQM/CIEH S4ULs are intended for use in assessing the potential risks posed to human health by contaminants in soil and are transparently-derived and cautious ‘trigger values’ above which further assessment of the risks or remedial action may be needed. The S4ULs (Suitable for Use Levels) have been derived, in accordance with UK legislation and Environment Agency policy, using a modified version of the Environment Agency CLEA 1.06 software.

Reference has also been given to ATRISKsoil soil screening values produced by Atkins Limited and provided under licence to Ground Engineering Limited. Atkins SSVs have been derived in line with the Environment Agency 2009 guidance using the CLEA 1.071 software. With the absence of a S4UL for cyanide the ATRISKsoil SSV has been used as the soil screening criteria within this report.

In 2014 the Department for Environment Food and Rural Affairs (DEFRA) published, in their document SP1010, Category 4 Screening Levels (C4SL) for several contaminants including lead. The C4SL represent screening levels below which the land could be considered suitable for a specified use and definitely not contaminated land in respect of those determinands. With the absence of S4UL for lead the C4SL has been used as the soil screening criteria within this report.

For each contaminant the adopted soil screening criteria have been calculated for the following land uses:

- Residential use with home grown produce
- Residential use without home grown produce
- Commercial and industrial usage

The intended purpose of the SSVs are as “intervention values” in the regulatory framework for assessment of human health risks in relation to land use. These values are not binding standards, but are intended to inform judgements about the need for action to ensure that a new use of land does not pose any unacceptable risks to the health of the intended users.

Table 5 compares the test results for the made ground with the SSVs in relation to the specified uses. The number of test results which exceed these values, are also provided. Statistical analysis would not be meaningful for the small dataset and has not been undertaken.

Table 5: Comparison of Chemical Test Results with SSVs for Made Ground Soils

Determinand	Number of Samples	Min Value mg/kg	Max Value mg/kg	Number of Samples Exceeding SSV for			Assessment Method	Soil Screening Criteria 1.0% SOM		
				Residential with home grown produce	Residential without home grown produce	Commercial/Industrial		Residential with home grown produce mg/kg	Residential without home grown produce mg/kg	Commercial/Industrial mg/kg
Organic Matter	4	1.2%	3.2%	-	-	-	-	-	-	-
Arsenic	4	7.9	14	0	0	0	S4UL	37	40	640
Cadmium	4	<0.2	0.3	0	0	0	S4UL	11	85	190
Chromium (III)*	4	19	37	0	0	0	S4UL	910	910	8600
Chromium (VI)	4	<4.0	<4.0	0	0	0	S4UL	6	6	33
Lead	4	16	37	0	0	0	C4SL	200	310	2330
Mercury	4	<0.3	<0.3	0	0	0	S4UL	11	15	320
Selenium	4	<1.0	<1.0	0	0	0	S4UL	250	430	12,000
Nickel	4	16	23	0	0	0	S4UL	130	180	980
Phenols	4	<1.0	<1.0	0	0	0	S4UL	120	440	440
Benzo[a]pyrene	4	<0.05	0.25	0	0	0	S4UL	0.79	1.2	15
Copper	4	11	25	0	0	0	S4UL	2400	7100	68,000
Zinc	4	65	130	0	0	0	S4UL	3700	40,000	730,000
Free Cyanide	4	<1	<1	0	0	0	ATRISK	34	34	34

Notes

*The concentration of Trivalent Chromium is assumed to be equivalent to the Total Chromium concentration. This is because most naturally occurring chromium is in the trivalent (chromic) state.

S4UL and C4SL for metals were derived using 6% SOM. These values are not sensitive to SOM and would also be applicable for 1% SOM and 2.5% SOM.

LQM/CIEH S4ULs 'Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3608. All rights reserved'.

ATRISKsoil SSVs produced by Atkins Limited and provided under licence to Ground Engineering Limited.

Discussion of Soil Results

Levels of all elements and compounds were within the associated soil screening values for both residential and commercial/industrial end uses.

A fragment of cement bound asbestos sheet was also found at 0.15m depth in HA2, which following examination in the laboratory was determined to be Chrysotile in a hard cement type material.

The made ground did not have any olfactory nor visual evidence of fuel contamination.

The results indicate that the made ground would be suitable for retention at the surface in the proposed residential setting. Asbestos roof sheet fragments should be handpicked by qualified operatives from exposed soil, and disposed of a suitably licensed landfill.

UPDATED CONCEPTUAL MODEL

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

A generalised conceptual model relative to the existing site and proposed residential use of the site is presented in Table 6 below.

Table 6: General Conceptual Model Relative to Future Residential Development

Receptors	Pathway	Estimated Potential for Linkage with Contaminant Sources			
		Drainage/ Buildings	Soil	Soil Gas	Off-Site Sources
Human Health – groundworkers	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Moderate	Low	Low	Very Low
Human Health – users of completed development	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	N/A	Low	Low	Very Low
Water Environment	Migration through ground into surface water or groundwater	Low	Very Low	Very Low	Very Low
Flora	Vegetation on site growing on contaminated soil	Very Low	Very Low	Low	Very Low
Building Materials	Contact with contaminated soil	Very Low	Very Low	Low	Very Low

<u>Key to Table 6 Risk</u>	Definition
Very High	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, or, there is evidence that severe harm to a designated receptor is currently happening. The risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) and remedial works may be necessary in the short term and likely over the long term.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.
Low	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.
N/A	Not Applicable because the proposed development will remove the source.

COMMENTS ON GROUND CONTAMINATION IN RELATION TO PROPOSED DEVELOPMENT

Anticipated exposure scenarios relating to the existing site, the site history and proposed residential end use of the site, in the context of the conceptual model, are discussed as follows.

This investigation may not have revealed the full extent of contamination on the site and appropriate professional advice should be sought if subsequent site work reveals materials that may appear to be contaminated.

Contaminated Soil

On the basis of this ground investigation, the site is underlain by between 0.45m and 0.70m of made ground resting on naturally deposited Tidal Flat Deposits. The presence of made ground and the level of contaminants indicates that there is a low risk of contaminants affecting groundworkers during any construction works, and there will be a low risk of affecting future end users of the site within a residential setting.

The underlying naturally deposited soils encountered beneath the site would also be considered suitable for re-use within the development.

Drainage

Redundant foul or surface water drain runs, if present, should be removed where encountered from beneath the site and precautions should ensure that any remaining effluent or sediment is directly disposed off-site. The integrity of any existing drains should be checked, and where they are to be retained, any damaged sections should be replaced prior to development.

Buildings

The existing buildings within the site have signage indicating asbestos containing materials within them. Suitable precautions, in line with current best practice, should be put in place to protect workers from the effects of asbestos material, during the site clearance and redevelopment phases.

There is a very low risk of contamination affecting the existing and proposed structures, and their foundations.

Soil Gas

There are no landfills within 250m of the site. The site is underlain by a layer of made ground, covering superficial, silty clay soils.

There is a low risk that hazardous gases would affect groundworkers during the construction phase and a low risk of hazardous gases affecting future users of the site.

The site lies within an area where less than 1% of homes are above the BRE action level for radon and that no radon protection measures are required.

Human Health - Construction Workers

The risk of the made ground affecting the groundworkers during the construction phase would be considered to be low.

Based on the chemical test results, no special precautions would be required during the development of the site by workers who may come into contact with the soil during groundworks, providing standard precautions are adopted which should generally include the procedures given by the Health and Safety Executive (The Blue Book) HS(G)66.

For the protection of workers during groundworks the following is recommended:

a) Limit repeated or prolonged skin contact with soils by wearing gloves with sleeves rolled down.

b) Washing facilities should be made available to groundworkers, so as to minimise the potential for inadvertent ingestion of soil.

- c) Generation of dust should be limited by damping-down.
- d) Suitable precautions, in line with current best practice, should be put in place to protect workers from the effects of asbestos containing material, during the site clearance phase. Asbestos containing materials should be handled by qualified operatives and disposed of at a suitably licensed landfill.
- e) If any soils are revealed which are different to those encountered by this ground investigation, the advice of a specialist should be sought in view of classifying the material and ascertaining its risk to groundworkers.

Human Health - Users of Completed Development

The results of the chemical analysis would indicate that the made ground should be considered to be suitable for re-use at the surface within any new landscaped or garden areas.

The made ground could be considered for re-use beneath proposed buildings and permanent hardstanding, if suitable for engineering purposes, where it is unlikely to affect future users of the site, however these soils could affect buried services.

Any soil imported to site must be certified as "suitable for use".

Water Environment

The site is underlain by superficial Tidal Flat Deposits, indicated by the EA to be an unproductive stratum, which cover the solid geology Oxford Clay at depth, also indicated by the EA to be an unproductive stratum. The nearest surface water feature is a drain 82m south of the site. The site does not lie within a source protection zone.

No groundwater was recorded within 1.10m below ground level during the investigation.

The risk to the water environment is considered very low as it is unlikely that the proposed development would impact the quality of the water environment.

Effects on Buried Services

The local water supply company should be consulted if new buried plastic water pipes within the made ground soils on this site are proposed.

Off-Site Disposal of Soil Arisings

The results of chemical analysis are provided following the exploratory hole records and can be used within the information necessary for basic characterisation of the soil destined for landfill. The Environment Agency publication Hazardous Waste, Technical Guidance WM3 outlines the methodology for classifying wastes and should be referenced for guidance. The test results (total metals, hydrocarbons and cyanide) should be compared to the relevant thresholds to determine whether they fall into the primary categories of non-hazardous or hazardous waste and will help indicate the likely European Waste Catalogue (EWC) code which is determined by the waste type. Asbestos containing materials would be considered hazardous and should be appropriately disposed of.

Excavated material and excess spoil should always be classified prior to removal from site as required by 'Duty of Care' (Environmental Protection Act, 1990) legislation. This means that material has to be given a proper description and waste classification prior to removal. Basic characterisation is the responsibility of the waste producer, whilst compliance checking and on-site verification are generally the responsibility of the landfill operator. The landfill operator will need to liaise with the waste producer, as the approach relies on the information from basic characterisation.

It is expected that arisings of natural soils from the excavations across this site would fall into the inert category under the European Waste Catalogue description 'Soil and Stones', EWC code 17 05 04 with restrictions excluding topsoil and peat.

CONCLUSIONS

The proposed development is understood to comprise construction of a new residential development, with associated gardens, parking and an access road.

Remediation Strategy

Suitable precautions, in line with current best practice, should be put in place to protect workers from the effects of asbestos containing material, during the site clearance phase. Asbestos roof sheet fragments should be handpicked by qualified operatives from exposed soil, and disposed of at a suitably licensed landfill.

The results of the chemical analysis would indicate that the made ground should be considered to be suitable for re-use at the surface within any new garden, landscaped or patio areas. Similarly, for areas to be covered by buildings or permanent hard surfaced areas, the made ground could also be re-used, however these soils could affect buried services or be geotechnically unsuitable.

Any soil imported to site must be certified as "suitable for use".

Imported Materials

Any imported materials should have appropriate certificates confirming its suitability prior to placement.

REMEDICATION METHOD STATEMENT

The following points will constitute a plan for remedial works considered necessary in order to ensure that soils retained within the development are fit for use.

- The groundworks contractor should undertake a watching brief during works to check for polluted soil.
- Asbestos roof sheet fragments should be handpicked by qualified operatives from exposed soil, and disposed of a suitably licensed landfill.
- Where private residential garden areas are proposed the made ground is considered suitable for retention. Selected made ground could be considered for re-use beneath proposed buildings and permanent hardstanding.
- If soils are revealed which are different to those encountered by this ground investigation, the advice of a specialist should be sought.
- A photographic record of such remediation should be undertaken by the contractor.
- Any imported 'clean' inert topsoil and granular fill should be supported by verification certificates to provide proof of its suitability. Documentation relating to the source of clean inert topsoil should be presented to the Local Planning Authority for approval prior to infilling. Samples of any imported clean topsoil placed in the garden areas should be tested to verify that the soil is suitable for use.
- The Local Authority should also be informed regarding each stage of the works and photographic evidence together with copied waste transfer receipts for any arisings should be gathered, as they are essential to demonstrate the works.
- The local water supply company should be consulted if new buried plastic water pipes within the made ground soils on this site are proposed.

VALIDATION

As the scheme includes private gardens and/or landscaped areas, a watching brief would be recommended. Implementation of the remediation method statement should be checked during construction and on completion, and appropriate records kept so that a Validation Report can be compiled and subsequently submitted to the local authority.

GROUND ENGINEERING LIMITED



S. WEATHERLEY

B.Eng.(Hons.),

C.Geol., F.G.S.

Senior Geo-Environmental Engineer



C. M. J. EBELING

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

C.Geol., F.G.S.

Director

Site Location Plan

With the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved.
Licence number AL100005523



Not to Scale



Project: Dave Cook Engineering Limited,
Quadring Road, Donington, Lincolnshire

Client: Dave Cook Engineering Limited

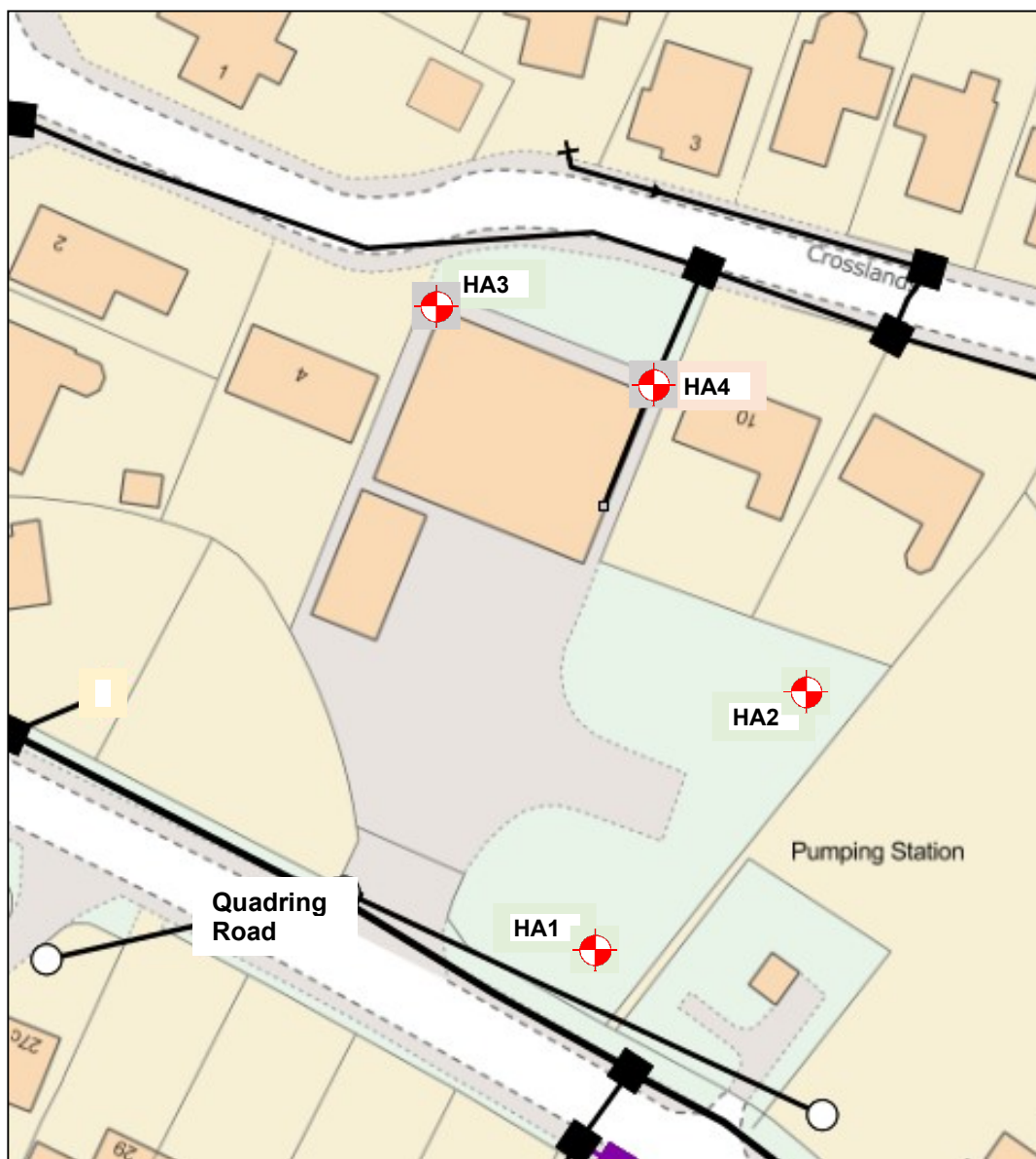
**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

**Project No.
C14984**

Exploratory Hole Location Plan

Based on BT plan. With the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright.
All rights reserved. Licence number AL100005523



Not To Scale



Project: Dave Cook Engineering Limited,
Quadring Road, Donington, Lincolnshire

Client: Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**

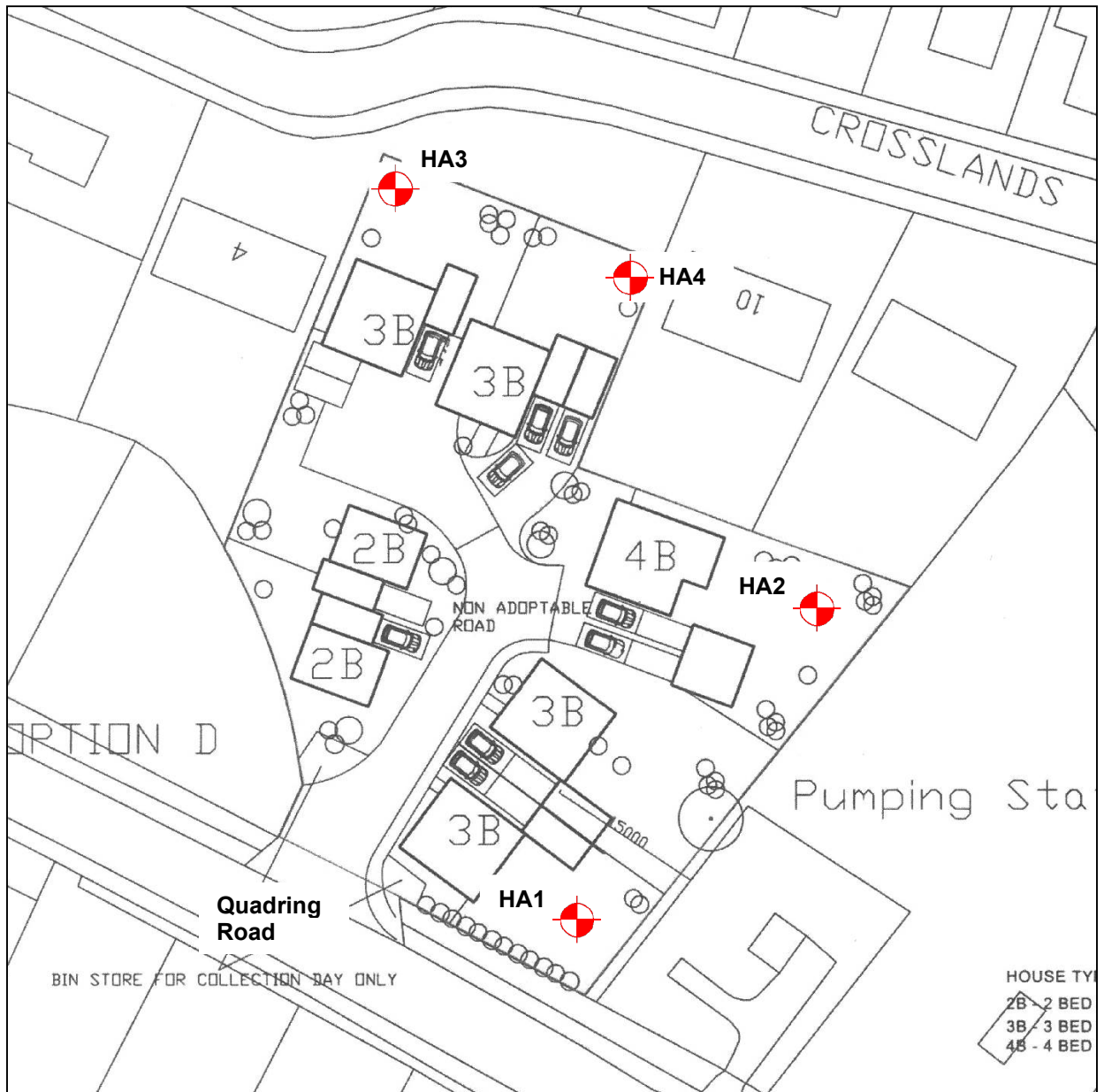
Peterborough

Tel : 01733 566566

**Project No.
C14984**

Proposed Development Plan

Based on plan provided by client



Not To Scale

Project: Dave Cook Engineering Limited,
Quadrang Road, Donington, Lincolnshire

Client: Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**

Peterborough

Tel : 01733 566566

**Project No.
C14984**

Site Photographs



**Project : Dave Cook Engineering Limited,
Quadring Road, Donington, Lincs.**
Client : Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**
Peterborough Tel : 01733 566566

**Project No.
C14984**

Site Photographs



**Project : Dave Cook Engineering Limited,
Quadring Road, Donington, Lincs.**

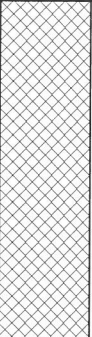
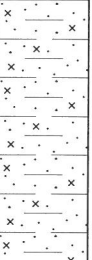
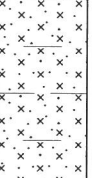
Client : Dave Cook Engineering Limited

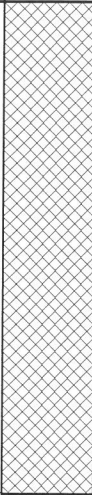
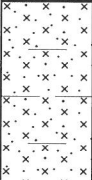
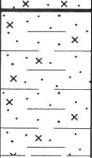
**GROUND
ENGINEERING
LIMITED**

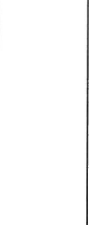
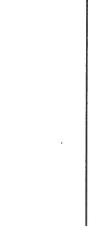
Peterborough

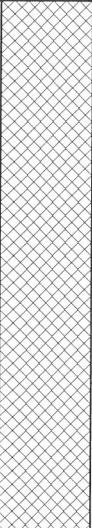
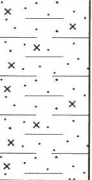
Tel : 01733 566566

**Project No.
C14984**

GROUND ENGINEERING L I M I T E D Tel: 01733-566566 www.groundengineering.co.uk			Site: LAND OFF QUADRING ROAD, DONINGTON				HAND AUGER HA1					
			Date: 27/01/20		Hole Size: 70mm dia to 1.05m		Ground Level:					
Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m					
Depth m	Type	Result										
0.30	D1			MADE GROUND - Soft, dark brown, slightly sandy, slightly gravelly CLAY/SILT. Gravel is angular to rounded flint, ash and brick fragments.		0.45						
0.60	D2			Soft, brown, slightly sandy, silty CLAY. (TIDAL FLAT DEPOSIT)								
0.90	D3			Soft, light brown, slightly sandy CLAY/SILT. (TIDAL FLAT DEPOSIT)				0.80				
				Hole completed at 1.05m depth		1.05						
REMARKS 1. Live roots observed to 0.20m depth 2. Hole sides stable						Project No 14984						
						Scale 1:10	Page 1/1					
KEY D - Disturbed Sample MP - Mackintosh Probe B - Bulk Sample V - Vane Shear Test U - Undisturbed Sample Cohesion () kPa W - Water Sample ES - Environmental R - Root Sample Sample ☒ Water Strike ☒ Water Rise ☒c Level on completion ☒s Standpipe Level			Groundwater Strikes				Groundwater Observations					
			Depth m						Depth m			
			No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						27/01/20	1.05		dry			

GROUND ENGINEERING L I M I T E D Tel: 01733-566566 www.groundengineering.co.uk			Site: LAND OFF QUADRING ROAD, DONINGTON				HAND AUGER HA2																								
			Date: 27/01/20		Hole Size: 70mm dia to 1.10m		Ground Level:																								
Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m																								
Depth m	Type	Result																													
0.10	D1			MADE GROUND - Firm, dark brown and dark grey, slightly sandy, slightly gravelly CLAY/SILT. Gravel is angular to rounded flint, limestone, mortar, brick, glass and rare fragments of cement bound asbestos sheet.		0.65																									
0.15	ASB1																														
0.50	D2			Soft, orange brown, slightly sandy, clayey SILT. (TIDAL FLAT DEPOSIT)		0.90																									
0.75	D3																														
1.00	D4			Firm, light grey, light brown and orange brown, slightly sandy, silty CLAY. (TIDAL FLAT DEPOSIT)		1.10																									
				Hole completed at 1.10m depth																											
REMARKS 1. Live roots observed to 0.20m depth 2. Hole sides stable							Project No 14984																								
							Scale 1:10	Page 1/1																							
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed Sample W - Water Sample R - Root Sample ☒ Water Strike ☒c Level on completion			MP - Mackintosh Probe V - Vane Shear Test Cohesion () kPa ES - Environmental Sample ☒ Water Rise ☒s Standpipe Level			Groundwater Strikes Depth m <table border="1"> <tr> <th>No</th> <th>Struck</th> <th>Rose to</th> <th>Rate</th> <th>Cased</th> <th>Sealed</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>			No	Struck	Rose to	Rate	Cased	Sealed							Groundwater Observations <table border="1"> <tr> <th>Date</th> <th>Hole</th> <th>Casing</th> <th>Water</th> </tr> <tr> <td>27/01/20</td> <td>1.10</td> <td></td> <td>dry</td> </tr> </table>			Date	Hole	Casing	Water	27/01/20	1.10		dry
No	Struck	Rose to	Rate	Cased	Sealed																										
Date	Hole	Casing	Water																												
27/01/20	1.10		dry																												

GROUND ENGINEERING L I M I T E D Tel: 01733-566566 www.groundengineering.co.uk			Site: LAND OFF QUADRING ROAD, DONINGTON				HAND AUGER HA3		
			Date: 27/01/20		Hole Size: 70mm dia to 1.10m			Ground Level:	
Samples and in-situ Tests			(Date) Water		Description of Strata			Legend	
Depth m Type Result								Depth m O.D. Level m	
0.20 D1					MADE GROUND - Soft, brown, dark brown and light brown, slightly sandy, slightly gravelly, SILT with pockets of clay. Gravel is angular to rounded flint, brick, clinker, ash and glass fragments.				
0.50 D2					Soft, brown, slightly sandy, silty CLAY.				
0.75 D3					(TIDAL FLAT DEPOSIT)				
1.00 D4					Soft, orange brown, sandy, silty CLAY. (TIDAL FLAT DEPOSIT)				
					Hole completed at 1.10m depth				
REMARKS 1. Live roots observed to at least 1.10m depth 2. Hole sides stable								Project No 14984	
								Scale 1:10 Page 1/1	
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed Sample W - Water Sample R - Root Sample ☒ Water Strike ▼c Level on completion			MP - Mackintosh Probe V - Vane Shear Test Cohesion () kPa ES - Environmental Sample ▼ Water Rise ▼s Standpipe Level			Groundwater Strikes Depth m No Struck Rose to Rate Cased Sealed		Groundwater Observations Date Depth m Hole Casing Water	
						27/01/20		1.10 dry	

GROUND ENGINEERING L I M I T E D Tel: 01733-566566 www.groundengineering.co.uk			Site: LAND OFF QUADRING ROAD, DONINGTON				HAND AUGER HA4				
			Date: 27/01/20		Hole Size: 70mm dia to 0.95m		Ground Level:				
Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O. D. Level m				
Depth m	Type	Result									
0.20	D1			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY. Gravel is angular to rounded flint with rare ash and brick fragments.							
0.50	D2										
0.80	D3			Soft, light brown and orange brown, sandy, silty CLAY. (TIDAL FLAT DEPOSIT)		0.70					
				Hole completed at 0.95m depth		0.95					
REMARKS 1. Live roots observed to 0.20m depth 2. Hole sides stable							Project No 14984				
							Scale 1:10	Page 1/1			
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed Sample W - Water Sample R - Root Sample ☒ Water Strike ☒c Level on completion MP - Mackintosh Probe V - Vane Shear Test Cohesion () kPa ES - Environmental Sample ☒ Water Rise ☒s Standpipe Level			Groundwater Strikes				Groundwater Observations				
			Depth m				Date	Depth m			
			No	Struck	Rose to	Rate		Cased	Sealed	Hole	Casing
								27/01/20	0.95		dry



Simon Weatherley
Ground Engineering Limited
Newark Road
Peterborough
PE1 5UA

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

e: simon@groundengineering.co.uk

Analytical Report Number : 20-83620

Project / Site name:	Quadrang Road, Donington	Samples received on:	29/01/2020
Your job number:	C14984	Samples instructed on:	29/01/2020
Your order number:		Analysis completed by:	04/02/2020
Report Issue Number:	1	Report issued on:	05/02/2020
Samples Analysed:	1 bulk sample - 4 soil samples		

Signed: *A. Czerwińska*

Agnieszka Czerwińska

Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Iss No 20-83620-1 Quadrang Road, Donington C14984

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.



Environmental Science

Analytical Report Number: 20-83620

Project / Site name: Quadring Road, Donington

Lab Sample Number	1425126	1425127	1425128	1425129	
Sample Reference	HA1	HA2	HA3	HA4	
Sample Number	D1	D1	D1	D2	
Depth (m)	0.30	0.10	0.20	0.50	
Date Sampled	27/01/2020	27/01/2020	27/01/2020	27/01/2020	
Time Taken	0900	0900	0900	0900	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	20	18
Total mass of sample received	kg	0.001	NONE	0.52	0.53

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.2	7.8	7.5	7.4
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	27	40	15	23
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.020	0.0077	0.011
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	13.5	19.8	7.7	11.4
Organic Matter	%	0.1	MCERTS	2.6	1.2	3.2	2.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.36	< 0.05	0.34	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.31	< 0.05	0.33	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.22	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.19	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.29	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.12	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.25	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	1.74	< 0.80
-----------------------------	-------	-----	--------	--------	--------	------	--------

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.9	13	14	7.9
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	3.1	0.6	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (III)	mg/kg	1	NONE	19	29	37	20
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	30	38	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	11	24	18
Lead (aqua regia extractable)	mg/kg	1	MCERTS	35	16	33	37
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	23	23	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	68	65	130	79

Iss No 20-83620-1 Quadring Road, Donington C14984

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

The results included within the report are representative of the samples submitted for analysis.

Page 2 of 5



Analytical Report Number: 20-83620

Project / Site name: Quadring Road, Donington

Lab Sample Number				1425130				
Sample Reference				HA2				
Sample Number				ASB1				
Depth (m)				0.15				
Date Sampled				27/01/2020				
Time Taken				0900				
Analytical Parameter (Bulk Analysis)	Units	Limit of detection	Accreditation Status					
Asbestos Identification	Type	N/A	ISO 17025	Chrysotile - Hard/Cement Type Material				



Analytical Report Number : 20-83620

Project / Site name: Quadring Road, Donington

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1425126	HA1	D1	0.30	Brown loam and clay with gravel and vegetation.
1425127	HA2	D1	0.10	Brown loam and clay with gravel and vegetation.
1425128	HA3	D1	0.20	Brown loam and clay with gravel and vegetation.
1425129	HA4	D2	0.50	Brown loam and clay with gravel and vegetation.



Environmental Science

Analytical Report Number : 20-83620

Project / Site name: Quadring Road, Donington

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Bulks	Asbestos Identification in bulk material with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

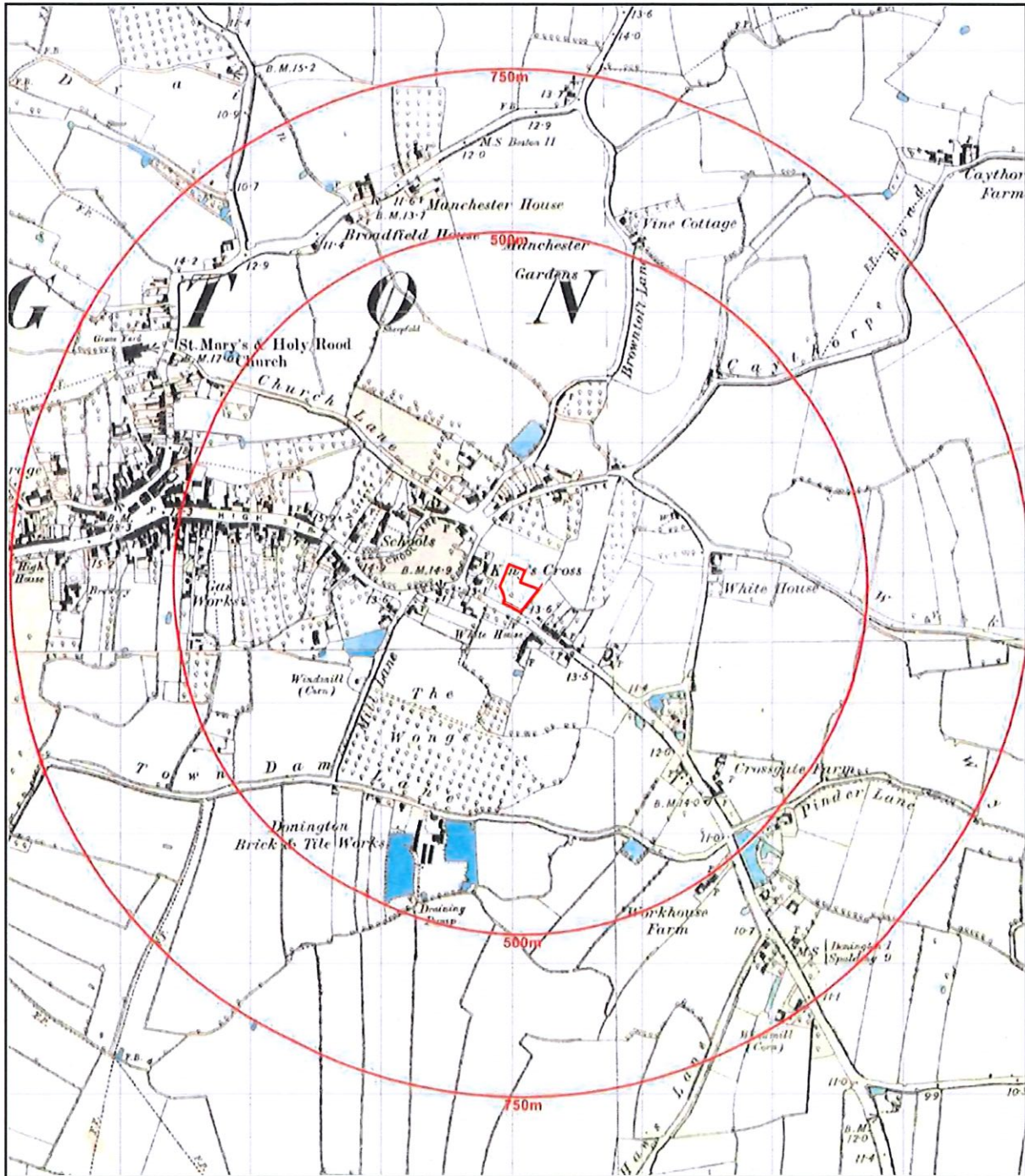
APPENDIX 1

HISTORICAL MAP EXTRACTS

Site History

Figure A

Reproduced from the 1887 edition Ordnance Survey sheets **Lincs. 116SE, 117SW, 125NE & 126NW** at 1:10,560 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL10005523



**Project : Dave Cook Engineering, Quadring Road,
Donington**

Client : Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

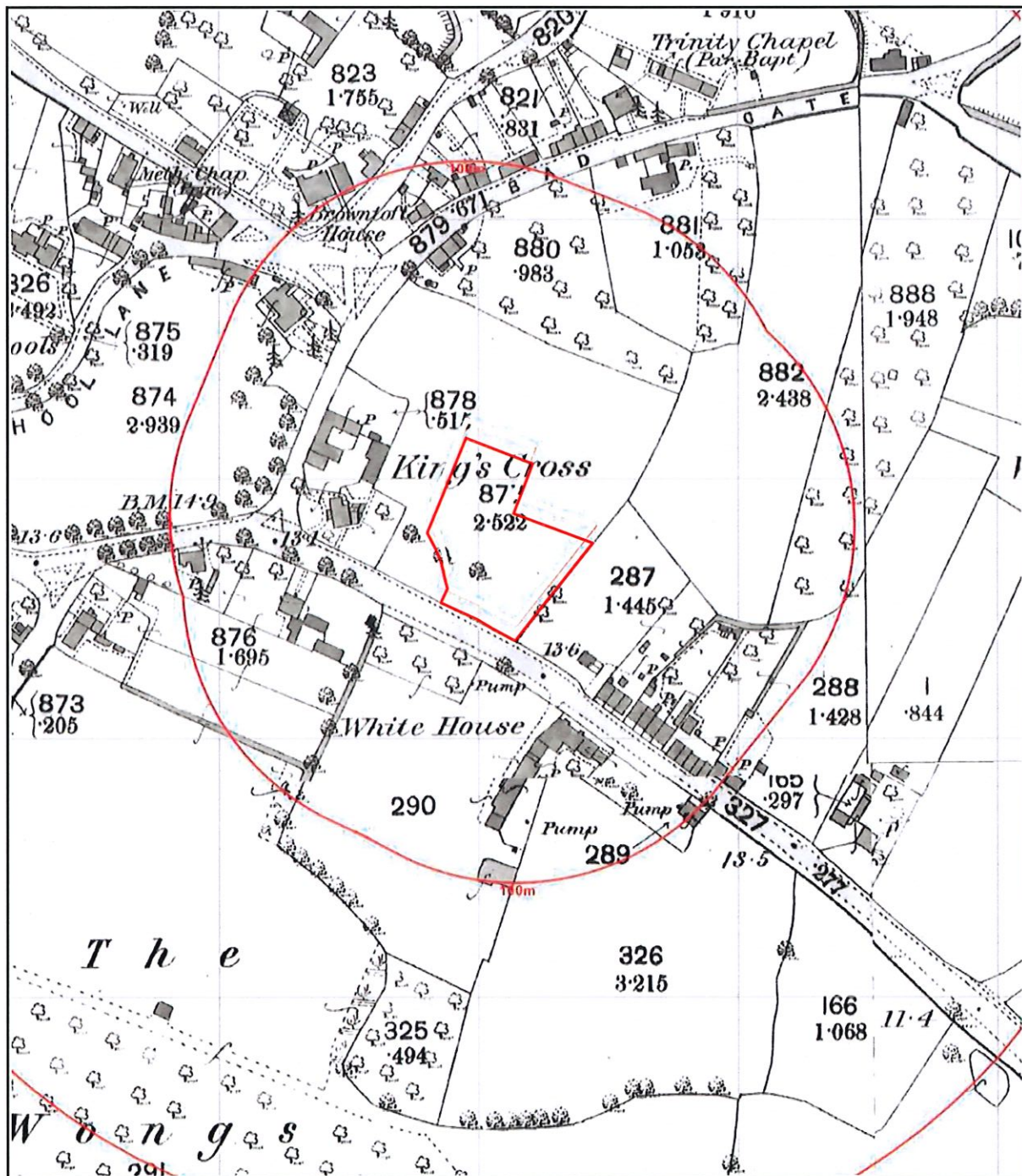
Project No.

C14984

Site History

Figure B

Reproduced from the 1889 edition Ordnance Survey sheets Lincolnshire 116.16, 117.13, 125.4 & 126.1 at 1:2500 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



Project : Dave Cook Engineering, Quadring Road,
Donington

Client : Dave Cook Engineering Limited

GROUND
ENGINEERING
LIMITED

Peterborough Tel : 01733 566566

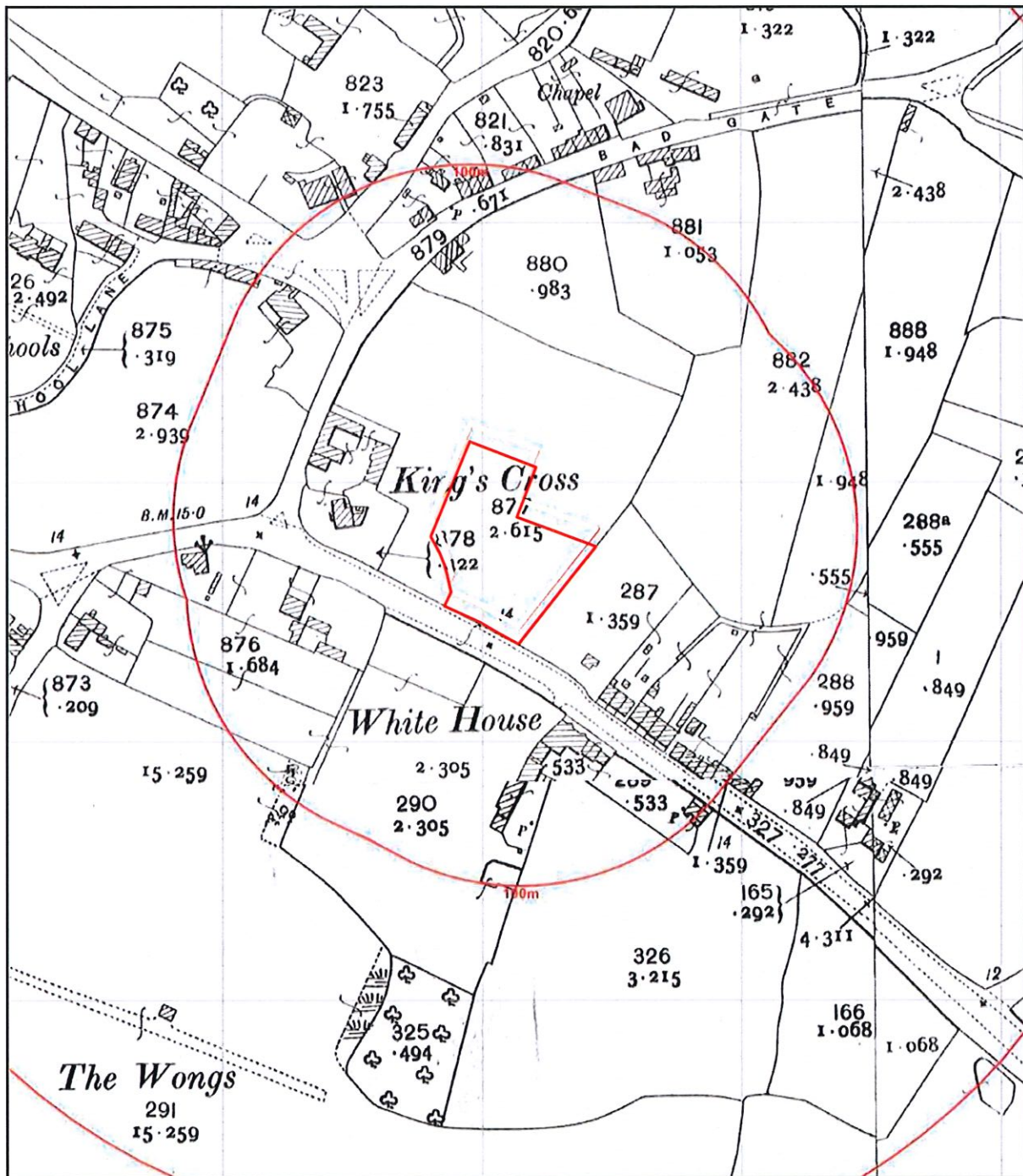
Project No.

C14984

Site History

Figure C

Reproduced from the 1905 edition Ordnance Survey sheets Lincolnshire 116.16, 117.13, 125.4 & 126.1 at 1:2500 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



Project : Dave Cook Engineering, Quadring Road,
Donington

Client : Dave Cook Engineering Limited

GROUND
ENGINEERING
LIMITED

Peterborough Tel : 01733 566566

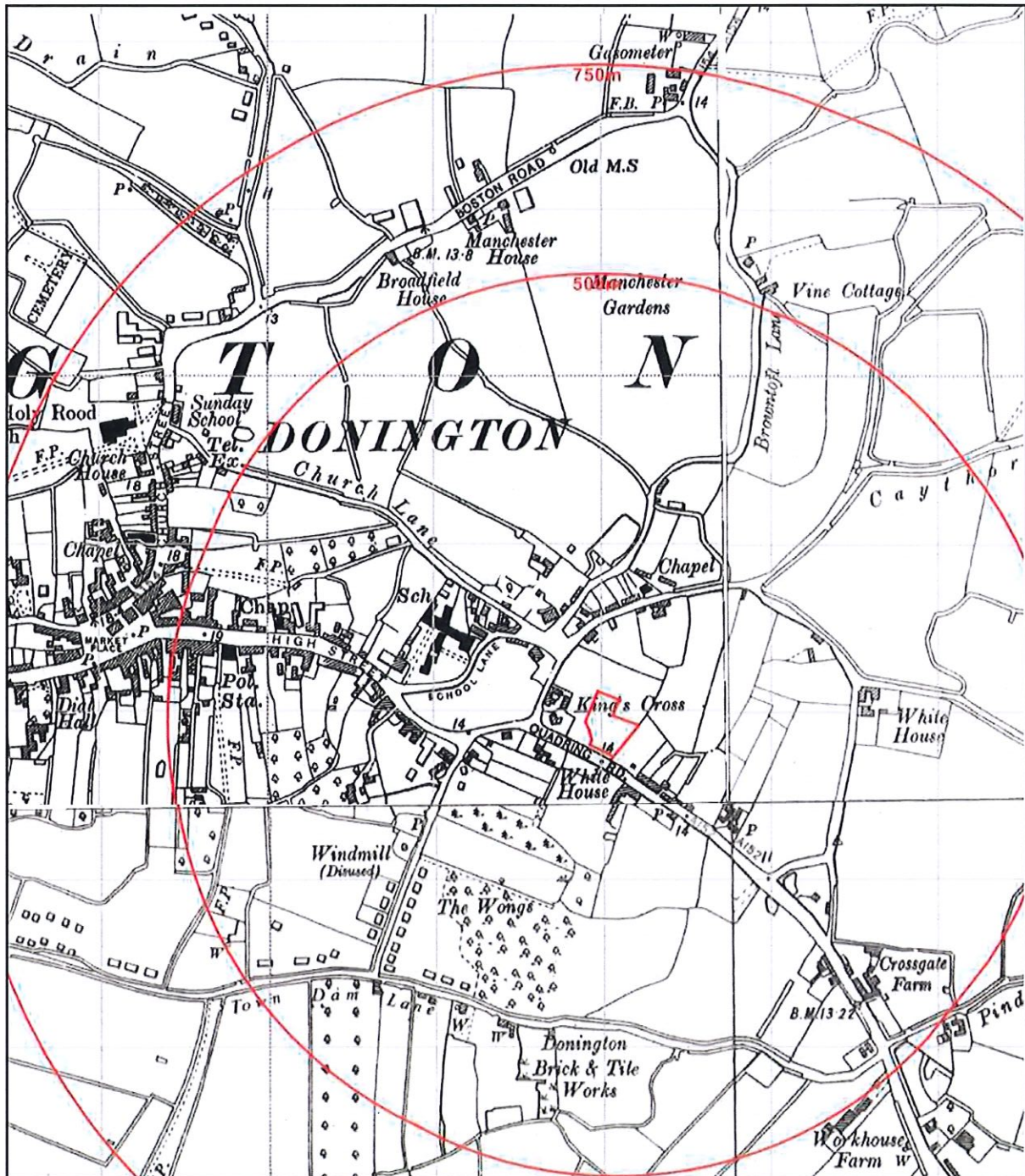
Project No.

C14984

Site History

Figure D

Reproduced from the 1938-48 edition Ordnance Survey sheets Lincs. 116SE, 117SW, 125NE & 126NW at 1:10,560 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



Project : Dave Cook Engineering, Quadring Road,
Donington

Client : Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

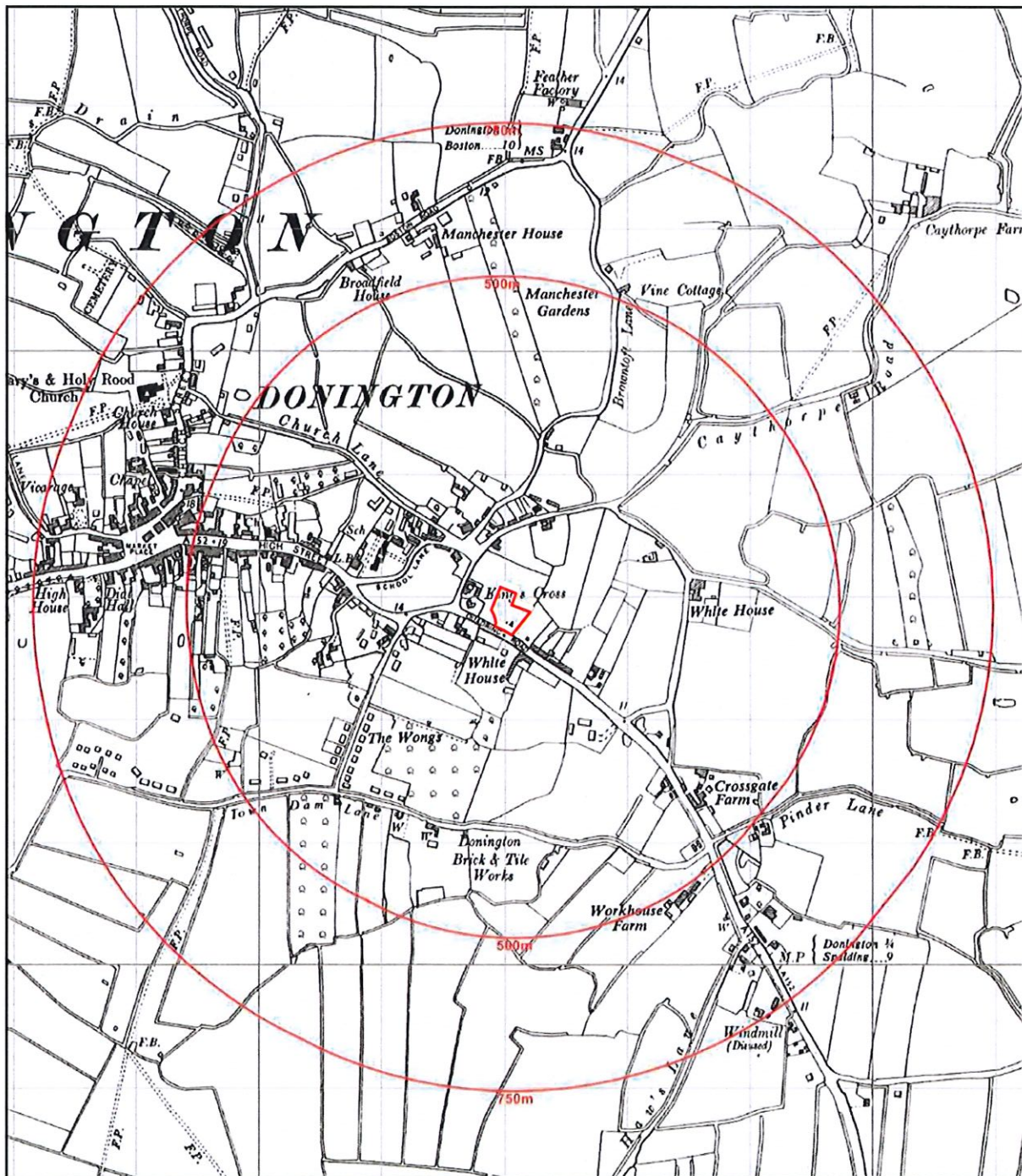
Project No.

C14984

Site History

Figure E

Reproduced from the 1956 edition Ordnance Survey sheet TF23NW at 1:10,560 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



Project : Dave Cook Engineering, Quadring Road,
Donington

Client : Dave Cook Engineering Limited

GROUND
ENGINEERING
LIMITED

Peterborough Tel : 01733 566566

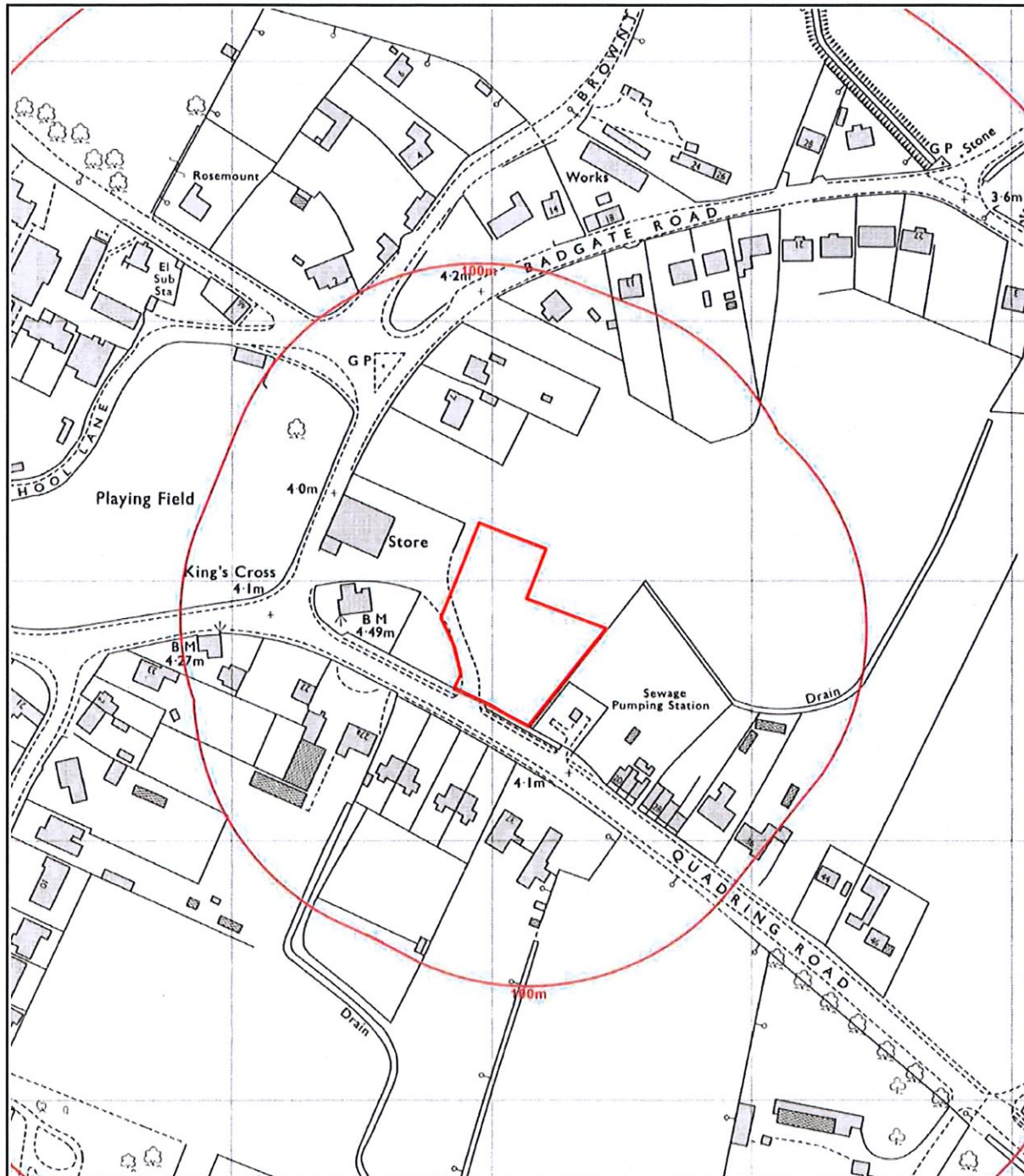
Project No.

C14984

Site History

Figure F

Reproduced from the 1972 edition Ordnance Survey sheet TF2135 at 1:2500 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



Project : Dave Cook Engineering, Quadring Road,
Donington

Client : Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

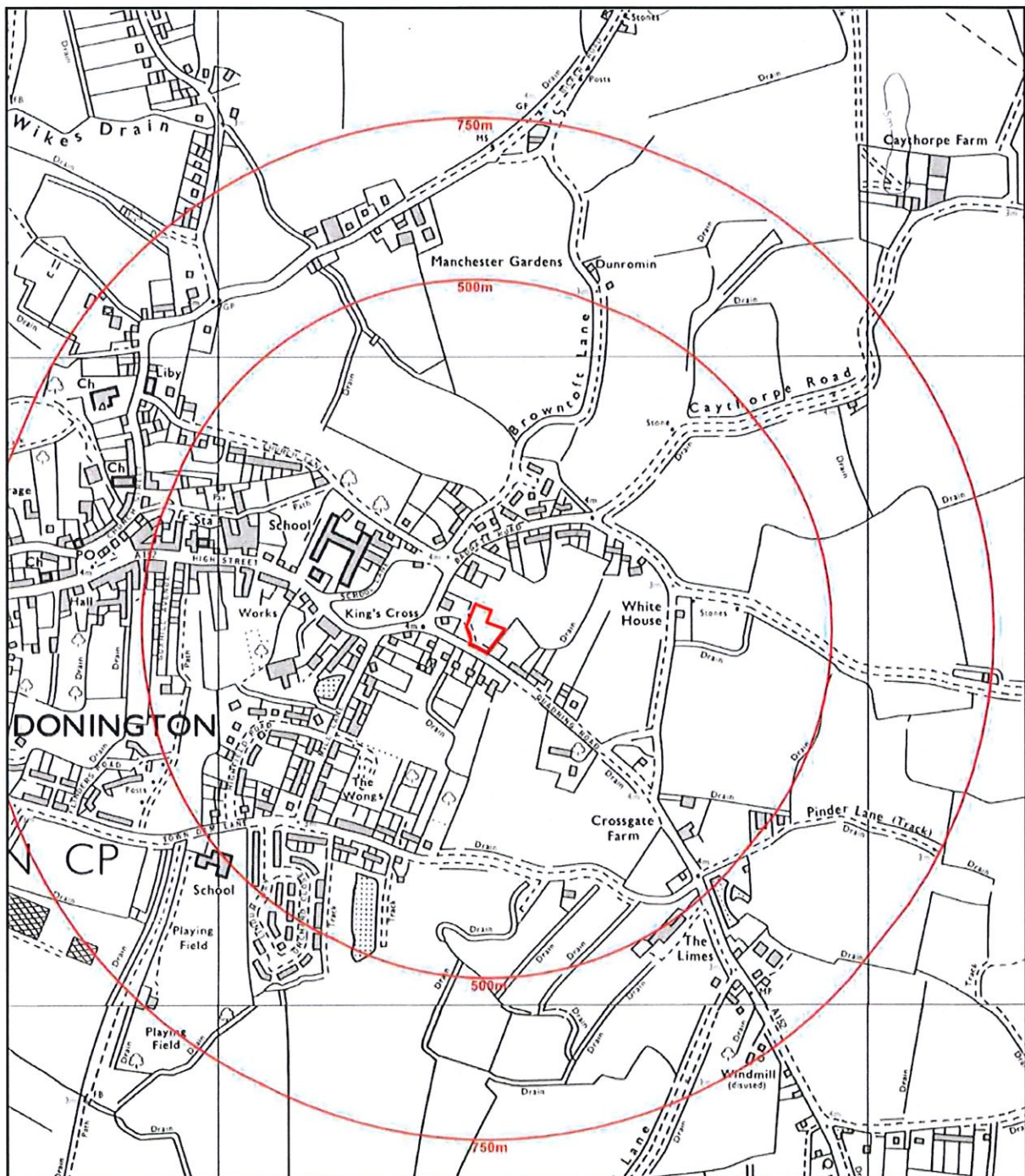
Project No.

C14984

Site History

Figure G

Reproduced from the 1977 edition Ordnance Survey sheet TF23NW at 1:10,000 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



Project : Dave Cook Engineering, Quadring Road,
Donington

Client : Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

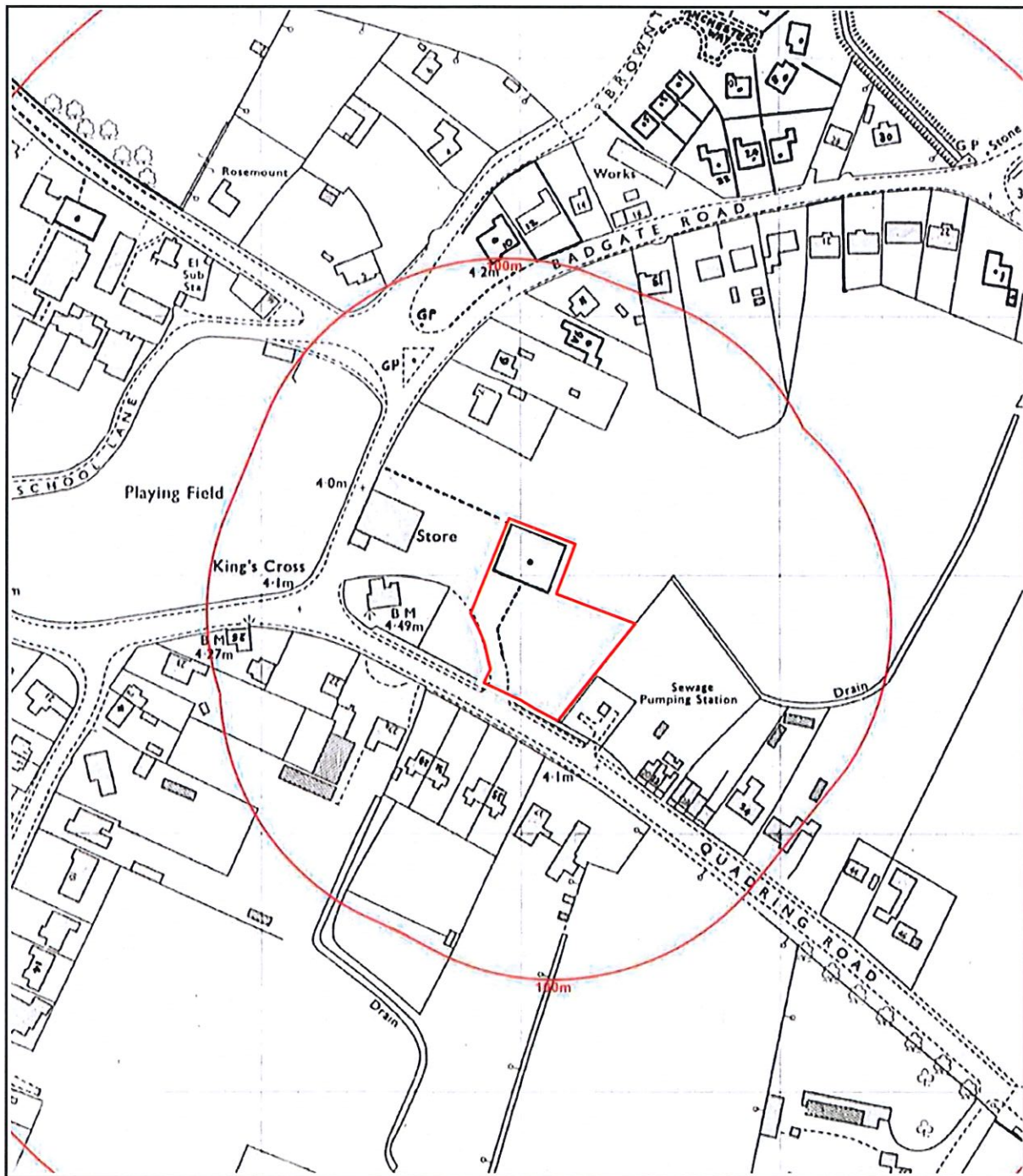
Project No.

C14984

Site History

Figure H

Reproduced from the 1980 edition Ordnance Survey sheet TF2135 at 1:2500 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



Project : Dave Cook Engineering, Quadring Road,
Donington

Client : Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

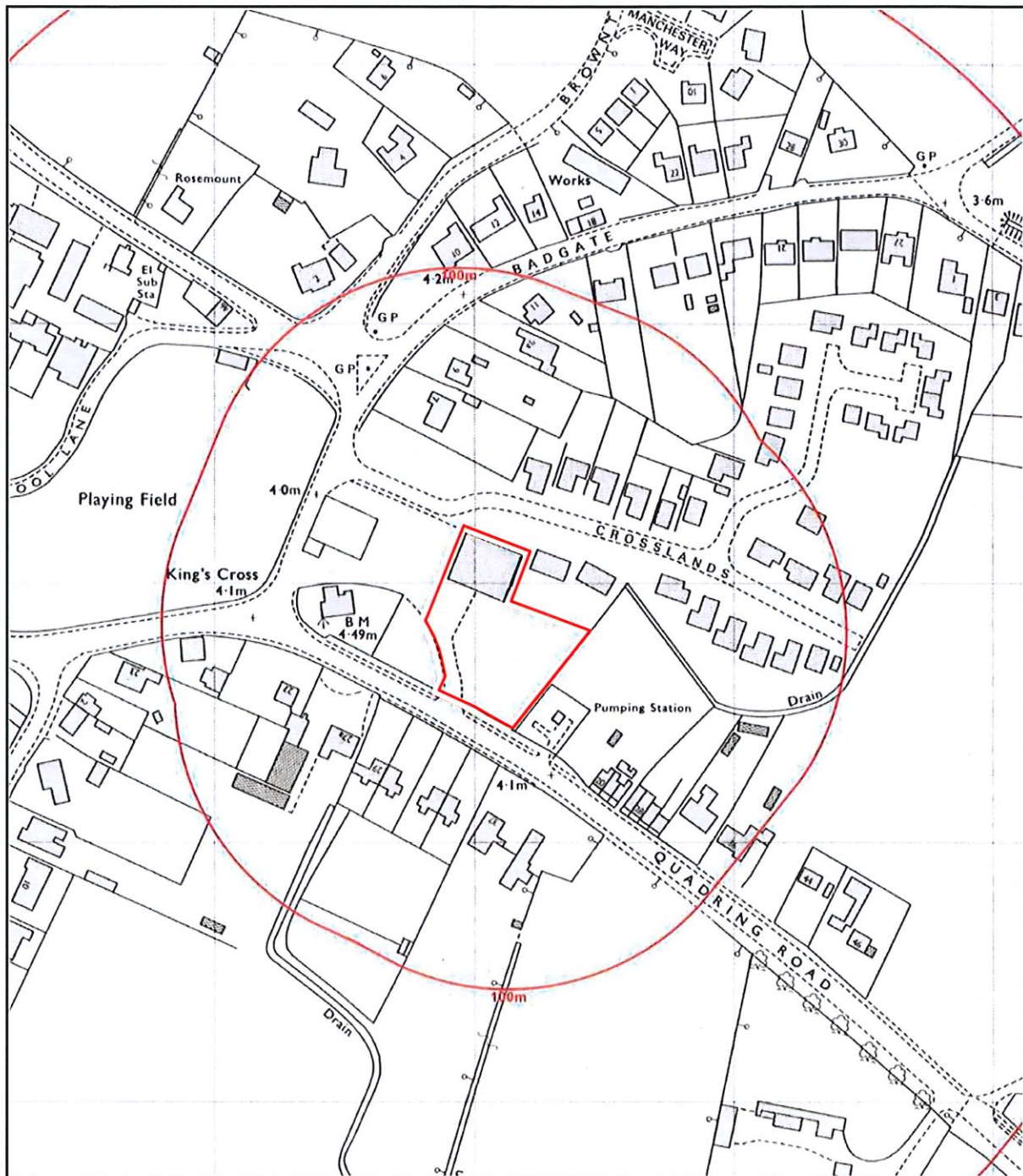
Project No.

C14984

Site History

Figure I

Reproduced from the 1987 edition Ordnance Survey sheet TF2135 at 1:2500 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



Project : Dave Cook Engineering, Quadring Road,
Donington

Client : Dave Cook Engineering Limited

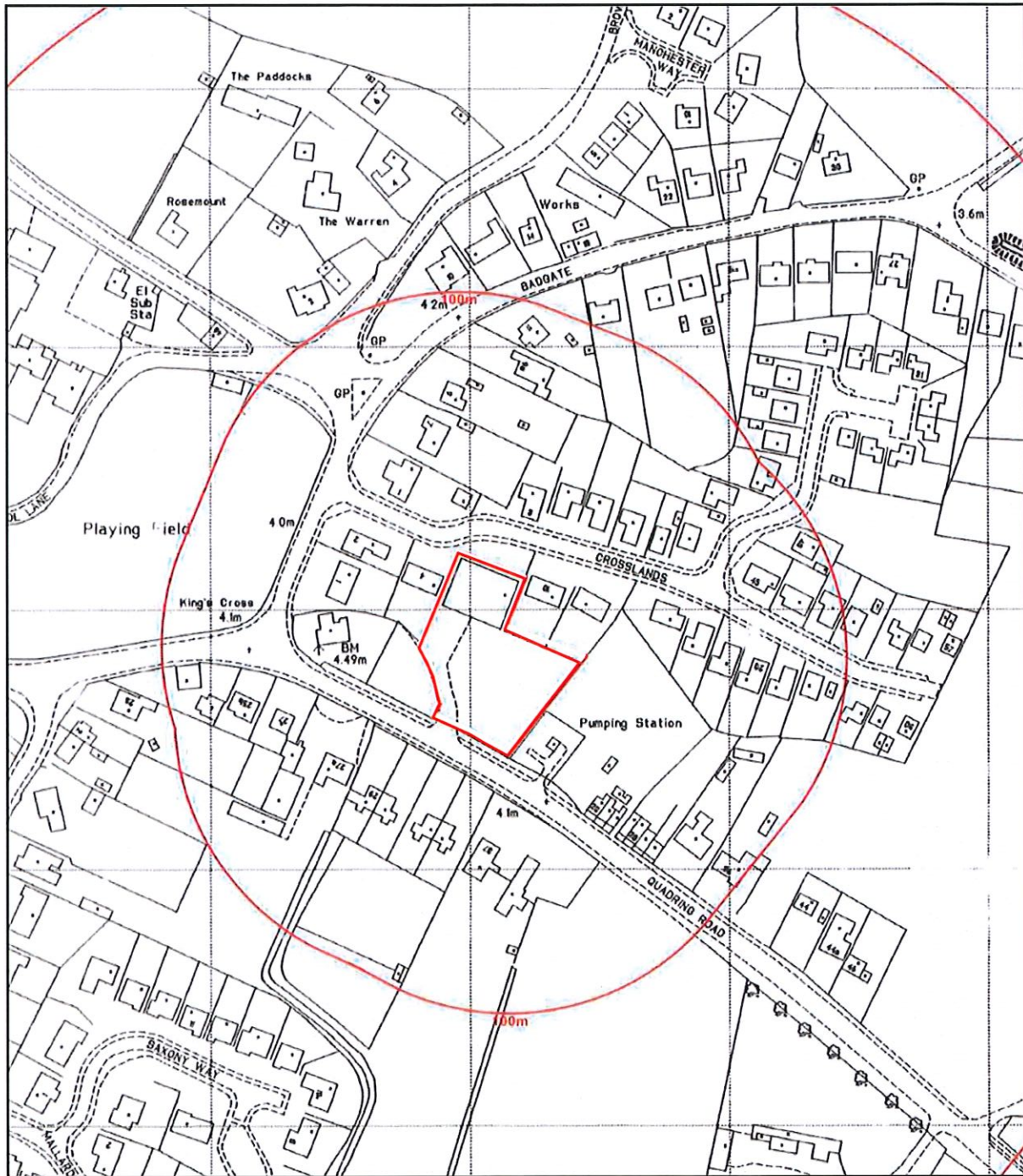
**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

Project No.

C14984

Figure J



Peterborough Tel : 01733 566566

Site History

Figure K

Reproduced from the 2003 edition Ordnance Survey sheets TF2135NW, NE, SW & SE originally at 1:1250 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



**Project : Dave Cook Engineering, Quadring Road,
Donington**

Client : Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

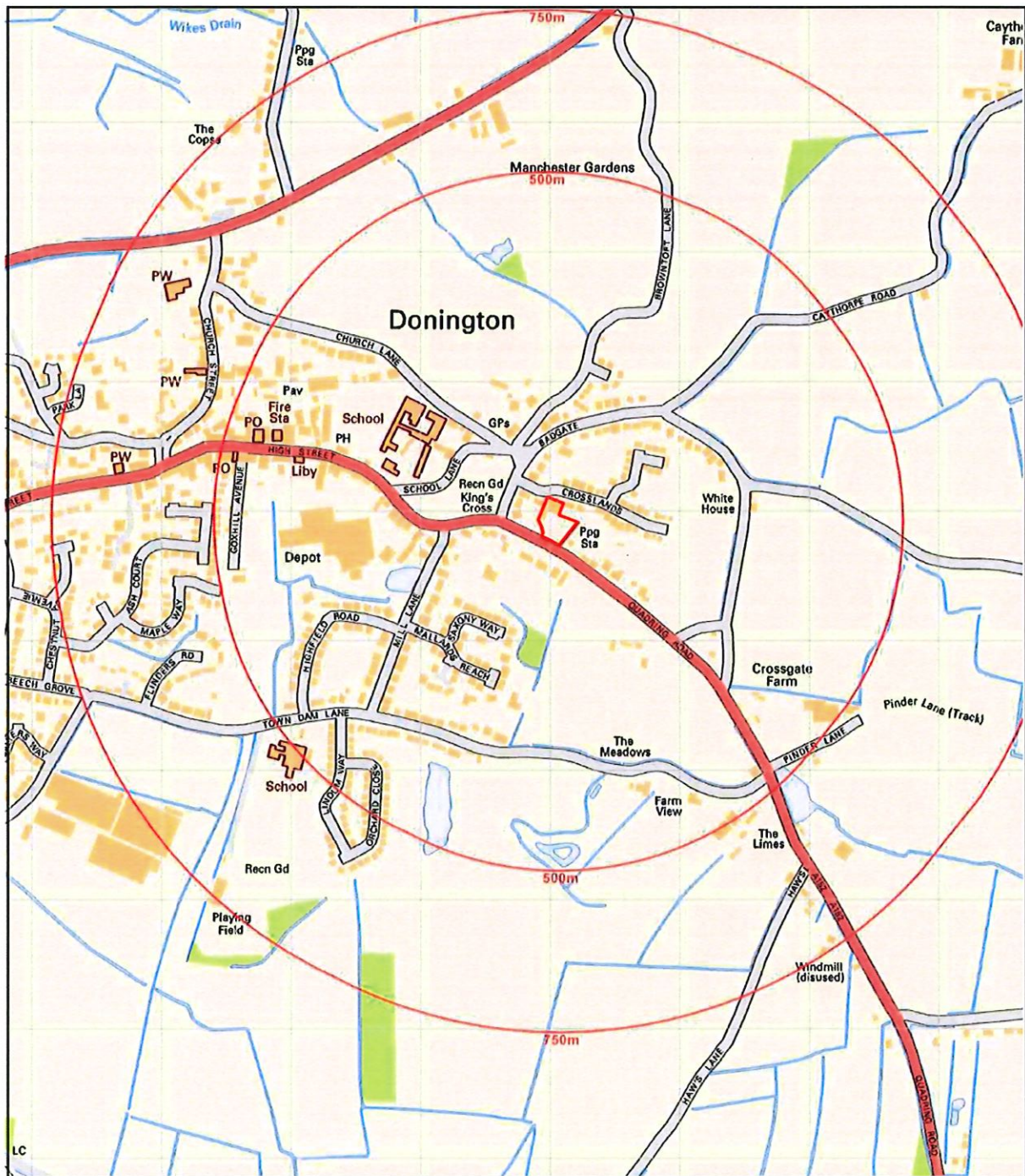
Project No.

C14984

Site History

Figure L

Reproduced from the 2010 edition Ordnance Survey sheet TF23NW at 1:10,000 scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



Project : Dave Cook Engineering, Quadring Road,
Donington

Client : Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

Project No.

C14984

Site History

Figure M

Reproduced from the 2019 edition Ordnance Survey sheet TF2135 (BT Plan) Not to scale with the permission of the Controller of Her Majesty's Stationery Office, © Crown Copyright. All rights reserved. Licence number AL100005523



Project : Dave Cook Engineering, Quadring Road,
Donington

Client : Dave Cook Engineering Limited

**GROUND
ENGINEERING
LIMITED**

Peterborough Tel : 01733 566566

Project No.

C14984

APPENDIX 2

ENVIRONMENTAL DATABASE SEARCH

Address: DAVE COOK ENGINEERING, QUADRING ROAD, DONINGTON, SPALDING, PE11 4TB
Date: 24 Jan 2020
Reference: GS-6573872
Client: Ground Engineering Limited



Aerial Photograph Capture date: 20-Apr-2018
Grid Reference: 521405,335584
Site Size: 0.2694ha

Report Reference: GS-6573872
Client Reference: SWC14984

Contents Page

Contents Page	3
Overview of Findings	6
Using this report	10
1. Historical Land Use	11
1. Historical Industrial Sites	12
1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping	12
1.2 Additional Information – Historical Tank Database	12
1.3 Additional Information – Historical Energy Features Database	13
1.4 Additional Information – Historical Petrol and Fuel Site Database	13
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	14
1.6 Historical military sites	14
1.7 Potentially Infilled Land	14
2. Environmental Permits, Incidents and Registers Map	16
2. Environmental Permits, Incidents and Registers	17
2.1 Industrial Sites Holding Licences and/or Authorisations	17
2.1.1 Records of historic IPC Authorisations within 500m of the study site	17
2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site	17
2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site	17
2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site	17
2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site	17
2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site	18
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	18
2.1.8 Records of Licensed Discharge Consents within 500m of the study site	18
2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site	19
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	19
2.2 Dangerous or Hazardous Sites	19
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents	19
2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site	19
2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site	19
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	20
3. Landfill and Other Waste Sites Map	21
3. Landfill and Other Waste Sites	22
3.1 Landfill Sites	22
3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site	22
3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site	22
3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site	22
3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site	22
3.2 Other Waste Sites	22
3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site	22
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site	23
4. Current Land Use Map	24
4. Current Land Uses	25
4.1 Current Industrial Data	25
4.2 Petrol and Fuel Sites	25
4.3 National Grid High Voltage Underground Electricity Transmission Cables	26
4.4 National Grid High Pressure Gas Transmission Pipelines	26

5. Geology	27
5.1 Artificial Ground and Made Ground.....	27
5.2 Superficial Ground and Drift Geology	27
5.3 Bedrock and Solid Geology	27
6 Hydrogeology and Hydrology	28
6a. Aquifer Within Superficial Geology	28
6b. Aquifer Within Bedrock Geology and Abstraction Licences	29
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences	30
6d. Hydrogeology – Source Protection Zones within confined aquifer	31
6e. Hydrology – Watercourse Network and River Quality	32
6.Hydrogeology and Hydrology	33
6.1 Aquifer within Superficial Deposits.....	33
6.2 Aquifer within Bedrock Deposits.....	33
6.3 Groundwater Abstraction Licences.....	33
6.4 Surface Water Abstraction Licences.....	34
6.5 Potable Water Abstraction Licences.....	34
6.6 Source Protection Zones.....	35
6.7 Source Protection Zones within Confined Aquifer.....	35
6.8 Groundwater Vulnerability and Soil Leaching Potential.....	35
6.9 River Quality.....	35
6.9.1 Biological Quality:.....	35
6.9.2 Chemical Quality:.....	35
6.10 Ordnance Survey MasterMap Water Network.....	36
6.11 Surface Water Features.....	41
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)	42
7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS)	43
Map	43
7 Flooding	44
7.1 River and Coastal Zone 2 Flooding.....	44
7.2 River and Coastal Zone 3 Flooding.....	44
7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating.....	45
7.4 Flood Defences.....	45
7.5 Areas benefiting from Flood Defences.....	45
7.6 Areas benefiting from Flood Storage.....	45
7.7 Groundwater Flooding Susceptibility Areas.....	45
7.8 Groundwater Flooding Confidence Areas.....	46
8. Designated Environmentally Sensitive Sites Map	47
8. Designated Environmentally Sensitive Sites	48
8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:.....	48
8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:.....	48
8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:.....	48
8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:.....	48
8.5 Records of Ramsar sites within 2000m of the study site:.....	48
8.6 Records of Ancient Woodland within 2000m of the study site:	49
8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:.....	49
8.8 Records of World Heritage Sites within 2000m of the study site:.....	49
8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:	49
8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:	49
8.11 Records of National Parks (NP) within 2000m of the study site:	49
8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:.....	49
8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:.....	50

8.14 Records of Green Belt land within 2000m of the study site:.....	50
9. Natural Hazards Findings.....	51
9.1 Detailed BGS GeoSure Data.....	51
9.1.1 Shrink Swell.....	51
9.1.2 Landslides.....	51
9.1.3 Soluble Rocks.....	51
9.1.4 Compressible Ground.....	52
9.1.5 Collapsible Rocks.....	52
9.1.6 Running Sand.....	52
9.2 Radon.....	53
9.2.1 Radon Affected Areas.....	53
9.2.2 Radon Protection.....	53
10. Mining.....	54
10.1 Coal Mining.....	54
10.2 Non-Coal Mining.....	54
10.3 Brine Affected Areas	54
Contact Details.....	55
Standard Terms and Conditions.....	57

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	0	6	20
1.2 Additional Information – Historical Tank Database	0	0	0	8
1.3 Additional Information – Historical Energy Features Database	0	0	5	13
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	5
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	12	29
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	1
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	1
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	3
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	1	1	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	0	0	0	5
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	0	0	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	16	46	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	Very Low					
7.4 Flood Defences within 250m of the study site	None identified					
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified					
7.6 Areas used for Flood Storage within 250m of the study site	None identified					
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	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.

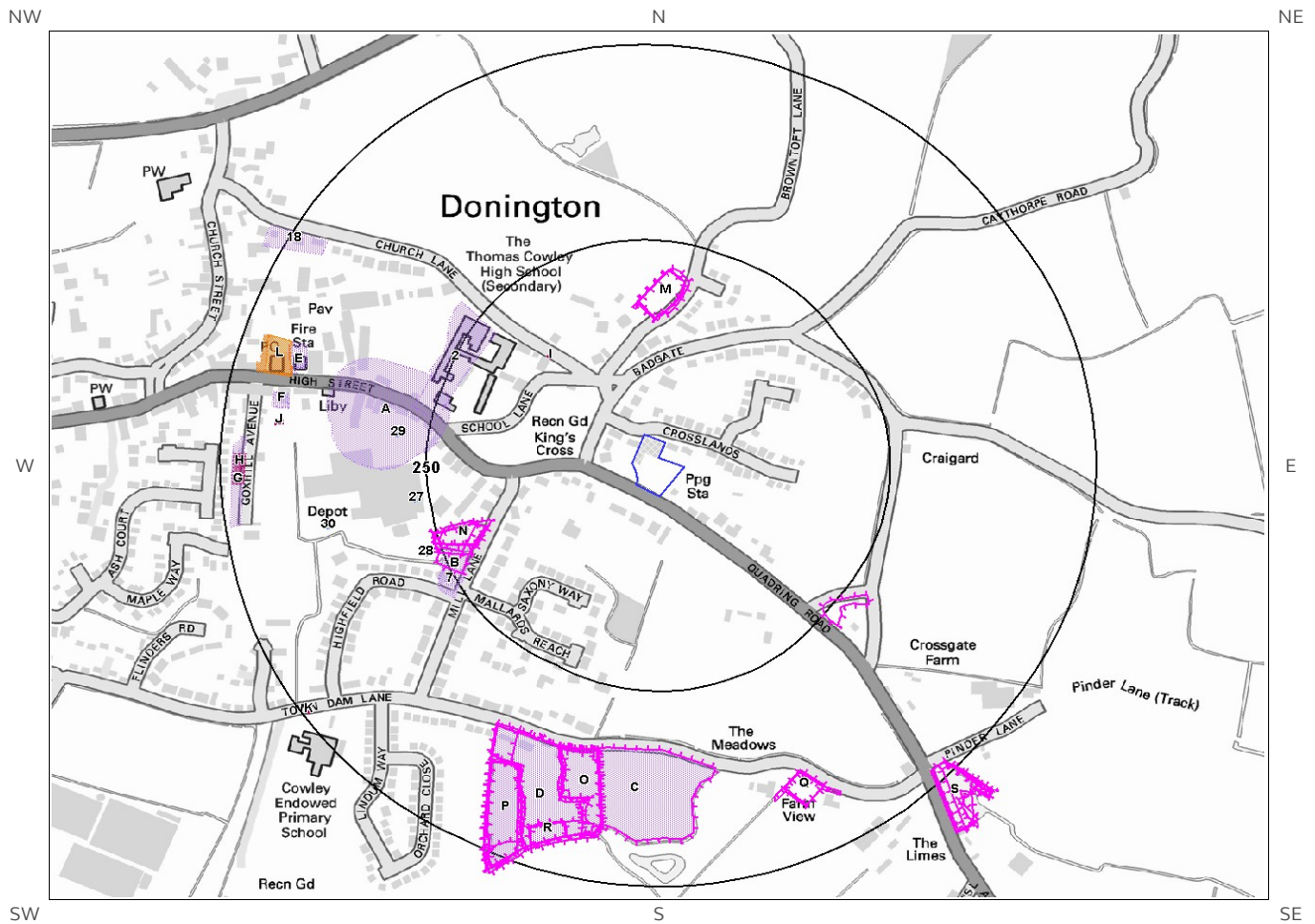
Note: Maps

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).

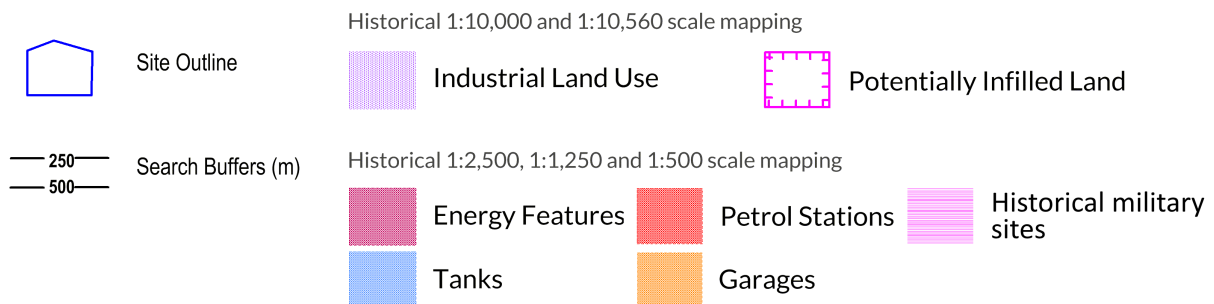
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

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



© Crown copyright and database rights 2020.
Ordnance Survey licence 100035207.



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: 26

ID	Distance [m]	Direction	Use	Date
1B	206	W	Corn Windmill	1887
2	222	NW	Nursery	1887
3A	230	W	Unspecified Works	1988
4A	230	W	Unspecified Works	1975
5B	237	SW	Disused Windmill	1903
6B	237	SW	Disused Windmill	1948
7	254	SW	Disused Windmill	1903
8C	325	S	Brick and Tile Works	1903
9C	325	S	Brick and Tile Works	1948
10D	334	S	Brick and Tile Works	1903
11D	334	S	Brick and Tile Works	1950
12D	334	S	Brick and Tile Works	1887
13E	414	W	Fire Station	1975
14E	414	W	Fire Station	1988
15E	415	W	Smithy	1903
16F	422	W	Police Station	1887
17F	424	W	Police Station	1922
18	453	NW	Telephone Exchange	1887
19G	469	W	Gas Works	1903
20G	469	W	Unspecified Commercial/Industrial	1887
21G	471	W	Gasworks	1887
22G	471	W	Gasworks	1887
23H	472	W	Gasometer	1903
24H	472	W	Unspecified Tank	1887
25H	474	W	Gasometer	1887
26H	474	W	Gasometer	1887

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:

8

ID	Distance (m)	Direction	Use	Date
27	262	W	Unspecified Tank	1972
28	267	W	Unspecified Tank	1972
29	284	W	Unspecified Tank	1889
30	375	W	Unspecified Tank	1966
31H	468	W	Gas Works	1889
32H	468	W	Gas Works	1905
33H	472	W	Gasometer	1905
34H	472	W	Gasometer	1889

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:

18

ID	Distance (m)	Direction	Use	Date
35I	150	NW	Electricity Substation	1988
36I	150	NW	Electricity Substation	1966
37I	151	NW	Electricity Substation	1972
38I	151	NW	Electricity Substation	1987
39I	152	NW	Electricity Substation	1995
40J	427	W	Electricity Substation	1987
41J	427	W	Electricity Substation	1972
42J	427	W	Electricity Substation	1988
43J	427	W	Electricity Substation	1981
44J	428	W	Electricity Substation	1995
45G	468	W	Gas Works	1905
46G	468	W	Gas Works	1889
47H	472	W	Gasometer	1905
48H	472	W	Gasometer	1889
49K	491	SW	Electricity Substation	1995
50K	491	SW	Electricity Substation	1987
51K	491	SW	Electricity Substation	1972
52K	491	SW	Electricity Substation	1988

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: 5

ID	Distance (m)	Direction	Use	Date
53L	428	W	Garage	1995
54L	429	W	Garage	1981
55L	429	W	Garage	1988
56L	429	W	Garage	1972
57L	429	W	Garage	1987

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

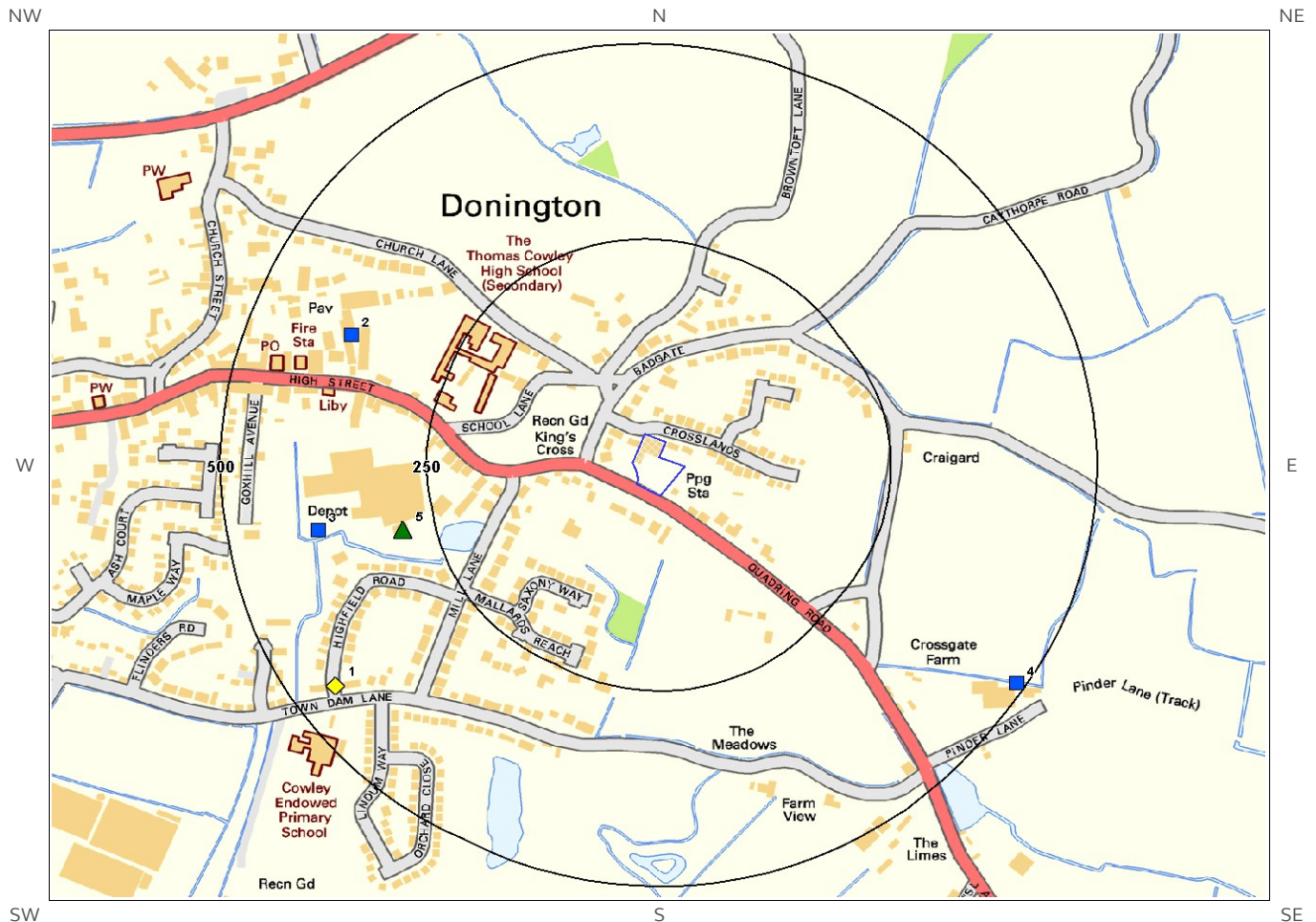
Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 41

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

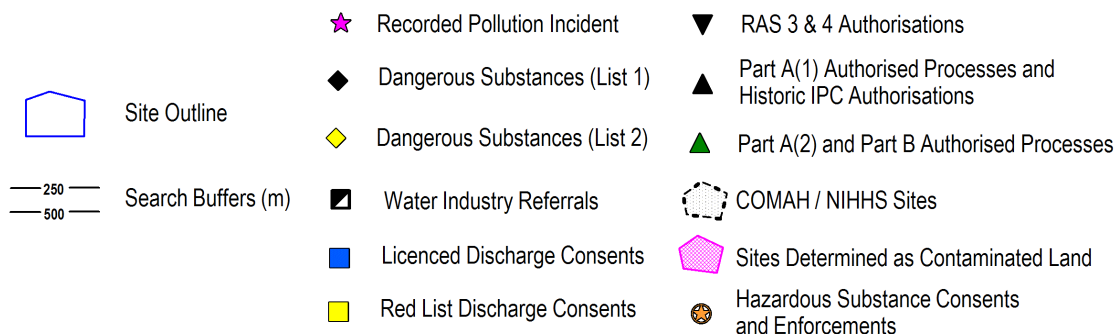
ID	Distance(m)	Direction	Use	Date
58M	148	N	Pond	1887
59M	149	N	Pond	1922
60M	150	N	Pond	1903
61M	150	N	Pond	1887
62N	183	W	Pond	1887
63N	188	W	Pond	1887
64N	188	W	Pond	1903

65N	190	W	Pond	1950
66N	198	W	Pond	1988
67N	198	W	Pond	1975
68N	206	W	Pond	1887
69	242	SE	Pond	1887
70C	325	S	Brick and Tile Works	1903
71C	325	S	Brick and Tile Works	1948
72O	331	S	Water Body	1903
73O	331	S	Water Body	1948
74D	334	S	Brick and Tile Works	1903
75D	334	S	Ponds	1903
76D	334	S	Brick and Tile Works	1950
77O	334	S	Pond	1887
78D	334	S	Brick and Tile Works	1887
79P	382	SW	Water Body	1948
80P	382	SW	Water Body	1903
81P	385	SW	Pond	1887
82P	388	SW	Pond	1988
83P	388	SW	Pond	1975
84Q	390	SE	Pond	1887
85Q	391	SE	Pond	1929
86Q	391	SE	Pond	1947
87Q	391	SE	Pond	1903
88Q	393	SE	Pond	1950
89R	432	S	Pond	1903
90R	432	S	Pond	1948
91R	433	S	Pond	1950
92S	482	SE	Ponds	1950
93S	482	SE	Pond	1887
94S	483	SE	Ponds	1947
95S	483	SE	Ponds	1903
96S	483	SE	Ponds	1929
97S	490	SE	Ponds	1975
98S	490	SE	Ponds	1988

2. Environmental Permits, Incidents and Registers Map



© Crown copyright and database rights 2020.
Ordnance Survey licence 100035207.



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:

1

The following List 2 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1	448	SW	521020	Name: Select Timber Products Ltd	Authorised Substances: pH

ID	Distance (m)	Direction	NGR	Details
			335300	Status: Not Active Receiving Water: Na

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

1

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
5	290	W	521102 335498	Address: Select Timber Products, Mill Lane, Donington, Spalding, Lincolnshire, PE11 4TL Process: Timber Manufacture Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

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:

3

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

ID	Distance (m)	Direction	NGR	Details
2	377	W	521040 335750	Address: 24-26 HIGH STREET, DONINGTON, LINCOLNSHIRE Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: PRNNF02638 Permit Version: 1 Receiving Water: Trib South Forty Foot Drain Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 14/05/1990 Effective Date: 14-May-1990 Revocation Date: 18/08/1992
3	390	W	521000 335500	Address: MILL LANE FACTORY Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: PR3NFF1076 Permit Version: 1 Receiving Water: Unknown trib Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 24/01/1974 Effective Date: 24-Jan-1974 Revocation Date: 20/02/1992
4	489	SE	521847 335304	Address: D&S FACTORS, 1 PINDER LANE, DONINGTON, SPALDING, Lincs, PE11 4SN Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Receiving Water: TRIBUTARY OF HAMMOND BROOK Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995)

ID	Distance (m)	Direction	NGR	Details
				Permit Number: NPSWQD008049 Permit Version: 1 Issue date: 03/06/2009 Effective Date: 03-Jun-2009 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

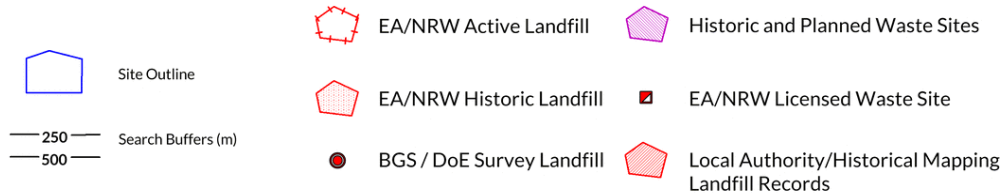
Database searched and no data found.

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

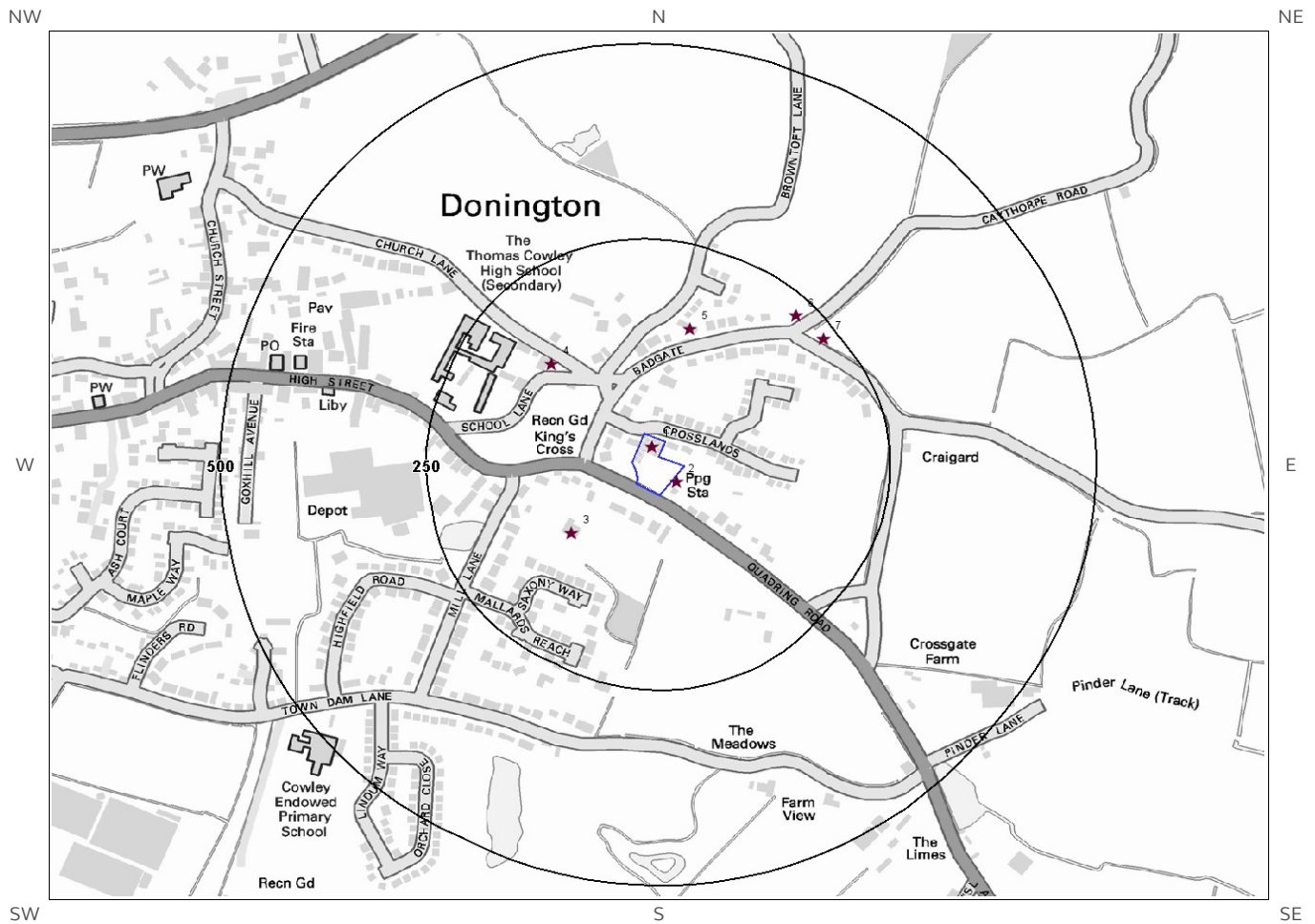
Database searched and no data found.

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



© Crown copyright and database rights 2020.
Ordnance Survey licence 100035207.



Site Outline

★ Current Industrial Sites

— Electricity Transmission Cables

— 250 —
— 500 — Search Buffers (m)

● Petrol & Fuel Sites

— Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

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

7

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Dave Cook Engineering	521404 335607	Dave Cook Engineering, Quadring Road, Spalding, Lincolnshire, PE11 4TB	Agricultural Contractors	Contract Services
2	4	SE	Pumping Station	521434 335562	Lincolnshire, PE11	Water Pumping Stations	Industrial Features
3	101	SW	P A Business Services	521306 335496	27a, Quadring Road, Donington, Spalding, Lincolnshire, PE11 4TD	Civil Engineers	Engineering Services
4	144	NW	Electricity Sub Station	521283 335713	Lincolnshire, PE11	Electrical Features	Infrastructure and Facilities
5	146	N	Greenaway Amenity Ltd	521450 335758	7, Browntoft Lane, Donington, Spalding, Lincolnshire, PE11 4TQ	Agricultural Machinery and Goods	Industrial Products
6	227	NE	Gas Governor	521579 335774	Lincolnshire, PE11	Gas Features	Infrastructure and Facilities
7	233	NE	Pumping Station	521612 335745	Lincolnshire, PE11	Water Pumping Stations	Industrial Features

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
TFD-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT

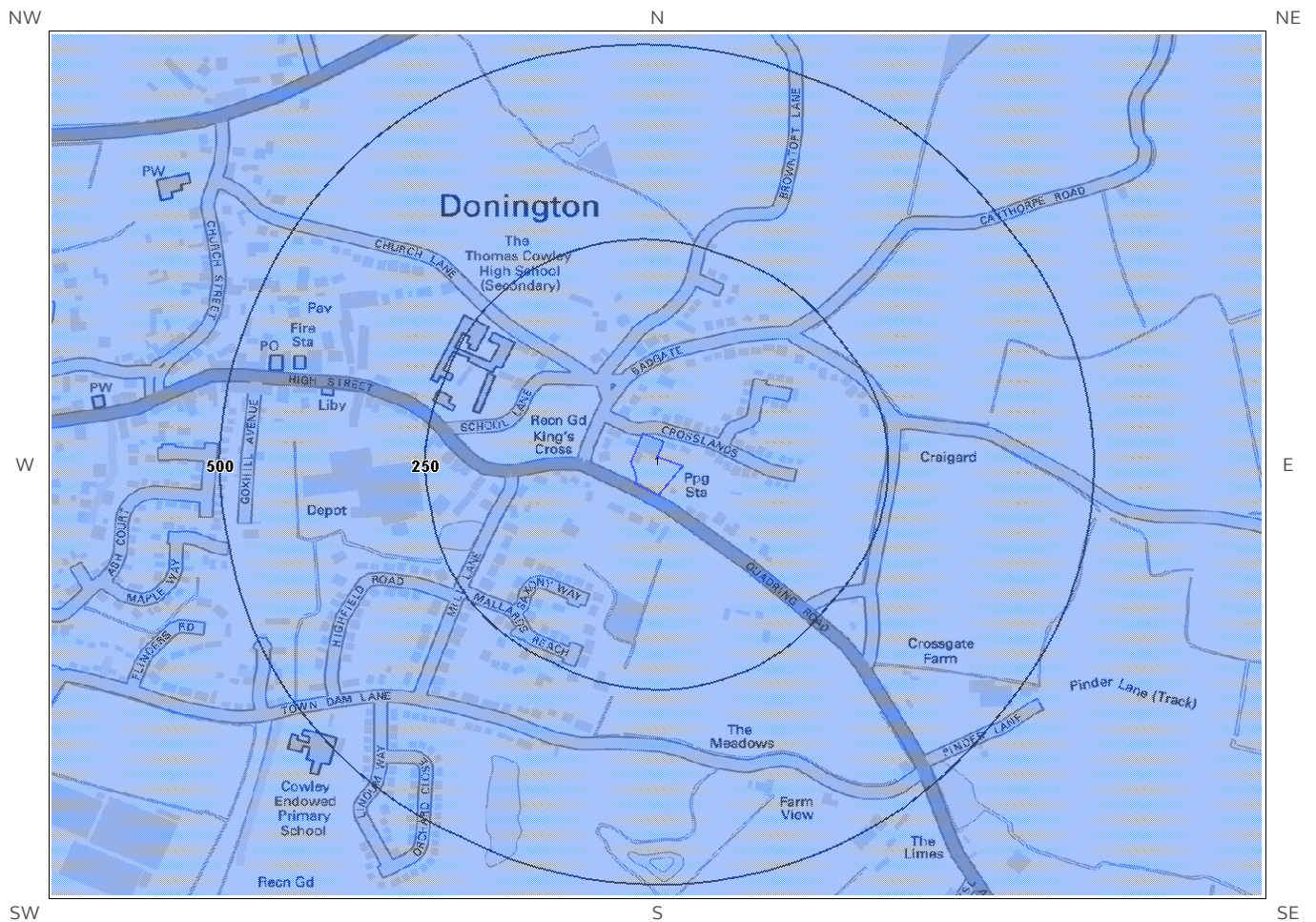
5.3 Bedrock and Solid Geology

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

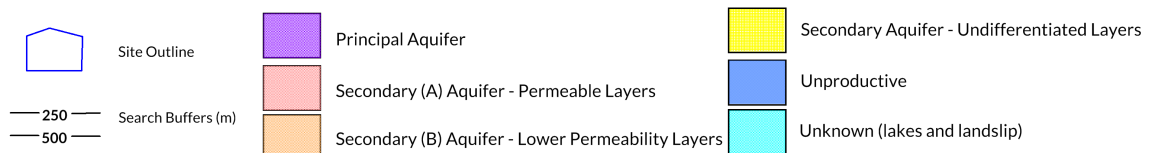
Lex Code	Description	Rock Type
OXC-MDST	OXFORD CLAY FORMATION	MUDSTONE

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

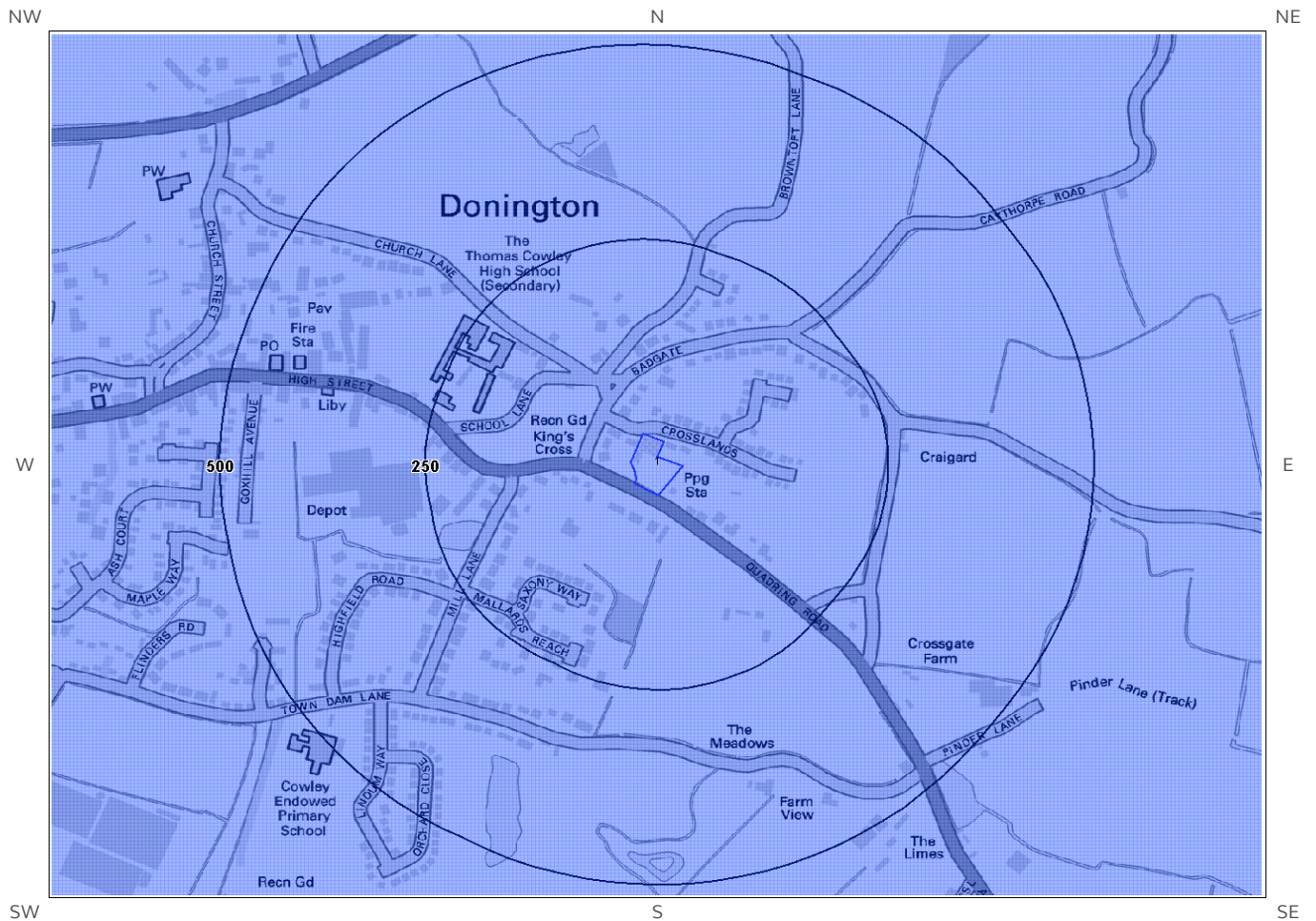
Geology



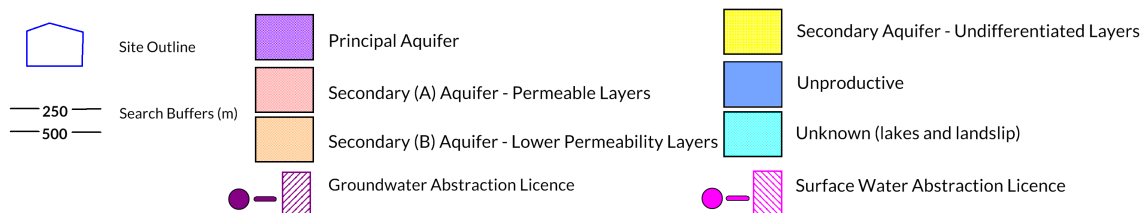
© Crown copyright and database rights 2020
Ordnance Survey licence 100035207.



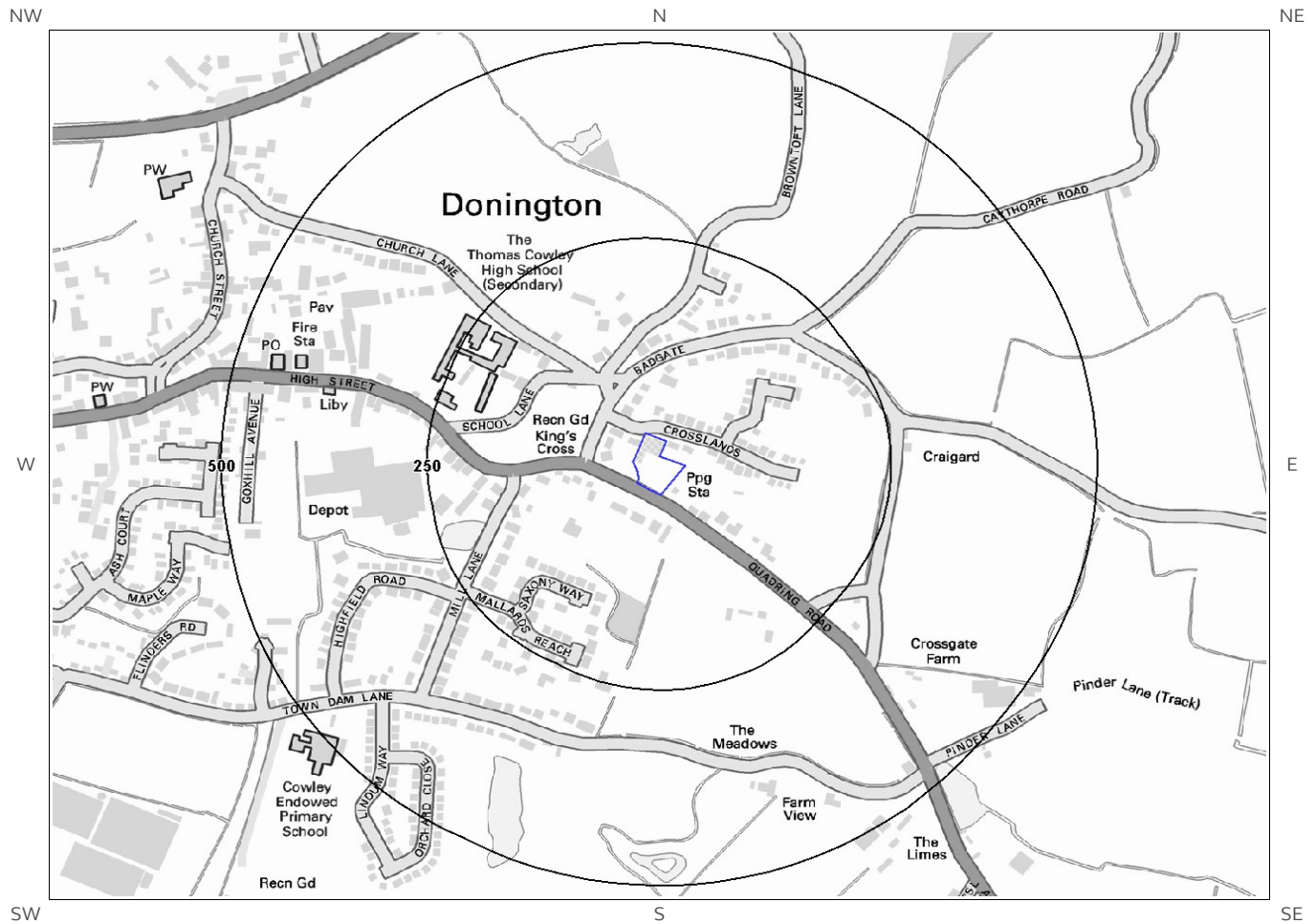
6b. Aquifer Within Bedrock Geology and Abstraction Licences



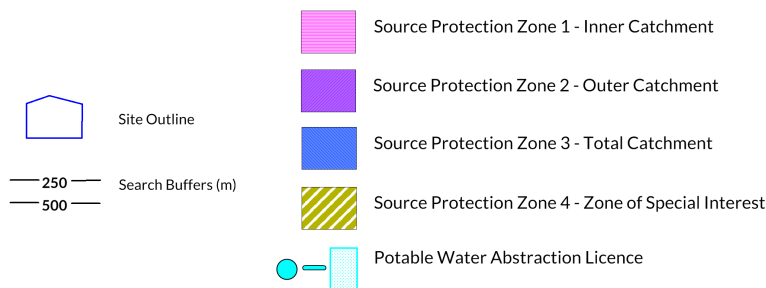
© Crown copyright and database rights 2020
Ordnance Survey licence 100035207.



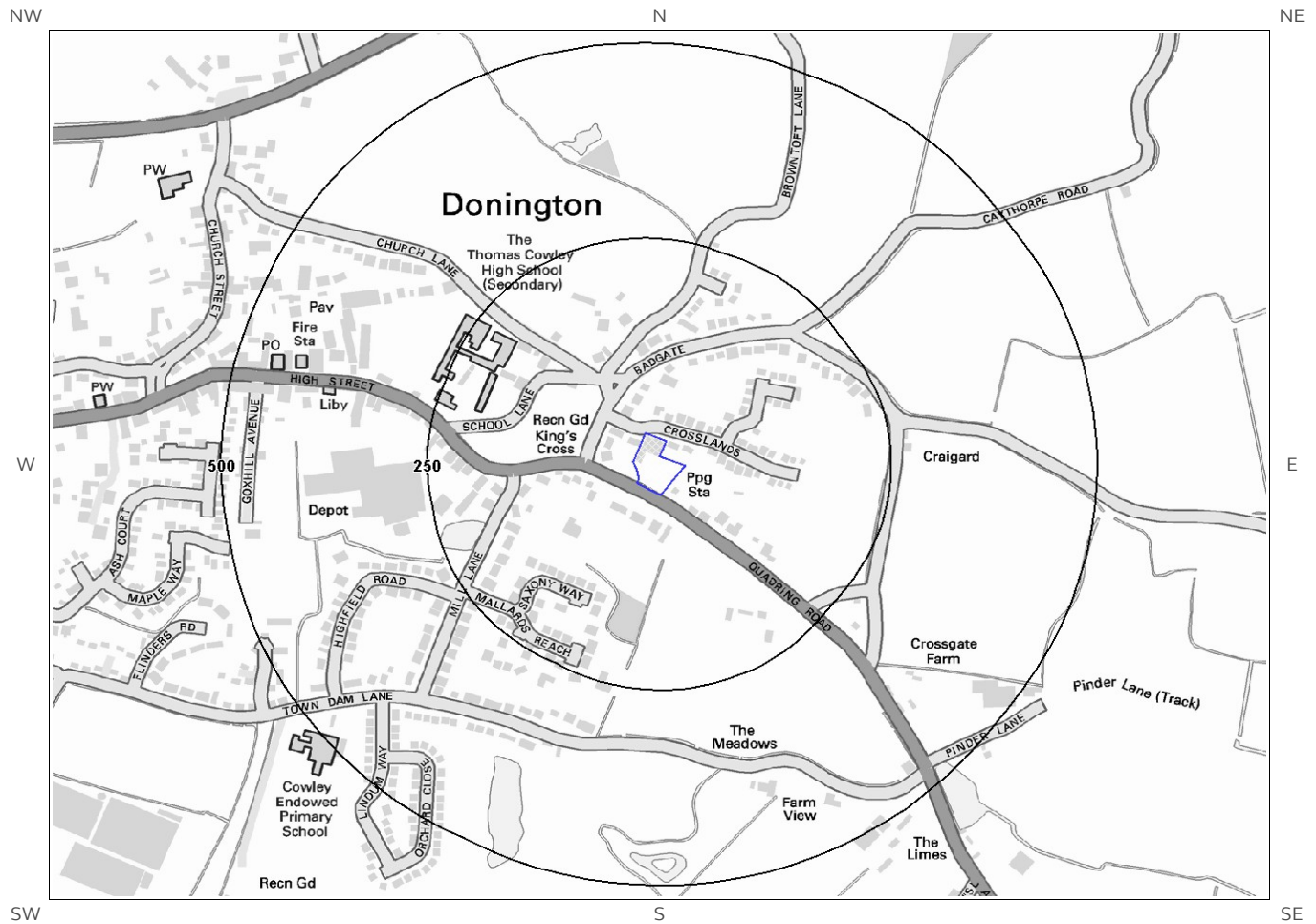
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



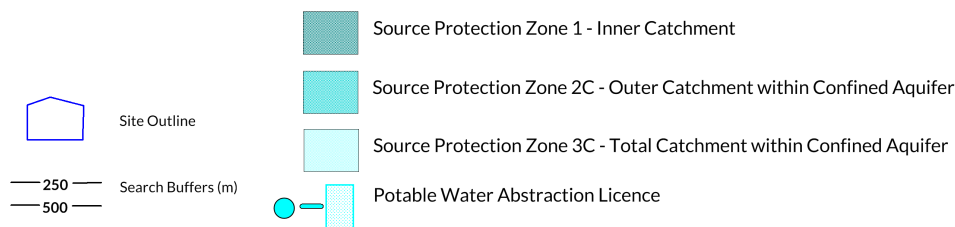
© Crown copyright and database rights 2020
Ordnance Survey licence 100035207.



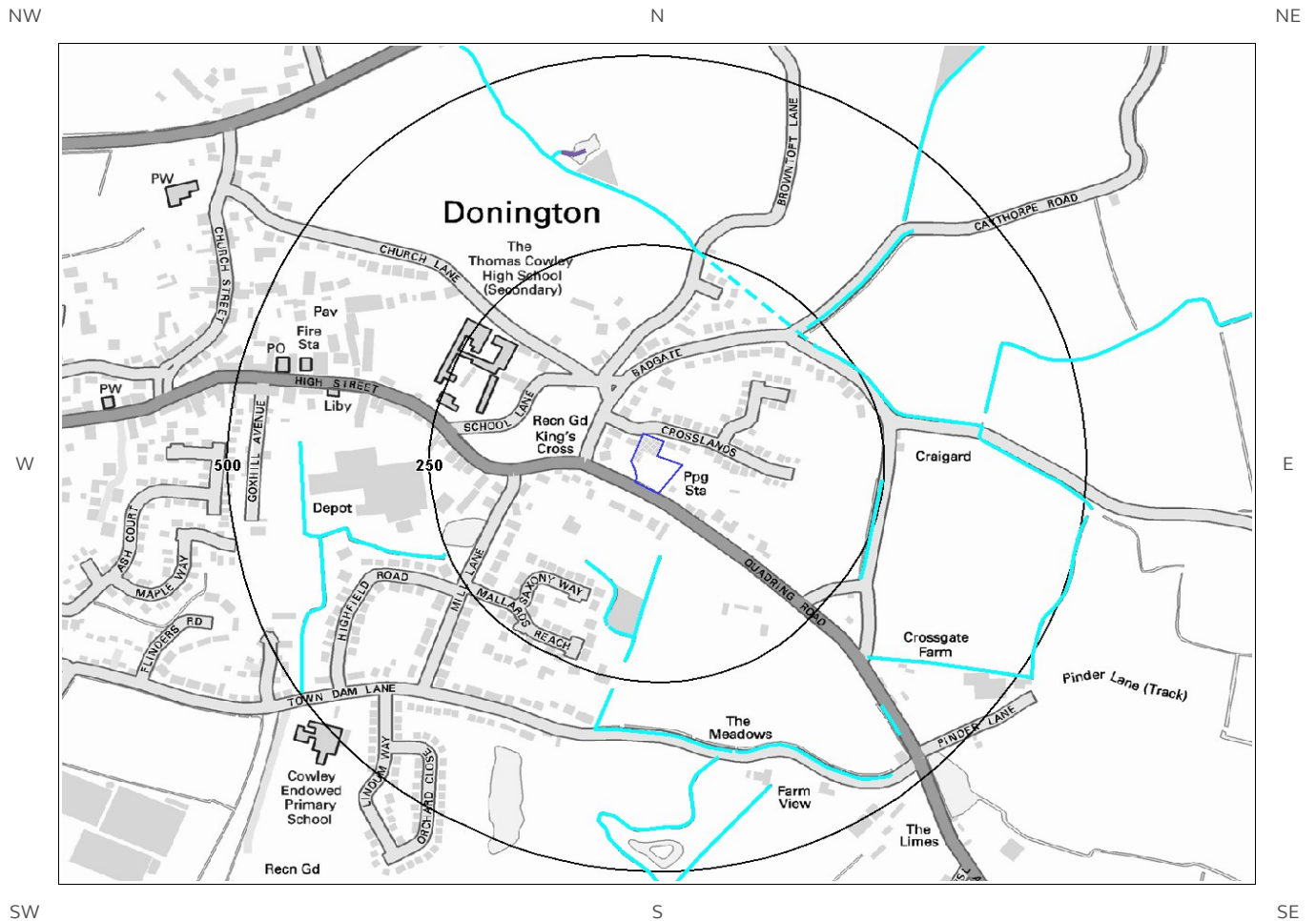
6d. Hydrogeology – Source Protection Zones within confined aquifer



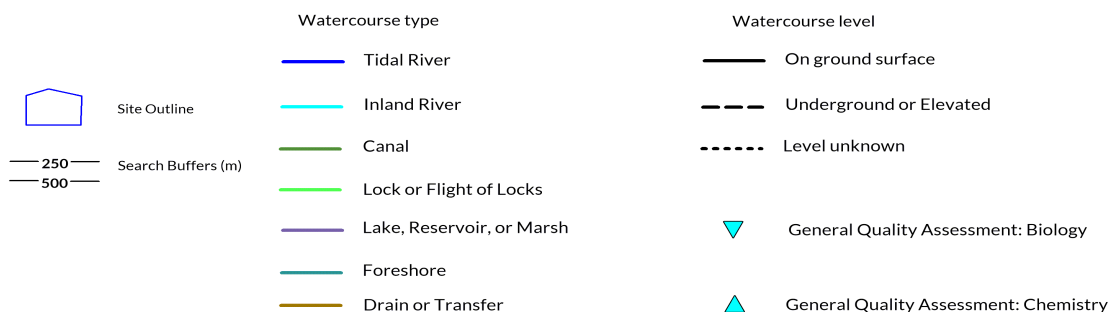
© Crown copyright and database rights 2020
Ordnance Survey licence 100035207.



6e. Hydrology – Watercourse Network and River Quality



© Crown copyright and database rights 2020.
Ordnance Survey licence 100035207.



6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	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
Not shown	1144	S	521400 334400	Status: Historical Licence No: 4/30/12/*S/0228 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: UNNAMED DRAIN DONINGTON Data Type: Line Name: M LEGGATE & SON Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 01/06/1977 Expiry Date: - Issue No: 100 Version Start Date: 01/06/1977 Version End Date:
Not shown	1318	SW	520600 334500	Status: Historical Licence No: 4/30/12/*S/0228 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: UNNAMED DRAIN DONINGTON Data Type: Point Name: M LEGGATE & SON Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 01/06/1977 Expiry Date: - Issue No: 100 Version Start Date: 01/06/1977 Version End Date:
Not shown	1685	S	524800 332500	Status: Historical Licence No: 5/31/14/*S/0230 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: MARLODE DRAIN AT QUADRING SPALDING Data Type: Line Name: R BRATLEY (QUADRING) LTD Annual Volume (m³): 46,000 Max Daily Volume (m³): 750 Application No: - Original Start Date: 01/07/1997 Expiry Date: 31/03/2017 Issue No: 102 Version Start Date: 30/06/2011 Version End Date:
Not shown	1685	S	524800 332500	Status: Active Licence No: 5/31/14/*S/0230/R01 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: MARLODE DRAIN AT QUADRING SPALDING Data Type: Line Name: R BRATLEY (QUADRING) LTD Annual Volume (m³): 46,000 Max Daily Volume (m³): 750 Application No: - Original Start Date: 19/04/2017 Expiry Date: 31/03/2026 Issue No: 1 Version Start Date: 19/04/2017 Version End Date:
Not shown	1685	S	521930 333940	Status: Historical Licence No: 5/31/14/*S/0230 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: MARLODE DRAIN "B" AT QUADRING Data Type: Point Name: R BRATLEY (QUADRING) LTD Annual Volume (m³): 46,000 Max Daily Volume (m³): 750 Application No: - Original Start Date: 01/07/1997 Expiry Date: 31/03/2017 Issue No: 101 Version Start Date: 21/07/1999 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	83 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
12	83 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
2	120 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.5
13	120 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.5
3	187 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
14	187 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
4	193 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
15	193 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
5	218 NE	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
16	218 NE	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
6	227 NE	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
17	227 NE	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
7	232 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
18	232 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
8	246 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
19	246 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
9	253 N	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
10	253 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.4
20	253 N	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
21	253 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.4
11	264 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.2
Not shown	264	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	S			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.2
12	265 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
23	265 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
13	267 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
24	267 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
14	316 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
15	316 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
Not shown	316 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	316 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
16	338 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
27	338 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
17	355 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
Not shown	355 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 2.9
18	356 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
Not shown	356 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
19	369 E	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
20	369 E	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	369 E	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
Not shown	369 E	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
21	379 N	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.9
Not shown	379 N	- Alternative Name: -	Lake, loch or reservoir.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.9
22	381 N	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
23	381 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
24	381 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
Not shown	381 N	Wikes Drain Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Not shown	381 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	381 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
25	394 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
Not shown	394 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
26	396 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
27	396 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
Not shown	396 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
Not shown	396 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
28	410 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
Not shown	410 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
29	411 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	411 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
30	414	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SE			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.2
Not shown	414 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.2
31	417 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
Not shown	417 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Witham Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6

6.11 Surface Water Features

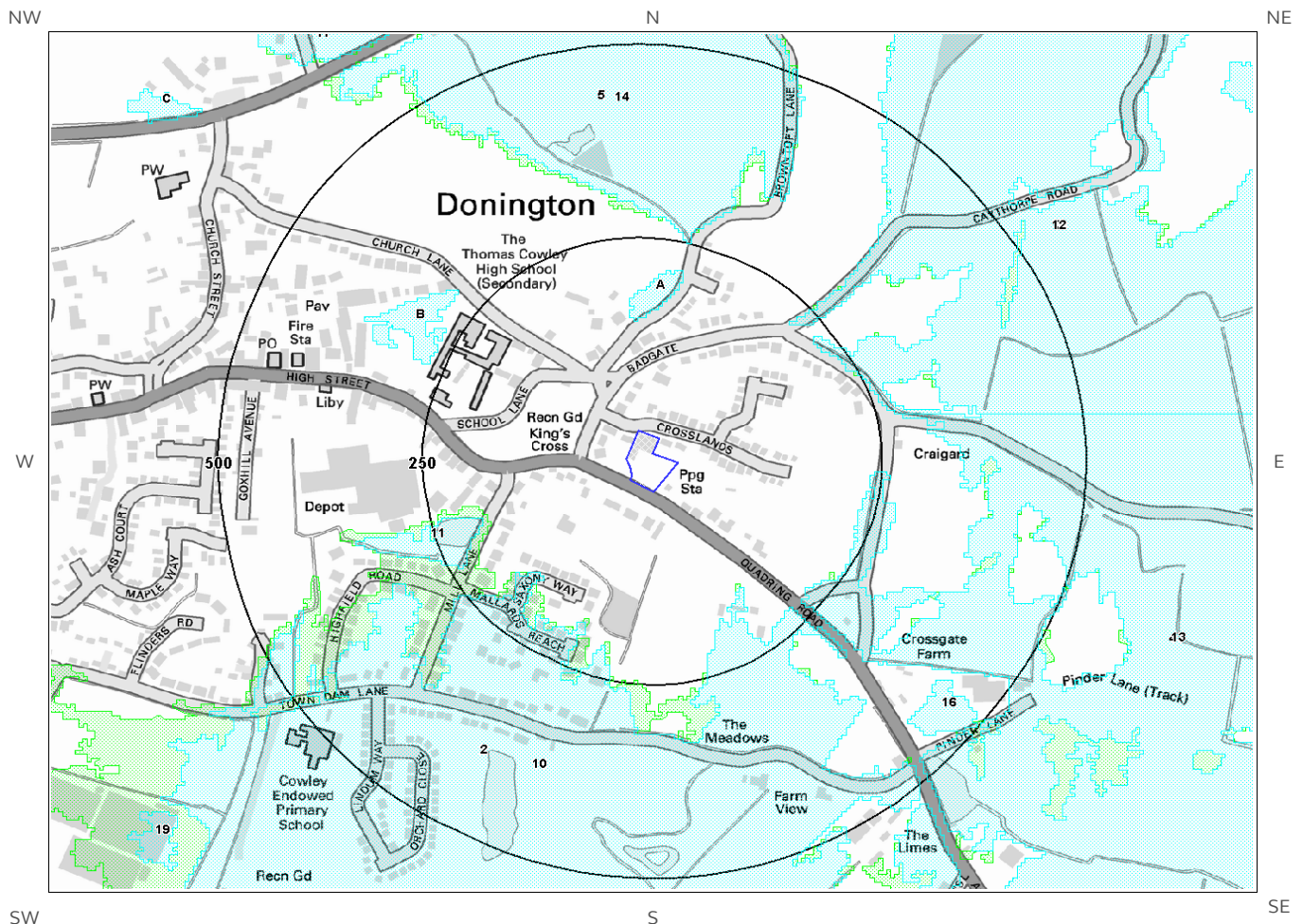
Surface water features within 250m of the study site

Identified

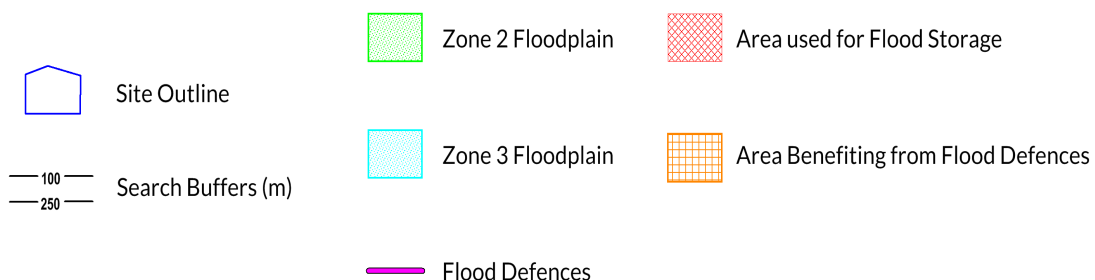
The following surface water records are not represented on mapping:

Distance (m)	Direction
82	S
119	SW
192	W
226	NE
232	NE

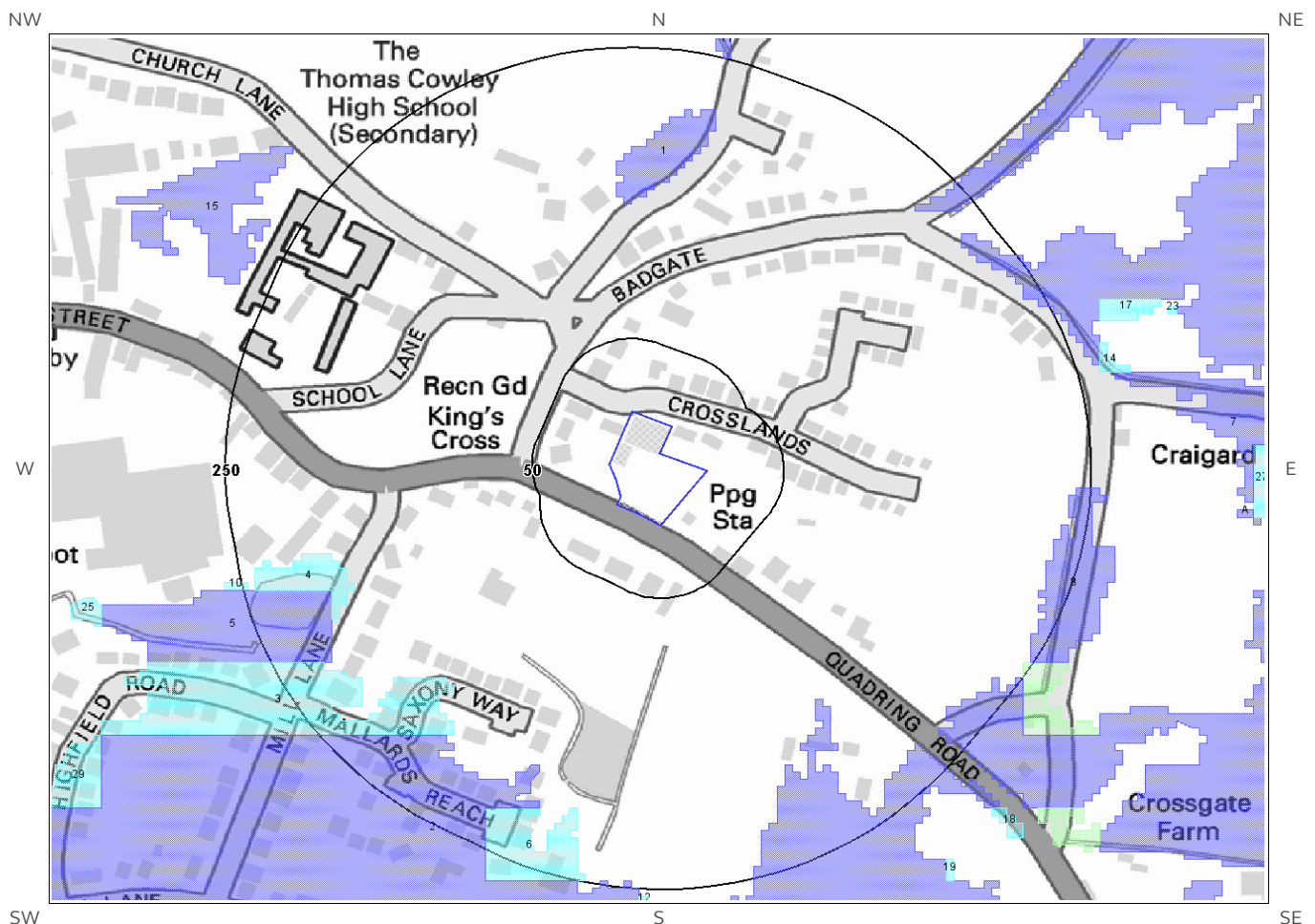
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



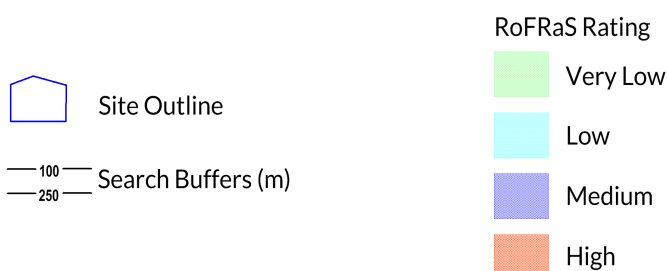
© Crown copyright and database rights 2020.
Ordnance Survey licence 100035207.



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



© Crown copyright and database rights 2020.
Ordnance Survey licence 100035207.



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
1A	142	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
2	156	SE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
3	216	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
4	222	SE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
5	249	N	19-Nov-2019	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
1A	142	N	19-Nov-2019	Zone 3 - (Fluvial Models)
2	162	SW	19-Nov-2019	Zone 3 - (Fluvial Models)
3	187	W	19-Nov-2019	Zone 3 - (Fluvial Models)
4	216	NE	19-Nov-2019	Zone 3 - (Fluvial Models)
5	222	SE	19-Nov-2019	Zone 3 - (Fluvial Models)
	249	N	19-Nov-2019	Zone 3 - (Fluvial Models)

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

Highest risk of flooding onsite

Very Low

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

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

7.4 Flood Defences

Flood Defences within 250m of the study site

None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site

None identified

7.6 Areas benefiting from Flood Storage

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

None identified

7.7 Groundwater Flooding Susceptibility Areas

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

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

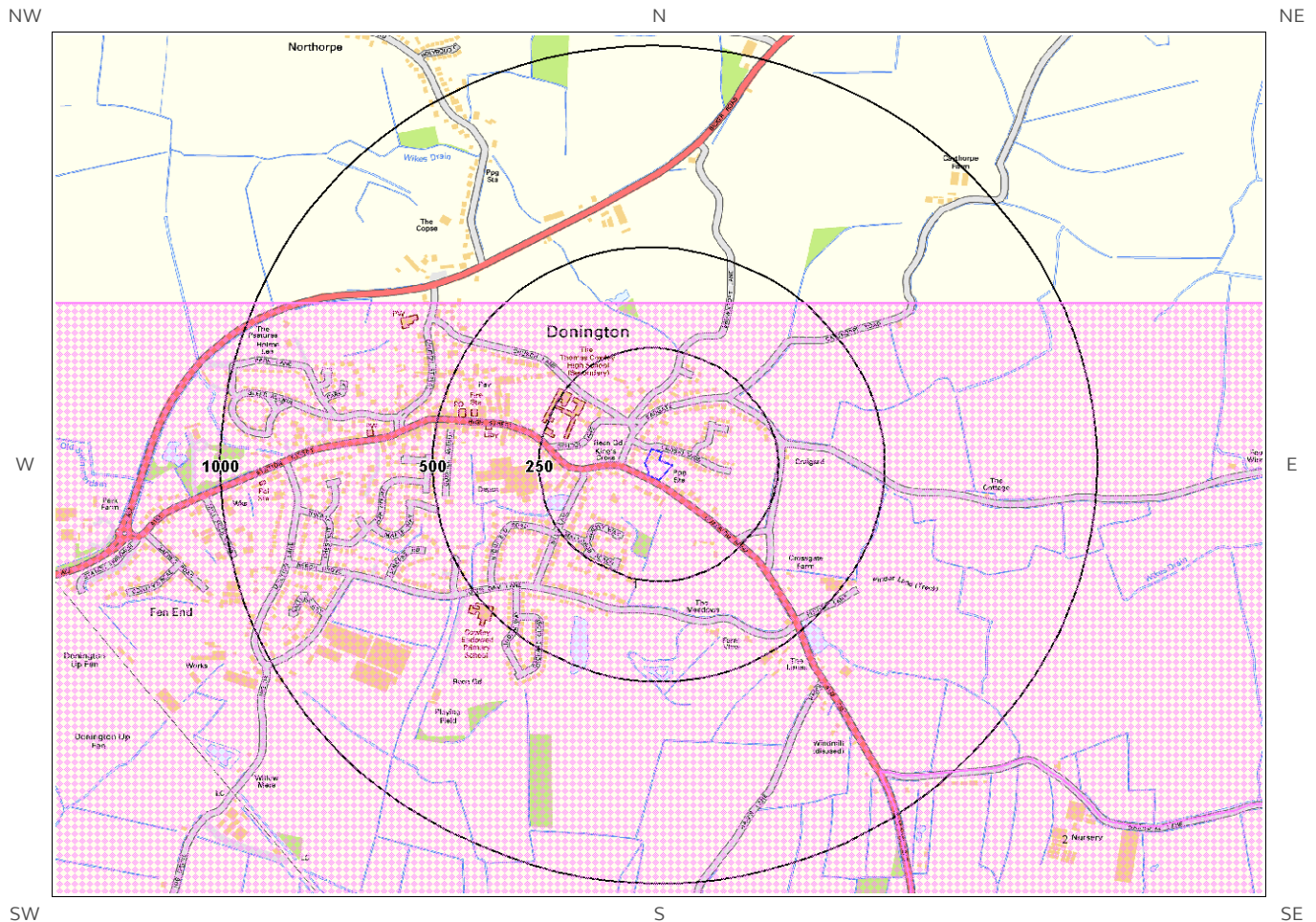
British Geological Survey confidence rating in this result

Not Applicable

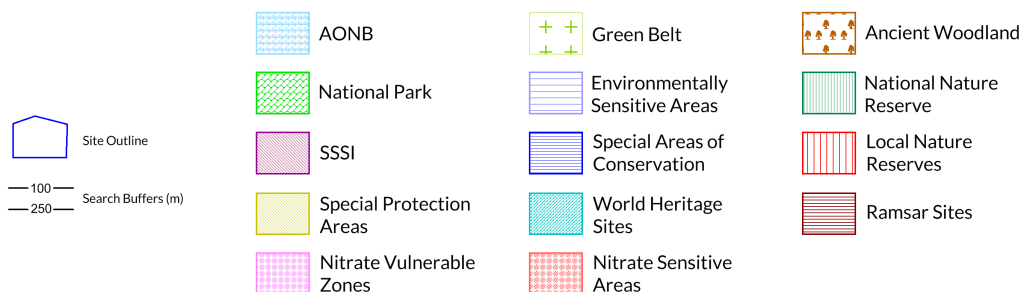
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

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



© Crown copyright and database rights 2020.
Ordnance Survey licence 100035207.



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:

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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

Database searched and no data found.

0

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	890	SE	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

