

Meadow Environmental Consulting

Phase I Environmental Assessment – Desk Study and Walkover Survey (LCRM Stage 1 Tier 1 Risk Assessment)

Site: Saint Joseph's Convent of Our Lady of Mercy, Hillside Drive,
Gravesend, Kent DA12 1NY



Prepared for: Saint Joseph's Convent of Our Lady of Mercy

Date: 21st November 2024

CLIENT: Saint Joseph's Convent of Our Lady of Mercy

SITE: Saint Joseph's Convent of Our Lady of Mercy, Hillside Drive,
Gravesend, Kent DA12 1NY

PROJECT REFERENCE: 24-153/P1

DATE: 21st November 2024

Report: Phase I Environmental Assessment – Desk Study and Walkover Survey (LCRM Stage 1, Tier 1 Risk Assessment)				
	Name	Position	Signature	Date
Prepared by	Keith Huxley	Head of Meadow Environmental Consulting		21/11/2024
Revision: Final Report				

This report has been prepared within the terms and scope of the contract between Meadow Environmental Consulting (the company) and the client, and specifically to the client's project. This report is confidential to the client and the company accepts no responsibility or liability for any loss or damage of whatever nature in the event that this report is relied upon by a third party or is issued for any purpose for projects for which it was not originally commissioned and outside the scope of this report. Any such party relies upon this report solely at their own risk.

CONTENTS & EXECUTIVE SUMMARY

	Page No
1. Introduction.....	1
2. The Site and Surrounding Areas.....	1
2.1 Location and Setting.....	1
2.1.1 Walkover Survey.....	2
2.2 Hydrology.....	3
3. Historical Site Use.....	3
3.1 1863 to 1909.....	3
3.2 1932 to 1978.....	3
3.3 1987 to Date.....	4
3.4 Planning and Uses.....	5
4. Environmental Sensitivity.....	6
4.1 Site Sensitivity.....	6
4.2 Flooding.....	7
4.3 Potentially Contaminative Use.....	7
4.4 Landfill and Waste Transfer Sites.....	8
4.5 Hydrogeology.....	9
4.6 Geology.....	10
5. Discharge Consents, Water Abstractions and Pollution Incidents.....	11
5.1 Discharge Consents.....	11
5.2. Abstraction Consents.....	11
5.3 Pollution Incidents, Inventories and Permits.....	11
6. Subsidence, Mining Hazards and Radon.....	12
6.1 Subsidence	12
6.2 Mining	12
6.3 Radon.....	13

7. Recommendations.....	14
7.1 General.....	14
7.2 On-Site Contamination Impact.....	15
7.3 Off-Site Contamination Impact.....	15
7.4 Conceptual Model.....	15
7.4.1 Source(s).....	15
7.4.2 Pathway(s).....	16
7.4.3 Receptor(s).....	16
7.4.4 Assessment of Risk.....	17
7.5 Investigation Work Recommended.....	19
7.5.1 General.....	19
7.5.2 Sampling Locations and Analysis.....	20
7.5.3 Timescale.....	20
7.6 Excavated Soils.....	20
7.7 Additional Notes.....	21

APPENDICES

APPENDIX 1 Site Plans (3 pages)

APPENDIX 2 Historic Aerial Photographs (8 pages)

APPENDIX 3 Site Photographs (11 pages)

APPENDIX 4 Historical Maps (26 pages)

1863-64 (1:2500)
1865 (1:10560)
1866 (1:2500)
1888 (1:10560)
1895 (1:10560)
1897 (1:2500)
1907 (1:10560)
1909 (1:2500)
1931-32 (1:10560)
1932-33 (1:2500)
1936 (1:2500)
1938 (1:10560)
1946 (1:10560)
1953-54 (1:1250)
1955 (1:10560)
1961-64 (1:1250)
1966 (1:10560)
1971-73 (1:10000)
1979-81 (1:1250)
1977-81 (1:10000)
1986-91 (1:1250)
1988-93 (1:1250)
2001 (1:10000)
2003 (1:1250)
2010 (1:10000)
2024 (1:10000)

APPENDIX 5 Groundsure Enviro and Geo Insight
Report (104 pages)

APPENDIX 6 Conceptual Model (1 page)

APPENDIX 7 Gravesham Borough Council
Information (2 pages)

Executive Summary

Meadow Environmental Consulting was instructed by Clay Architecture Limited on behalf of Saint Joseph's Convent of Our Lady of Mercy to carry out a Preliminary Environmental Risk Assessment (desk study and walkover survey) of the site at:

**Saint Joseph's Convent of Our Lady of Mercy, Hillside Drive,
Gravesend, Kent DA12 1NY**

A planning application has not been submitted to Gravesham Borough Council. A desk study report will be required to accompany the application(s) when submitted and to address various sections of the National Planning Policy Framework (Revised NPPF 2021).

The site is at the east end of the cul-de-sac Hillside Drive, which is off the south side of Old Road East and is occupied by a convent, its outbuildings, parking areas and private gardens. It is proposed to convert part of the convent building to town houses, replace a single storey extension at the west elevation of the convent building with a 1.5 storey residential bungalow and develop the north area of the site with four detached houses, all with off road parking and private gardens. At this juncture the west area of the north area of the site may be sold to an adjacent resident or if not, it may be included in the development of the north area and remain as a garden buffer area. The south area of the site will be a wildlife habitat conservation area. Part of the existing convent building will remain as a convent. The current regime is to submit the conversion of the convent building and the development of the north area as two linked planning applications.

From the investigations carried out for this desk study the site was undeveloped and within an area of farmland in the 1860's. By the late 1880's the main convent building had been built on the site and the gardens landscaped. A large greenhouse was in the southwest area of the site from the late 1880's until at least the early 1900's. By the early 1930's the building had been divided into three dwellings with their associated private gardens. The layout of the existing building including the chapel has remained since at least 1960. The north area of the gardens was used as kitchen garden from at least 1940 but does not appear to have been used as a kitchen garden from 1990. The site has been used as a convent since the 1950's.

The immediate surrounding area was farmland in the mid 1860's but had been developed with some of the roads and houses that remain to date by the late 1880's including Hillside Drive and some of the houses (Old Road East to the north was constructed by the early 1860's). The areas to the north/northwest, west and south were mostly developed with the houses that remain to date by the late 1930's. The land immediately to the north/northeast and east was a sports ground from at least the early 1930's until the mid 1970's. This area was used as a landfill site from the mid 1970's until its development with the existing residential houses in the late 1980's.

The predominant underlying bedrock geology is The Tunbridge Wells Sand Formation (sand) of high permeability with no drift deposits and thus the site is overlying a secondary aquifer (minor aquifer) and is within a groundwater source protection zone (SPZ2, outer catchment).

There are no surface water features (a body of water or watercourse that in normal circumstances contains water throughout the year) on, adjacent or near to the site (within 100m).

There are no current surface water abstraction consents for potable water supplies or other uses in the area (within 2km).

There are five current groundwater abstractions in the area (within 2km) and the nearest is 0.63km for public potable water supplies. There are also groundwater abstractions for other uses although the nearest is 1.4km from the site.

The findings of this report indicates that it is possible that there are contaminants on the site at unacceptable levels for the proposed residential development, the site represents a **very low to low environmental risk** and that a phase II intrusive investigation (LCRM Stage 1, Tier 2/Tier 3 Risk Assessment) of the site is required.

1. Introduction

Meadow Environmental Consulting was instructed by Clay Architecture Limited on behalf of Saint Joseph's Convent of Our Lady of Mercy to carry out a Preliminary Environmental Risk Assessment (desk study and walkover survey) of the site at; Saint Joseph's Convent of Our Lady of Mercy, Hillside Drive, Gravesend, Kent DA12 1NY (grid reference at the site centre is 565657 172862). The site is approximately 35 metres above ordnance datum (AOD) in the town of Gravesend, Kent.

The desk study would mainly comprise of a walkover survey of the site, review historical land use, review historical maps, assess the environmental sensitivity of the site and surrounding areas, review geological maps, investigate pollution incident registers, abstraction and discharge consents and liaise with the relevant personnel at the local authority if necessary.

The main sources of the information are, but not limited to; The Environment Agency (EA), Ordnance Survey, The Coal Authority, British Geological Survey, Natural England, Public Health England and The Health and Safety Executive.

The site is at the east end of the cul-de-sac Hillside Drive, which is off the south side of Old Road East and is occupied by a convent, its outbuildings, parking areas and private gardens. It is proposed to convert part of the convent building to town houses, replace a single storey extension at the west elevation of the convent building with a 1.5 storey residential bungalow and develop the north area of the site with four detached houses, all with off road parking and private gardens. At this juncture the west area of the north area of the site may be sold to an adjacent resident or if not, it may be included in the development of the north area and remain as a garden buffer area. The south area of the site will be a wildlife habitat conservation area. Part of the existing convent building will remain as a convent. The current regime is to submit the conversion of the convent building and the development of the north area as two linked planning applications.

Site plans showing the site location, existing layout and proposed layout are shown in appendix 1, site plans (p1 and p2).

2. The Site and Surrounding Areas

2.1 Location and Setting

The site covers an area of approximately 1.29ha (12900m²) and is at the east end of Hillside Drive, which is the end of the cul-de-sac, in the town of Gravesend. The town centre is approximately one and a half miles to the northwest.

It is located in an area of predominantly medium to high density residential use although there are public open spaces and a school in the area.

Aerial photographs of the site ranging from 1999 to 2021 are shown in the Groundsure Enviro and Geo Insight Report in appendix 5 (p9 to p13).

Immediately to the north of the site are detached residential houses in The Yews and The Lapwings with residential houses beyond that extend to more than 500m from the site. Approximately 120m to the northwest is Old Road East and approximately 300m to the northeast is St John's Roman Catholic Comprehensive School. The junction of Hillside Drive and Old Road East, which is the B261, is approximately 140m to the northwest.

Immediately to the west of the site are detached residential houses on the north and south sides of Hillside Drive with residential houses in Old Road East beyond. Approximately 150m from the site are the grounds of a disused school (St Joseph's Convent Preparatory School). The school buildings are approximately 240m from the site with residential houses beyond that extend to more than 500m from the site.

Immediately to the south of the site are residential houses in Hillside Avenue with residential houses beyond that extend to more than 500m from the site.

Immediately to the east of the site are detached residential houses in The Turnstones with residential houses beyond that extend to more than 500m from the site.

2.1.1 Walkover Survey

The walkover survey was carried out on the 13th November 2024. At the time of the walkover survey the main building was in full use as a convent with its associated lounges, dining room, bedrooms and laundry room. The second floor of the building was not in use. The southeast section of the building was undergoing the building works as per the 2023/24 planning applications (see section 3.4), was sectioned off with Heras fencing and scaffolding was erected in some parts. The area at the end of the access drive was being used as the construction compound area. Type 1 sub base had been laid and the area occupied with steel storage containers, the site offices and areas for construction staff car parking. The area was enclosed by Heras fencing.

The main building was constructed of brick with a dual pitched tiled roof. The building had a suspended timber floor. The extension at the west elevation (laundry room area) had a part flat felt roof.

The access road on the site was tarmac. The areas around the building were well kept lawns with scattered well established trees, hedges with some shrubs and bushes. A few fruit trees were also in the southwest area. The greenhouses in the northwest area were disused and there was also a small ornamental fountain and pond in this part of the gardens. There were footpaths around the gardens. The south area of the site, which is the proposed wildlife habitat conservation area had many well established trees and bushes and was bounded by a very low level wall. The far south area at the south boundary had a very steep downward embankment.

The north boundary had a closed timber fence and an established Leylandii hedge.

All of the vegetation on and adjacent to the site appeared to be in a very healthy condition.

The northwest boundary had a closed board timber fence. The southwest and south boundaries were bounded by a brick wall. The east boundary had a part brick wall and part close board timber fence.

There were no above ground fuel tanks on the site and there was no evidence of any former above ground fuel tanks on or adjacent to the site. There were no below ground fuel tanks on or adjacent to the site.

A site plan showing the existing and proposed layout and the immediate surrounding areas is shown in appendix 1 (p3). Also shown on this site plan are the locations and view direction of the photographs of the site that were taken during the walkover survey. The site photographs are shown in appendix 3.

There are no current or former fuel stations within 250m.

There are no high voltage underground electricity transmission cables or high pressure gas pipelines within 500m of the site.

This is all shown in appendix 5 (section 4).

2.2 Hydrology

There are no surface water features on, adjacent or near to the site (within 100m).

This is shown in appendix 5 (section 6).

3. Historical Site Use

3.1 1863 to 1909

The study of the historical maps of the site, some of which can be found in appendix 4, Historical Maps, shows that the site was undeveloped in 1863 and was within an area of farmland. The west half of the site was marked as part of a larger orchard in 1865 that extended further to the west and northwest.

Most of the roads in the immediate area were not constructed although Old Road East was constructed and followed the same route that remains to date. A few houses were in Old Road East at this date. Further to the northwest the town of Gravesend was developed although smaller in layout.

By 1888 the main building that is now the convent had been built on the site and Hillside Drive had been constructed. A large greenhouse had also been built in the southwest area of the site as well as outbuildings just to the west of the main building. The site was marked as Hillside. A house had been built in Hillside Drive as well as the residential house, The Lodge at the junction of Hillside Drive and Old Road East and more houses had been built in the further environs. The orchard was smaller and remained to the northwest of the site. Further to the southeast approximately 400m from the site, a small old chalk pit was marked.

By 1909 the gardens around the building were marked as landscaped with paths and a few trees. Small outbuildings were in the centre of the site and in the north area.

3.2 1932 to 1978

By 1932 many more roads and houses had been built in the immediate area and further environs including a few more houses in Hillside Drive. Immediately to the east and northeast was a sports field with a tennis court immediately beyond the north boundary and a bowling green immediately beyond the east boundary. The site generally remained unchanged although the building was marked as three dwellings, the large greenhouse was no longer marked and a small outbuilding was at the northwest boundary of the site. A small nursery was approximately 100m to the southwest of the site.

By 1936 many more roads and houses had been built in the immediate area and further environs. A small greenhouse had been built on the site at the northwest boundary, which remains to date and the main building had been extended at the west elevation. The tennis court immediately beyond the north boundary was no longer marked. An embankment was marked around part of the sports ground.

By 1953 a chapel, which remains to date had been built at the east elevation of the main building and the site was marked as St Joseph's Convent of Our Lady of Mercy. The outbuildings at the west end of the building had been changed to the layout that remains to date. More houses had been built in Hillside Drive. A sports pavilion had been built just beyond the north boundary, tennis courts were marked immediately beyond the southeast boundary and a putting green was marked immediately beyond the bowling green to the east.

By 1955 many more roads and houses had been built in the further environs and the small nursery was no longer marked.

By 1961 the main building had been extended further at the southeast elevation to the layout that remains to date.

By 1978 two small outbuildings had been built in the centre west area of the site as well as another greenhouse in the northwest area. The greenhouses remain to date. The tennis courts and putting green were no longer marked to the east.

3.3 1987 to Date

By 1987 the area of the sports ground had been redeveloped with the roads and houses that remain to date

According to the OS mapping the site and immediate surrounding areas have remained unchanged to date.

An assessment of historic aerial photographs shows that the site was developed in 1940 with the main convent building that remains to date. The gardens around the building appear to be landscaped with lawns, bushes and trees (many of the trees that remain to date) with the north area used a kitchen garden. Most of the houses in the immediate area were all built by this date although the sports ground adjacent to the east and northeast remained until at least 1960. By 1960 the chapel had been built and the layout of the building was that which remains to date. The 1990 aerial photo shows the sports ground had been redeveloped with the existing residential houses. The site and surrounding areas have remained unchanged to date although the north area of the site does not appear to have been used as a kitchen garden from 1990.

Copies of the historical aerial photographs are shown in appendix 2 and 5.

3.4 Planning & Uses

Following an assessment of Gravesham Borough Council planning website there has been three historical planning applications for the site apart from the current proposal, which has not been submitted. Council online records for the area date from at least 1948.

Date	Planning Details
2023 Sept	Internal subdivision of Theydon, 1950s block and the chapel from Rydal and Hillside, installation of new entrance at Theydon, erection of a dormer extension within the chapel roof, extension to the external staircase, alterations to existing 1950s block including roof alterations, cladding and fenestration changes, along with associated internal and external alterations – withdrawn
2023 Dec	Alterations to the convent to include; proposed installation of a new entrance at Theydon, closing off the party wall between Theydon and Hillside, extension to the staircase, alterations to the existing 1950s block to include cladding, re-glazing and re-roofing. Addition of a first floor to the chapel with roof lights and re-ordering of the rooms and a new lift – granted
2024	Application for the variation of conditions 2, 3 and 4 attached to the December 2023 planning permission for alterations to the convent to include; proposed installation of new entrance at Theydon, closing off the party wall between Theydon and Hillside, extension to the staircase, alterations to the existing 1950s block to include cladding, re-glazing and re-roofing. Addition of a first floor to the chapel with roof lights and re-ordering of the rooms and a new lift; Amendment to materials. Removal of the Brise Soleil, roof lights to the chapel and 1st floor – granted

The current land use data indicates that there is one current or recent ‘industrial site’ on or within 250m of the site. The registered address of an alarm company at a residential house is marked approximately 240m from the site to the southeast, which is highly unlikely to impact the site.

There are two electrical sub stations in the area (within 250m). These are small electrical sub stations located 60m south and 190m north of the site. They are both unlikely to impact the site if they are leaking or have leaked.

This is all shown in appendix 5 (section 4).

4. Environmental Sensitivity

4.1 Site Sensitivity

The site is not within a site of special scientific interest (SSSI), special protection area (SPA), a special area of conservation (SAC), RAMSAR (wetlands) site, a nature reserve, ancient woodland, a biosphere reserve, forest park, an area of greenbelt land or a marine conservation zone (MCZ).

The site is not within a nitrate vulnerable zone (Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture. (reference Natural England)).

The site is within a SSSI Impact Risk Zone and this should be borne in mind with any potential planning applications and the local authority may need to be consulted particularly with regard to any potential discharges of water or liquid waste e.g. surface water or final treated effluent discharges to ground or to surface waters, if this method of disposal is carried out and the discharge exceeds $5\text{m}^3\text{day}^{-1}$.

This is all shown in appendix 5 (section 10).

The site is not within a conservation area, a national park, an area of outstanding natural beauty, a registered park/garden or a world heritage site. There are also no listed buildings or scheduled monuments within 100m.

This is all shown in appendix 5 (section 11).

The agricultural land classification for the site and the area is recorded as urban land.

This is all shown in appendix 5 (section 12).

The site is not within a designated habitat area and there are no designated habitat areas within 250m (reference Natural England).

This is all shown in appendix 5 (section 13).

4.2 Flooding

The highest risk of flooding from rivers and sea (RoFRaS) shows that the risk is ‘**Very Low**’ on the site and in the area.

“The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).” (reference EA).

There are no flood defences within 250m.

There are no recorded flooding events on or within 250m of the site since records began in 1946.

This is all shown in appendix 5 (section 7).

The highest risk of surface water flooding is negligible on the site and 1 in 30 years to a depth of 0.1m to 0.3m in the immediate area (within 50m) (reference Ambiental Risk Analytics).

Ambiental Risk Analytics surface water (pluvial) flood map identifies areas likely to flood as a result of extreme rainfall events, typically this is topographical low spots which are naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

This is all shown in appendix 5 (section 8).

The potential for groundwater flooding is classed as negligible on most the site and low at the south boundary as well as low to moderate in the immediate area (within 50m) (reference Ambiental Risk Analytics).

Low indicates that “Groundwater levels have the potential to impact basement structures in <1 in 100 year event.” (reference Ambiental Risk Analytics).

Moderate indicates that “Groundwater levels have the potential to impact basement structures in a 1 in 100 year event.” (reference Ambiental Risk Analytics).

This is shown in appendix 5 (section 9).

4.3 Potentially Contaminative Use

The site is not within an area of potentially contaminative use from past industrial use although there are past ‘industrial’ uses within 250m. Unspecified heaps that were on the former sports ground in the 1930’s approximately 50m to the east of the site are marked but unlikely to impact the site. Also marked are the former small nursery further to the southwest and a former school further to the northwest beyond Old Road East, which are both unlikely to have impacted the site. The ‘unspecified tank’ marked just to the west/northwest is not annotated as a tank on the OS mapping.

There are no major historical energy features with 250m.

This is all shown in appendix 5 (sections 1 and 2).

The railway infrastructure information in appendix 5, section 22 shows that there are no existing railways, former railways, tunnels or proposed railways on the site or within 250m.

There are no areas of reclaimed ground, made ground, infilled ground, disturbed ground, worked ground and/or landscaped ground on or within 250m of the site (see appendix 5, sections 14 and 15).

4.4 Landfill and Waste Transfer Sites

There are no current EA registered licensed landfill sites or local authority registered licensed landfill sites within 250m.

There is one EA registered historical licensed landfill site in the area (within 250m). This was the site of the former sports ground immediately to the north/northeast and east of the site. The license was issued to Gravesham Borough Council in 1976 for the disposal of inert, household waste. There are no details of when the license was surrendered or the first and last waste deposit dates*.

There are no waste exemption licence sites within 250m.

There are no other current or former licensed waste sites within 250m.

This is all shown in appendix 5 (section 3).

*Further searches of the Gravesham Borough Council (GBC) planning portal have established further information.

The GBC Scientific Officer issued comments regarding land contamination in association with a 2016 planning application for 1 The Lapwings, which is a dwelling in the road adjacent to the northeast of the site.

The comments state that *“The Lapwings forms part of the Holyoake Mount landfill development. The original planning documents and remediation strategy suggest that a protective capping layer of 750mm clean soil would be needed in all gardens. It is assumed this was completed however there does not appear to be any definitive answer within the old planning records and no condition was imposed to ensure the work was done. However, it is understood a letter from the developer to the initial property buyers in the area states that they should not dig below 2’6” in the gardens as this is the depth of protective material.”*

“Soil Decontamination – The applicant shall undertake a watching brief during construction in case any contamination issue is encountered. If during development any contamination is found, the local authority should be informed as soon as practical and the work shall not continue until written agreement is provided by the LPA as to the appropriate measures to be taken to resolve the matter and they are satisfied that those measures have been carried out.”

“Landfill Gas – A gas impermeable membrane shall be incorporated within the structure along with a ventilated sub-floor area. Any services entering/leaving the structure should be located above the gas impermeable membrane or adequate seals will have to be provided if the membrane has to be breached.”

A copy of the GBC comments is shown in appendix 7, Gravesham Borough Council Information.

Also shown in appendix 7 is a site plan that was produced as part of the initial development for 100 dwellings on the former sports ground/landfill site in 1984 that shows the approximate areas of fill to depths of 2m and 3m. The fill is immediately adjacent to the north/northeast and east boundaries of the site.

This former landfill site could impact the site.

4.5 Hydrogeology

As there are no superficial deposits on the site there is no classification by the EA for the aquifer status within the superficial geology.

The site is classified by the EA as overlying a secondary 'A' aquifer within the bedrock geology on the site. The areas further to the south, southeast and east are classified as a principal aquifer.

A secondary 'A' aquifer is defined as "permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers." (reference EA).

The site therefore could be classed as overlying a secondary 'A' aquifer (minor aquifer).

The groundwater vulnerability is classed as high on the site and in the area (reference British Geological Survey (BGS)/EA).

High indicates that "Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits." (reference BGS/EA).

"Infiltration value (surface); >70%, Dilution value <300mm/year. Aquifer type (superficial); none, Vulnerability; n/a, Thickness; <3m, Recharge potential; no data, Aquifer type (bedrock); secondary, Vulnerability; high, flow mechanism – well connected fractures". (reference BGS/EA).

The site is within a groundwater source protection zone (SPZ). The site is within a zone 2 SPZ, outer catchment (reference EA). A zone 2 SPZ is defined "This zone is defined by the 400 day travel time from a point below the water table. Additionally this zone has a minimum radius of 250 or 500m, depending on the size of the abstraction. The travel time is derived from consideration of the minimum time required to provide delay, dilution and attenuation of slowly degrading pollutants. In geological settings where a confining layer is present, this is indicated as Zone 2c."

The area just to the northwest is designated as a zone 1 SPZ, inner catchment (reference EA), which is defined "This zone is defined by a travel time of 50 days or less from any point within the zone at, or below, the water table. Additionally, the zone has a minimum of a 50m radius. It is based principally on biological decay criteria and is designed to protect against the transmission of toxic chemicals and water-borne disease. In geological settings where a confining layer is present, this is indicated as Zone 1c."

This is all shown in appendix 5 (section 5).

4.6 Geology

According to geological information, BGS sheet 271, Dartford, the site is underlain by Tunbridge Wells Sand/Upper Chalk with no drift deposits.

This is also shown on the superficial deposits and landslips information in appendix 5, sections 14 and 15, which shows that there are no superficial deposits on the site although there are in the area (within 500m).

The areas shown are:

Area 1 (140m S) – Head – Diamicton (A type of sedimentary rock that is poorly sorted and contains a wide range of clast sizes) (clay, silt, sand and gravel)

Area 2 (200m N) – Head - Diamicton (A type of sedimentary rock that is poorly sorted and contains a wide range of clast sizes) (clay, silt, sand and gravel)

There are no areas of landslip deposits within 500m.

The bedrock and faults maps in appendix 5, sections 14 and 15 shows that The Tunbridge Wells Sand Formation (sand) is the bedrock geology on the site of high permeability (area 1 on the maps).

Area 2 on the map (70m south) is The Lewes Nodular Chalk Formation, The Seaford Chalk Formation and The Newhaven Chalk Formation, undifferentiated (chalk).

There are no fault lines within 500m.

There are no previously drilled boreholes on or within 250m of the site (see appendix 5, section 16).

5. Discharge Consents, Water Abstractions and Pollution Incidents

5.1 Discharge Consents

There are no current or former licensed discharge consent points within 250m of the site.

This is all shown in appendix 5 (section 4).

5.2 Abstraction Consents

There are nine current or former groundwater abstraction consents for potable water supplies or other uses within 2000m of the site.

Only five are current consents, the nearest of which is 630m northwest of the site that is for potable water supplies (public supply) at Windmill Hill Pumping Station. The next nearest current consent is 1440m northeast of the site for general washing and process washing. The other abstractions are for spray irrigation and mineral washing.

There are no current or former surface water abstraction consents for potable water supplies or other uses within 2000m of the site.

This is all shown in appendix 5 (section 5, p38; the map shows abstractions up to 500m only)

5.3 Pollution Incidents, Inventories and Permits

There are no recorded pollution incidents within 250m of the site.

There are no pollution inventories within 250m.

There are no Control of Major Accident Hazards (COMAH) sites within 250m.

There are no radioactive substance authorisations or regulated explosive sites within 250m.

There are no historical licensed industrial activities (IPC) within 250m.

There are no licensed industrial activities (Part A(1)) within 250m.

There are no licensed pollutant release (Part A(2)/B) within 250m.

There are no List 1 or List 2 dangerous substances records within 250m.

There are no sites determined as 'contaminated land' under Part 2A of the Environmental Protection Act 1990 within 500m of the site.

This is all shown in appendix 5 (section 4).

6. Subsidence, Mining Hazards and Radon

6.1 Subsidence

The clay swelling/shrinking subsidence hazard is classed as ‘negligible hazard’ (soils that are predominantly non plastic) although this would depend on the localised clay content.

The running sand stability hazard is classed as ‘low hazard’. Low hazard indicates that “Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.”

The compressible subsidence hazard is classed as ‘negligible hazard’.

The collapsible ground stability hazard is classed as ‘very low hazard’.

The landslides ground stability hazard is classed as “very low hazard”.

The ground dissolution subsidence hazard is classed as ‘low hazard’. Low hazard indicates that “Soluble rocks are present within the ground. Some dissolution features may be present. Potential for difficult ground conditions are at a level where they may be considered, localised subsidence need not be considered except in exceptional circumstances.”

This is all shown in appendix 5 (section 17).

6.2 Mining Hazards

There are no surface ground workings on the site although there is one in the area (within 250m), which is the unspecified heaps that were on the former sports ground approximately 50m to the east of the site, which are unlikely to affect the site.

There are no BritPits (British Pits, active and closed surface and underground mineral workings) on the site but there is one within 250m. This was located 160m west of the site and was an underground working for chalk extraction. This BritPit is unlikely to have affected the site.

There are no underground workings on or within 250m of the site.

There are non-coal mining cavities within 250m and the site is within a category ‘A’ area for the non coal mining activity. Category ‘A’ – “Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered. Presence of past underground mining is not known to have occurred. Areas are categorised on the basis that the rock types present are known to have been worked in other areas. Areas therefore have the potential for underground mining but there is little or no evidence of mining activity.” (reference BGS).

There are two areas of potential mining located 60m and 150m west of the site for stone extraction. These areas are unlikely to affect the site if this was carried out.

The site is not within an area that may be affected by past, current or future coal mining.

There are no natural cavities on or within 250m of the site.

There are no mining cavities on the site but there is one within 250m. This is located 180m west of the site that was used for chalk extraction. It is unlikely to affect the site.

There are no recent recorded incidents or historical recorded incidents relating to sinkholes, deneholes, shakeholes or other 'holes' on or within 250m of the site.

This is all shown in appendix 5 (sections 18 and 19).

6.3 Radon

There are less than 1% of properties* in the area that are above the action level for radon and therefore radon protection measures are not necessary in new buildings, extensions and/or conversions.

* Estimated percentage of dwellings exceeding the Radon Action Level. The highest radon reading within the buffer is provided. This data is the highest resolution radon dataset available for the UK, produced to a 50m accuracy. This data has been pre-buffered to account for the relative accuracy and other uncertainties, so no additional buffering on site is required. The findings of this section should supersede any estimations derived from the Indicative 1km Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households (reference BGS and Public Health England).

This is shown in appendix 5 (section 20).

7. Recommendations

7.1 General

From the investigations carried out for this desk study the site was undeveloped and within an area of farmland in the 1860's. By the late 1880's the main convent building had been built on the site and the gardens landscaped. A large greenhouse was in the southwest area of the site from the late 1880's until at least the early 1900's. By the early 1930's the building had been divided into three dwellings with their associated private gardens. The layout of the existing building including the chapel has remained since at least 1960. The north area of the gardens was used as kitchen garden from at least 1940 but does not appear to have been used as a kitchen garden from 1990. The site has been used as a convent since the 1950's.

The immediate surrounding area was farmland in the mid 1860's but had been developed with some of the roads and houses that remain to date by the late 1880's including Hillside Drive and some of the houses (Old Road East to the north was constructed by the early 1860's). The areas to the north/northwest, west and south were mostly developed with the houses that remain to date by the late 1930's. The land immediately to the north/northeast and east was a sports ground from at least the early 1930's until the mid 1970's. This area was used as a landfill site from the mid 1970's until its development with the existing residential houses in the late 1980's.

There are no surface water features (a body of water or watercourse that in normal circumstances contains water throughout the year) on, adjacent or near to the site (within 100m).

The site overlies a secondary 'A' aquifer (minor aquifer) within the bedrock geology (there are no superficial deposits on the site). The site is within a groundwater source protection zone (SPZ2, outer catchment).

The Tunbridge Wells Sand Formation (sand) is the bedrock geology on the site of high permeability with no drift deposits. The Lewes Nodular Chalk Formation/The Seaford Chalk Formation/The Newhaven Chalk Formation, undifferentiated, is just to the south (approximately 70m) at the nearest point.

There are five current groundwater abstractions in the area (within 2km) and the nearest is 0.63km for public potable water supplies. There are also groundwater abstractions for other uses although the nearest is 1.4km from the site.

There are no current surface water abstraction consents for potable water supplies or other uses in the area (within 2km).

It is proposed/envisaged at this juncture that the surface water drainage for the new buildings will be discharged via new surface water soakaways that will be installed on the site. The existing building currently discharges surface water to a soakaway(s).

It is proposed at this juncture that the foul drainage for the new dwellings and converted building will be discharged via the existing foul sewer on the site as it is at present.

The site is not within a flood risk area.

7.2 On-Site Contamination Impact

From the investigations carried out for this desk study it is unlikely that the site has been impacted to unacceptable levels for residential end uses from its current or former uses.

There are no recorded pollution incidents on the site that could have impacted the site.

It is unlikely that landfill gases are impacting the site from on site sources.

7.3 Off-Site Contamination Impact

The findings of this desk study indicate that contamination impact to the site from the immediate surrounding areas is possible in some areas from the adjacent former landfill site. Leachable contaminants could have impacted the site and the fill material was adjacent to parts of the site boundary (the north/northeast and east boundaries).

There are no recorded pollution incidents near the site that could have impacted the site.

It is possible that landfill gases are impacting the site from off site sources. The former adjacent landfill site could impact the site.

7.4 Conceptual Model

Using the Contaminated Land Exposure Assessment (CLEA) model and associated Environment Agency Land Contamination Risk Management guidance (LCRM) framework to assess sites, a Source – Pathway – Receptor approach is used.

Source – “a contaminant or pollutant that is in, on or under the land and that has the potential to cause harm or pollution”

Pathway – “route by which a receptor is or could be affected by a contaminant”

Receptor – “something that could be adversely affected by a contaminant, for example a person, controlled waters, an organism, an ecosystem, or Part 2A receptors such as buildings, crops or animals”

If any of the above elements are missing i.e. there is no pollution linkage, then it is considered that there is no significant risk associated with contamination. If there is a pollution linkage the potential risks to the identified receptors need to be assessed.

7.4.1 Source(s)

The possible sources of contamination on this site are:

Heavy metals (leachates from the adjacent former landfill site)

Polyaromatic hydrocarbons (leachates from the adjacent former landfill site)

Total petroleum hydrocarbons including BTEX compounds (leachates from the adjacent former landfill site)

Asbestos (former buildings, possible impact from the former adjacent landfill site although not that likely but verification is required)

Landfill gases (possible impact from the former adjacent landfill site)

7.4.2 Pathway(s)

It is proposed to convert part of the convent building to town houses, replace a single storey extension at the west elevation of the convent building with a 1.5 storey residential bungalow and develop the north area of the site with four detached houses, all with off road parking and private gardens. Part of the building will remain as a convent with its associated gardens.

Using the CLEA model the potential pathways for a residential site are:

Ingestion of soils/groundwater/surface water

Ingestion of dusts, gases and vapours (indoors and outdoors)

Dermal contact with soils/groundwater/surface water

Ingestion of contaminated vegetables and or soils attached to vegetables (if applicable)

Leachate via soakaways (if applicable)

Leachate via infiltration

The potential pathways for this site are:

Ingestion of soils

Ingestion of dusts, gases and vapours (indoors)

Ingestion of dusts (outdoors) – no current outdoor gas or vapour impact

Dermal contact with soils

Ingestion of contaminated vegetables and or soils attached to vegetables (if applicable)

Leachate via soakaways

Leachate via infiltration

7.4.3 Receptor(s)

The potential receptors and associated risks for this site are:

Construction staff – very low to low risk

Residents on site – very low to low risk (existing residents in the convent not impacted)

Residents off site – very low risk (no apparent current impact)

New buildings and below ground services – very low to low risk

Existing buildings and below ground services – very low risk (no apparent current impact)

Nearby dwellings – very low risk (no apparent current impact)

Groundwater (secondary aquifer and SPZ) – very low to low risk

7.4.4 Assessment of Risk

The assessment of the associated risk is based on the CIRIA (Construction Industry Research and Information Association) C552 methodology, contaminated land risk assessment, a guide to good practice (2001), tabulated below and overleaf.

(SH = Significant Harm, SPOSH = Significant Possibility of Significant Harm).

Classification of Consequence

Classification	Definition
Severe	Concentration of contaminants is likely to (or is known from previous data to) exceed that indicative of unacceptable intake or contact. Highly elevated concentrations likely to result in 'significant harm' to human health as defined by the EPA 1990 Part 2A, if exposure occurs i.e. SH/SPOSH concentrations are high enough to cause acute (short term) effects. Equivalent to an EA category 1 pollution incident including persistent and/or extensive effects on water quality (controlled waters); leading to a closure of a potable abstraction point; major impact on amenity value or major damage to agriculture or commerce. Major damage to aquatic or other ecosystems, which is likely to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long term maintenance of the population. Catastrophic damage to buildings or property.
Medium	Concentration of contaminants is likely to (or is known from previous data to) exceed that indicative of unacceptable intake or contact. Elevated concentrations which could result in 'significant harm' to human health as defined by the EPA 1990 Part 2A, if exposure occurs i.e. greater than SH/SPOSH Equivalent to an EA category 2 pollution incident including a significant effect on water quality (controlled waters); notification required to abstractors; reduction on amenity value or significant damage to agriculture or commerce. Significant damage to aquatic or other ecosystems, which may result in a substantial adverse change in its functioning or harm to a species of special interest that may endanger the long term maintenance of the population. Significant damage to buildings or property.

Classification of Consequence (cont)

Classification	Definition
Mild	Concentration of contaminants is likely to (or is known from previous data to) exceed that indicative of no harm but not unacceptable intake or contact. Exposure to human health unlikely to lead to 'significant harm' i.e. concentrations are greater than SGV/GAC but less than SH/SPOSH. Equivalent to an EA category 3 pollution incident including minimal or short term effects on water quality (controlled waters); minor impact on amenity value, agriculture or commerce. Minor damage or short term damage to aquatic or other ecosystems, which is unlikely to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long term maintenance of the population. Minor damage to buildings or property.
Minor	Concentration of contaminants is likely to (or is known from previous data to) be less than that indicative of no harm. No measurable effect on humans i.e. less than SGV/GAC. Equivalent to an unsubstantial pollution incident with no observed effect on water quality (controlled waters); no reduction on amenity value or damage to agriculture or commerce. No observed effect to aquatic or other ecosystems. Repairable effects of damage to buildings or property.

Classification of Probability

Classification	Definition
High Likelihood	There is a pollution linkage and an event that appears very likely in the short term and almost inevitable in 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 no means certain that even over a longer period such event could take place, and it is less likely in the shorter term.
Unlikely	There is a pollution linkage but the circumstances are such that it is improbable that an event would occur even in the very long term.

Matrix of Consequence against Probability to determine Risk Classification

	Consequence			
Probability	Severe	Medium	Mild	Minor
High Likelihood	Very High Risk	High Risk	Moderate Risk	Low Risk
Likely	High Risk	Moderate Risk	Low Risk	Very Low Risk
Low Likelihood	Moderate Risk	Low Risk	Low Risk	Very Low Risk
Unlikely	Low Risk	Very Low Risk	Very Low Risk	Very Low Risk

A schematic diagram of the conceptual model for the site dated 19/11/24 is shown in appendix 6, conceptual model.

7.5 Investigation Work Recommended

7.5.1 General

As outlined above it is unlikely that there are any sources of contamination on this site that could have impacted the site soils to unacceptable levels for the proposed residential end use from the on site past and current uses.

It is possible that the site has been impacted to unacceptable levels by the uses and/or activities from the immediate surrounding areas (the former adjacent landfill site).

The risk to human health could be classed as very low to low (worse case consequence – mild: worse case probability – low likelihood).

The risk to the new buildings and below ground services could be classed as very low to low (worse case consequence – mild: worse case probability – low likelihood).

The site overlies a secondary (minor aquifer) and is within a source protection zone (SPZ2). There are groundwater abstractions within 0.7km of the site for public potable water supplies but there are no surface water abstractions within 2km. It is proposed/envisaged at this juncture that the surface water drainage for the new buildings will be discharged via new surface water soakaways that will be installed on the site. The existing building currently discharges surface water to a soakaway(s).

It is proposed at this juncture that the foul drainage for the new dwellings and converted building will be discharged via the existing foul sewer on the site as it is at present.

Groundwater is considered a receptor of potentially unacceptable risk now and on completion of the development.

The risk to controlled waters now and on completion of the development could be classed as very low to low (worse case consequence – mild: worse case probability – low likelihood).

It is therefore necessary to carry out a phase II intrusive investigation of the site (EA LCRM stage 1 tier 2/3 contaminated land investigation). LCRM (Land Contamination Risk Management, published October 2020 and last updated July 2023).

7.5.2 Sampling Locations and Analysis

Soils should be taken from various locations across the site in the areas proposed for the new dwellings and their private gardens as well as the proposed garden area for the private gardens for the converted building and convent and analysed for a general suite of determinands that must include heavy metals, polyaromatic hydrocarbons, total petroleum hydrocarbons (including BTEX compounds) as a minimum.

Surface/near surface soils must also be screened for the presence of asbestos fibres.

A soil sample from the locations of the proposed new surface water soakaways should also be taken and the prepared soil leachate analysed for heavy metals, polyaromatic hydrocarbons, total petroleum hydrocarbons and BTEX compounds as a minimum.

The requisite chemical analysis should also be carried out on soil samples from the proposed locations of the new water main to the new dwellings for the assessment for the type of pipe required to Southern Water protocol.

As mentioned above there is a potential for landfill gases to impact the site and landfill gas monitoring should be carried out to determine if gas protection measures are required and the type of gas protection, if required.

The landfill gas assessment should be carried out using BS8485:2015+A1:2019 (Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings).

Additionally, the landfill gas assessment should also be carried out using CIRIA (Construction Industry Research Information Association, now known as the Construction Information Service) document C795 – Retrofitting Hazardous Ground Gas Protection Measures in Existing or Refurbished Buildings (published 2020).

Landfill gas monitoring should be carried out over a period of eight weeks with at least six rounds of monitoring carried out over that period, or at least until there is sufficient data to carry out an accurate assessment in accordance with BS8576:2013 (Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds (VOC's)).

7.5.3 Timescale

The intrusive investigation work could be carried out immediately, subject to the approval of this report by the local authority.

7.6 Excavated Soils

Any excavated soils that are produced as part of the construction work that are to be removed from the site to landfill, chemical analysis will be required to classify the 'waste' in conjunction with the EU Landfill Directive that came into effect in 2005, which defines the criteria for the chemical analysis and classification of materials that are to be disposed to landfill.

Should soils need to be removed from the site to landfill, a European Landfill Directive Waste Acceptance Criteria analysis will be required on the material to be disposed to be submitted to the proposed receiving tip before the soil is removed from the site.

The different strata excavated (if applicable) should be segregated and analysed separately prior to disposal off site.

7.7 Additional Notes

Should any contaminants be encountered during the site investigation or development works that were not expected analysis must be carried out to identify the type and extent of the contamination.

During the construction work, exposed soils should be protected from any accidental leakage or spillages from stored oils/fuels or chemicals used in the construction work, if any, to prevent any potential impact to the site or controlled waters.

The ground stability hazards in section 6.1 and associated comments where applicable are the opinion of the BGS based on the expected geology.

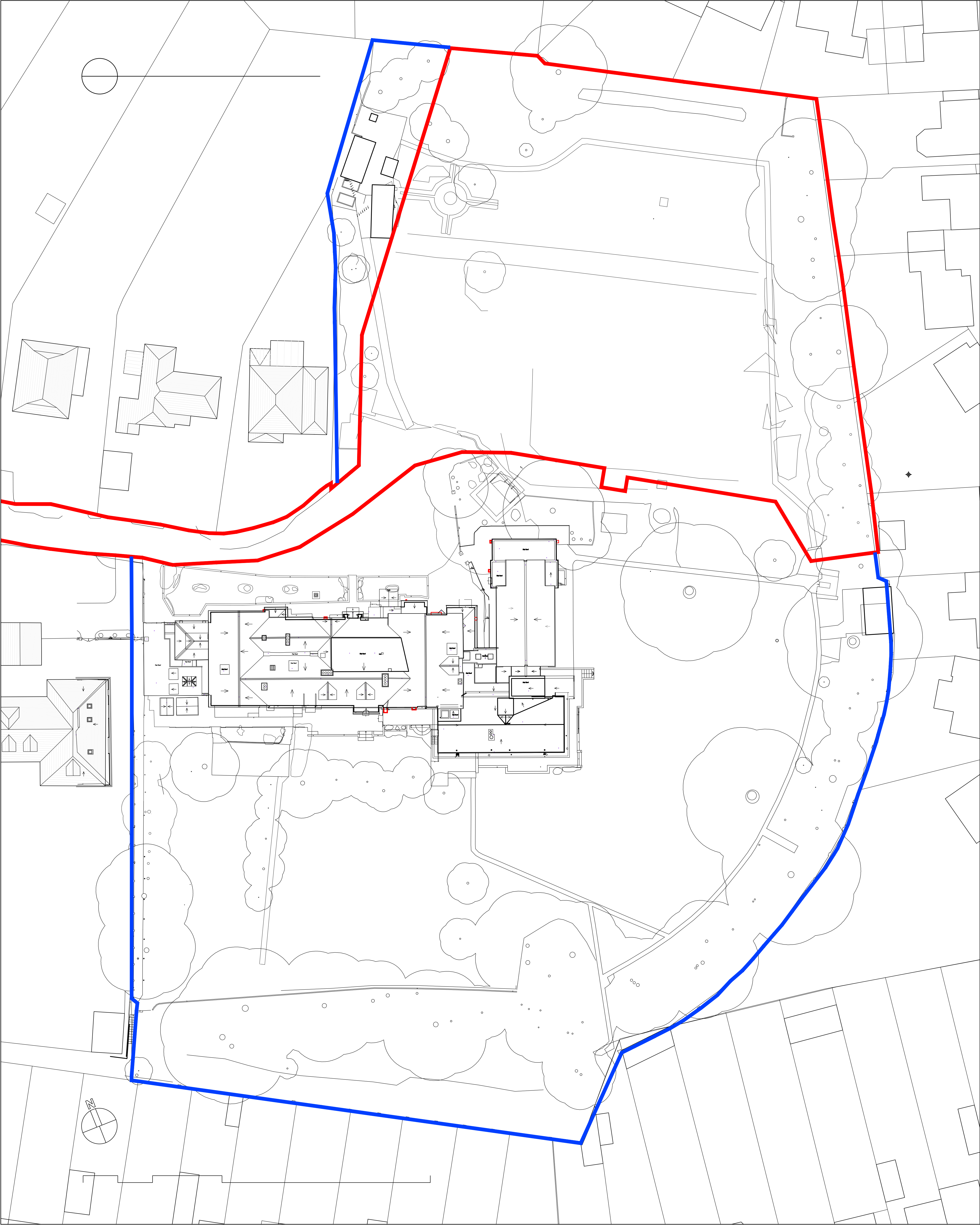
A copy of this report should be forwarded to of Gravesham Borough Council or other regulators/insurers if applicable for their consideration and approval.

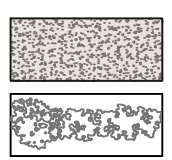
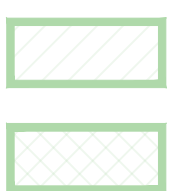
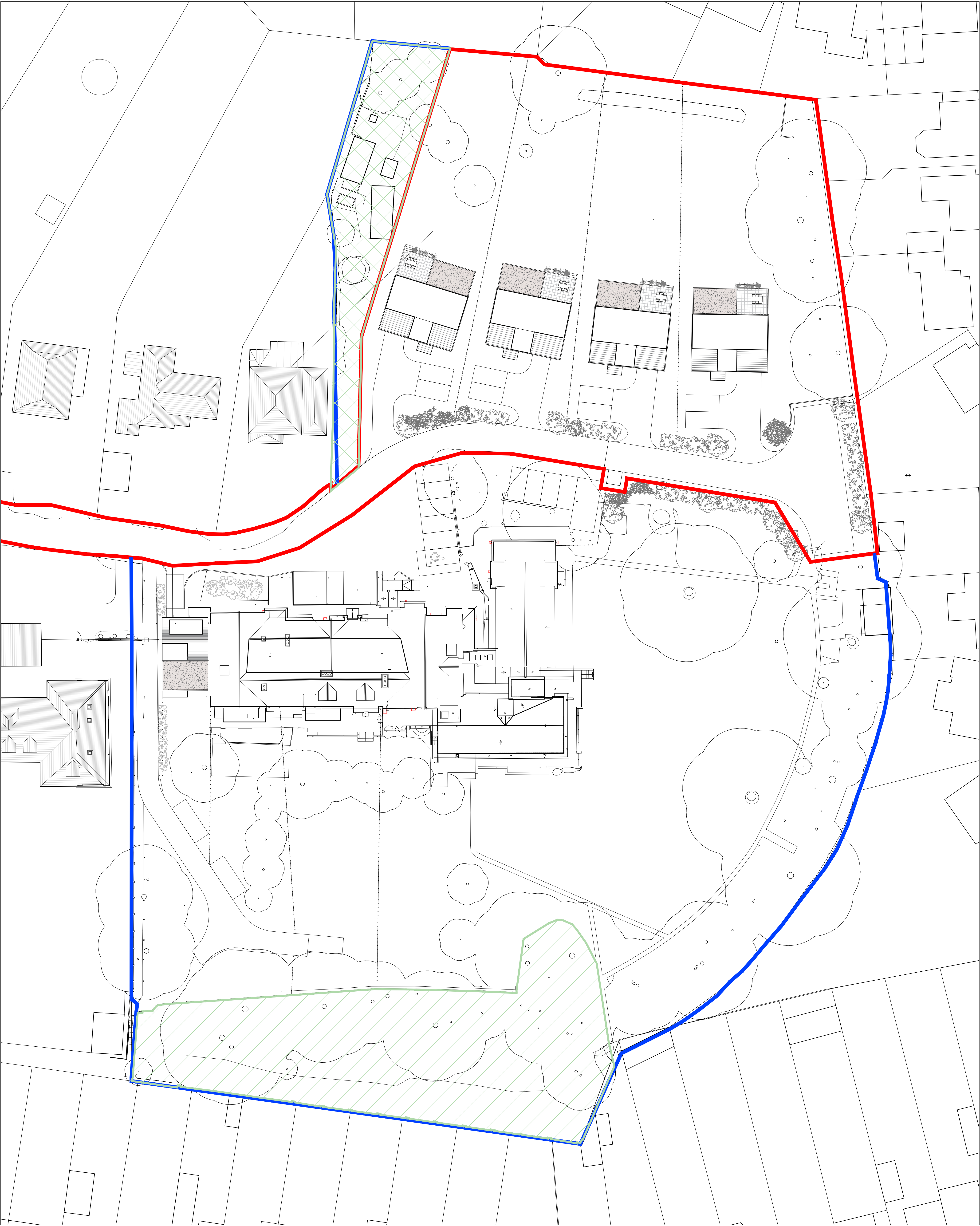
K.D.Huxley CSci CChem MRSC MIEnvSc RSoBRA

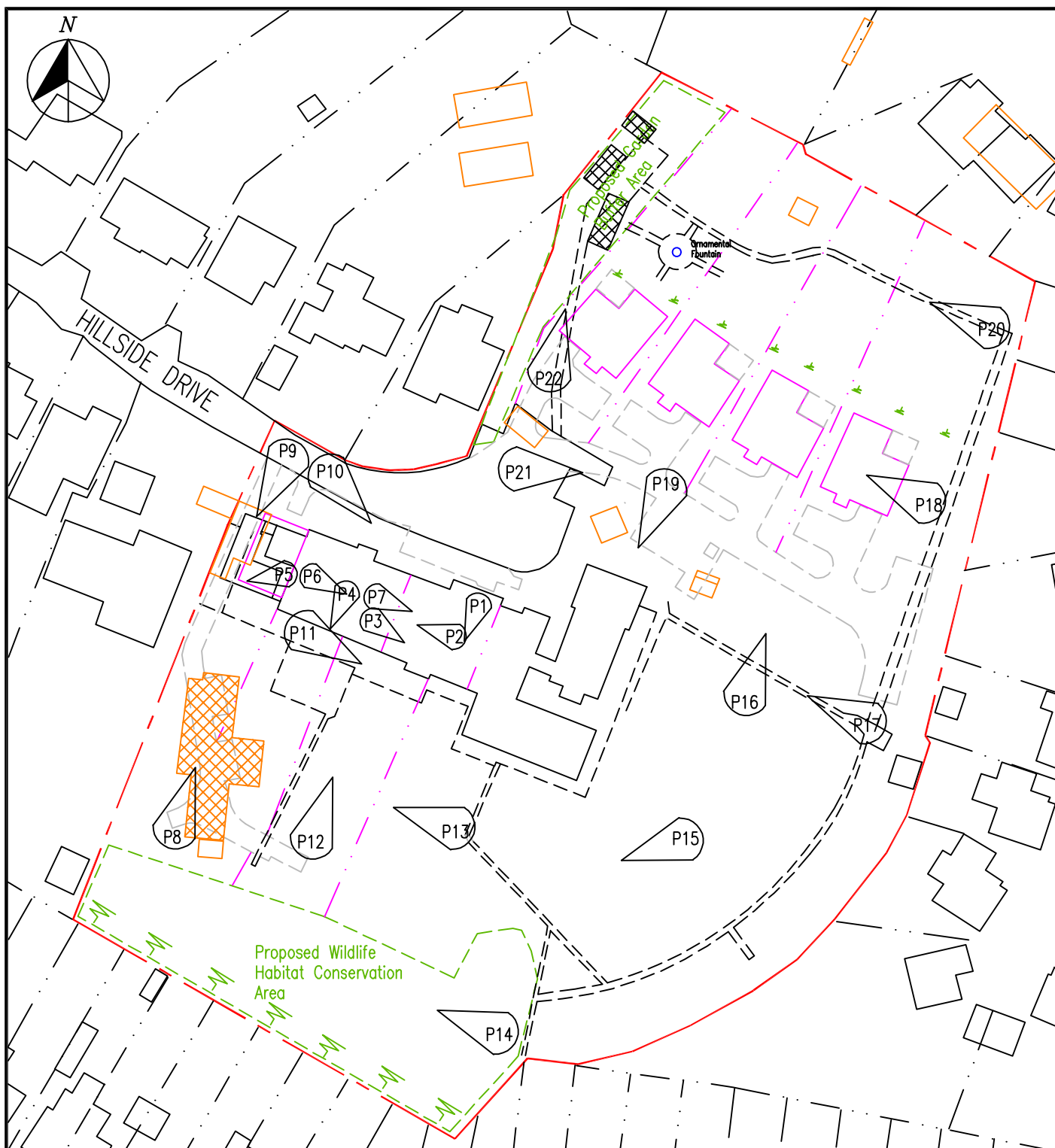
Date: 21/11/24

APPENDIX 1

SITE PLANS







Key:

	Existing Buildings		Former Buildings and Structures
	New Buildings		Proposed Access Roads, Paths, Patios and Parking Areas

Scale: NTS

Drawn: KDH

Site: Convent of Mercy, Gravesend DA12 1NY

Report: 24-153/P1

Title: Phase 1 Contamination Investigation (Desk Study)

Figure No: 1

APPENDIX 2

HISTORIC AERIAL PHOTOGRAPHS

All aerial photographs below courtesy of Google Earth

AERIAL PHOTOGRAPH 1 (1940)



AERIAL PHOTOGRAPH 2 (1960)



AERIAL PHOTOGRAPH 3 (1990)



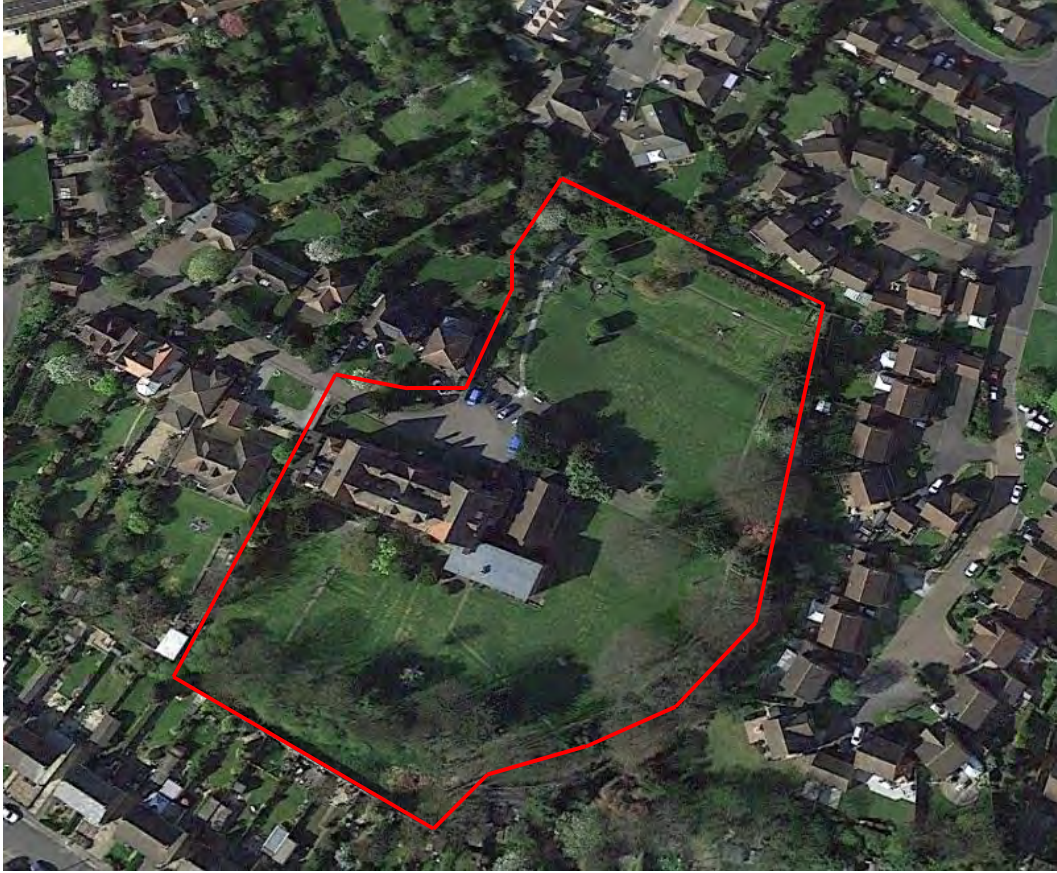
AERIAL PHOTOGRAPH 4 (2003)



AERIAL PHOTOGRAPH 5 (2007)



AERIAL PHOTOGRAPH 6 (2015)



AERIAL PHOTOGRAPH 7 (2020)



An aerial photograph of a residential neighborhood. A large, irregularly shaped lot is outlined in red. This lot is mostly bare earth with some scattered trees and a small, light-colored structure near the top center. The lot is surrounded by densely packed houses with brown roofs and green lawns. Streets are visible, including a curved road on the right and a straight road on the left. The overall scene is a typical suburban development.

APPENDIX 3

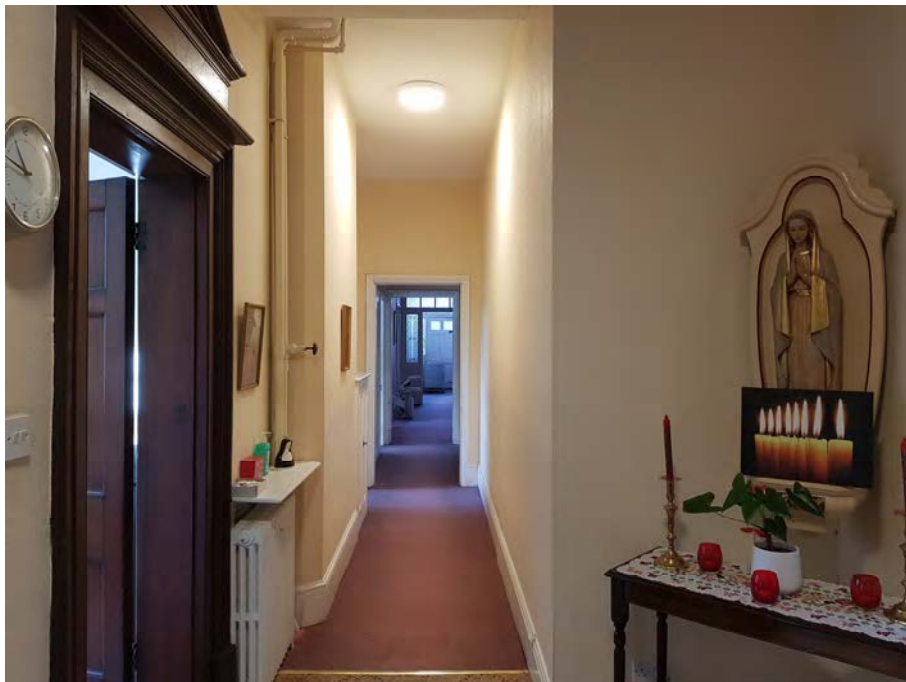
SITE PHOTOGRAPHS

PHOTOGRAPH 1



Inside the entrance hall to the main building currently used as the convent. This area will be part of one of the residential houses when converted.

PHOTOGRAPH 2



Looking along the hallway in the main building, which will be in the residential houses when converted.

PHOTOGRAPH 3



The main dining room in the convent. This area will be part of one of the residential houses when converted.

PHOTOGRAPH 4



The main kitchen in the convent. This area will be part of one of the residential houses when converted.

PHOTOGRAPH 5



The laundry room in the convent. This part of the building will be demolished and replaced with a 1.5 storey residential bungalow.

PHOTOGRAPH 6



The first floor corridor in the convent. This area will be part of the residential houses when converted.

PHOTOGRAPH 7



The second floor corridor in the convent. This area will be part of the residential houses when converted.

PHOTOGRAPH 8



Looking northeast along the west boundary showing part of the existing gardens and the convent building in the background. This area will be part of the new access road and some parking areas for the residents of the building when converted.

PHOTOGRAPH 9



Looking southwest at the extension to the main building that will be demolished. This area will be redeveloped with a 1.5 storey residential bungalow.

PHOTOGRAPH 10



Looking southeast at the main building that will be converted to two residential town houses.

PHOTOGRAPH 11



Looking southeast along the rear of the main building that will be converted to two residential town houses. This area will remain as a patio area for one of the town houses.

PHOTOGRAPH 12



Looking northeast at the main building across part of the existing garden area. This area will be the private gardens for the two residential town houses.

PHOTOGRAPH 13



Looking west/northwest across part of the south area of the site. This area will be the private gardens for the town houses and part of the garden for the convent in the foreground.

PHOTOGRAPH 14



Looking northwest across the south area of the site. This area will be the wildlife habitat conservation area.

PHOTOGRAPH 15



Looking southwest across part of the existing garden in southeast area of the site. This area will remain as part of the garden for the convent.

PHOTOGRAPH 16



Looking north/northeast across part of the existing garden in east area of the site. This area will remain as part of the garden for the convent.

PHOTOGRAPH 17



Looking northwest across part of the existing garden in east area of the site. This area will remain as part of the garden for the convent. The existing chapel and part of the convent building undergoing the renovation works is in the background.

PHOTOGRAPH 18



Looking northwest across part of the existing garden in north area of the site. This area will be occupied by the new dwellings with the new access and parking areas on the left and private gardens to the right.

PHOTOGRAPH 19



Looking southwest at the part of the convent building undergoing the renovation works that will remain as a convent. The convent and visitor parking area will be in the foreground.

PHOTOGRAPH 20



Looking northwest across part of the existing garden in north area of the site at the north boundary. This area will be the private gardens for the new dwellings.

PHOTOGRAPH 21



Looking east across the centre of the site. This area will be the main access and parking areas for the new dwellings.

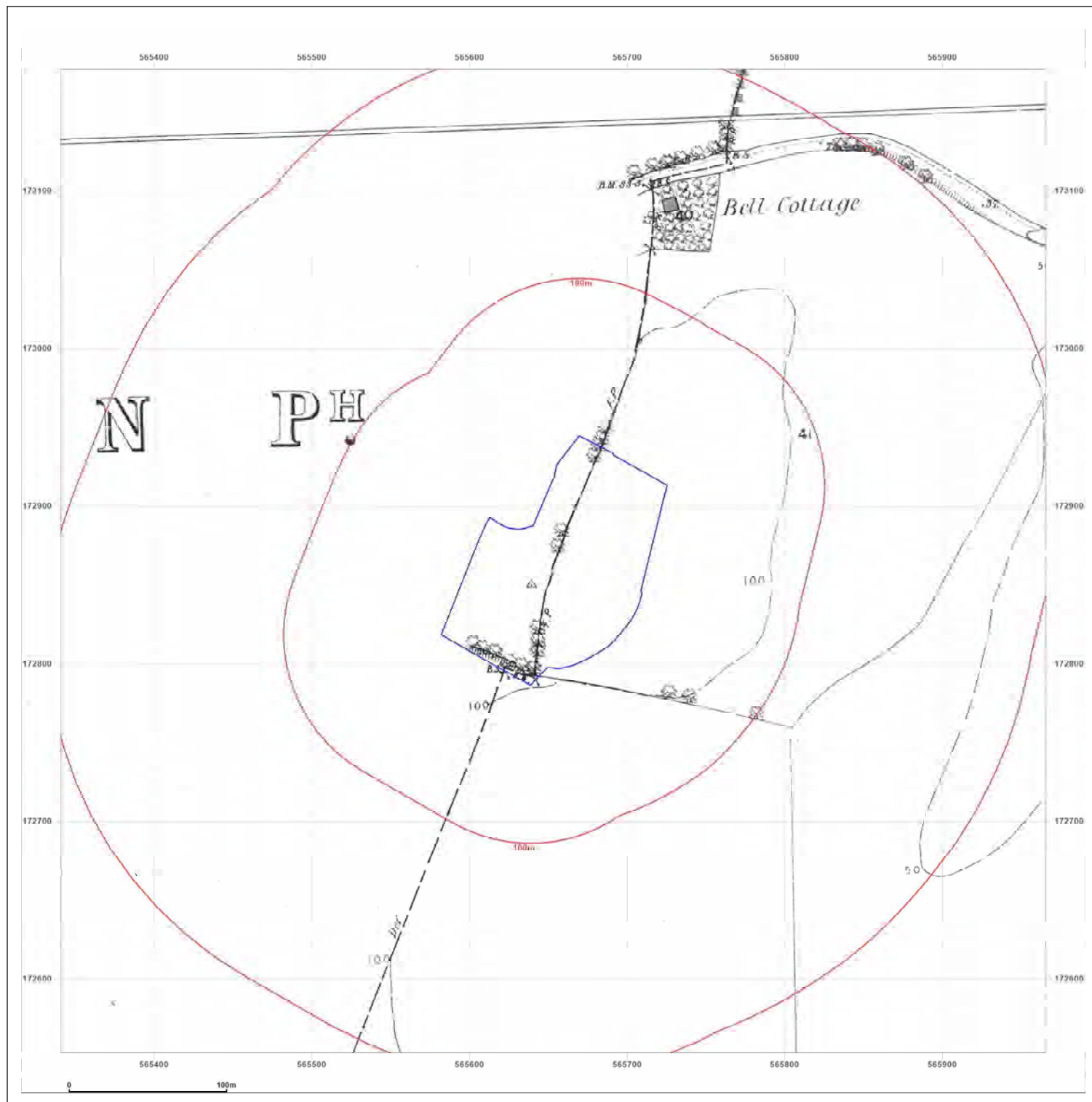
PHOTOGRAPH 22



Looking north/northeast along the northwest boundary of the site. This area will be the garden buffer area.

APPENDIX 4

HISTORICAL MAPS



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

Map date: 1863-1864

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1864
Revised 1864
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1863
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

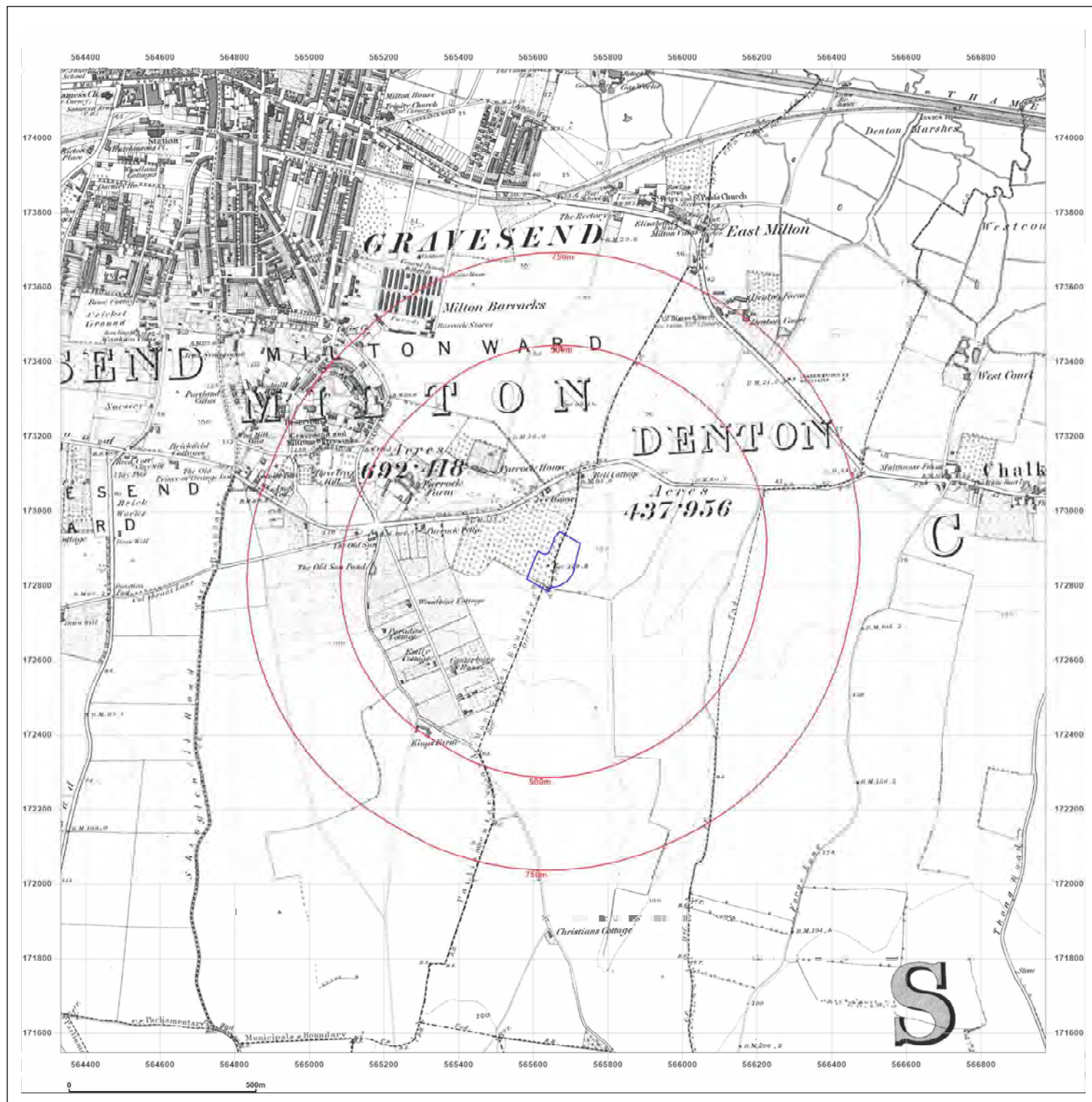


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

Map date: 1865

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1865
Revised 1865
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

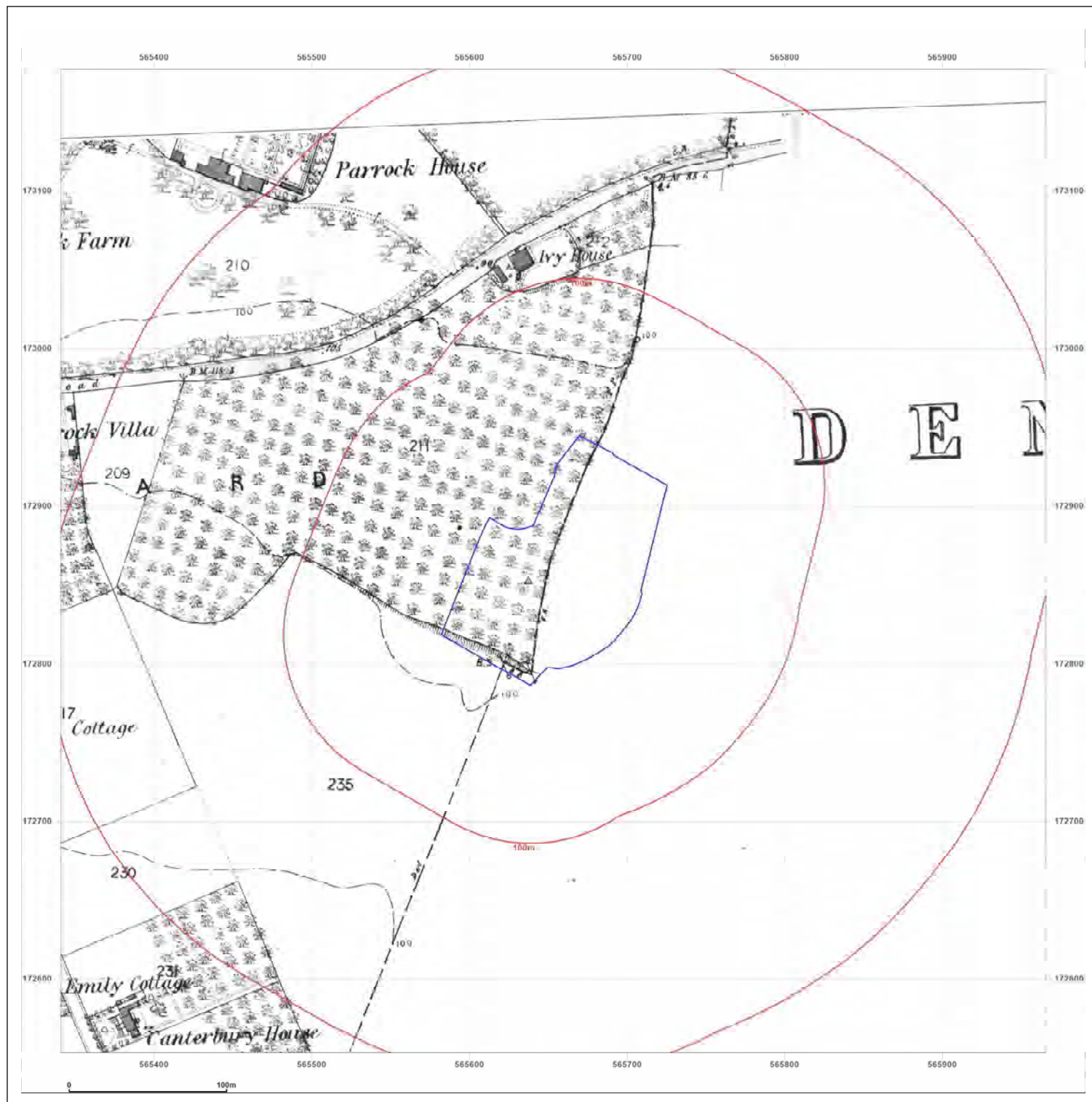


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

Map date: 1866

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1866
Revised 1866
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1866
Revised 1866
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

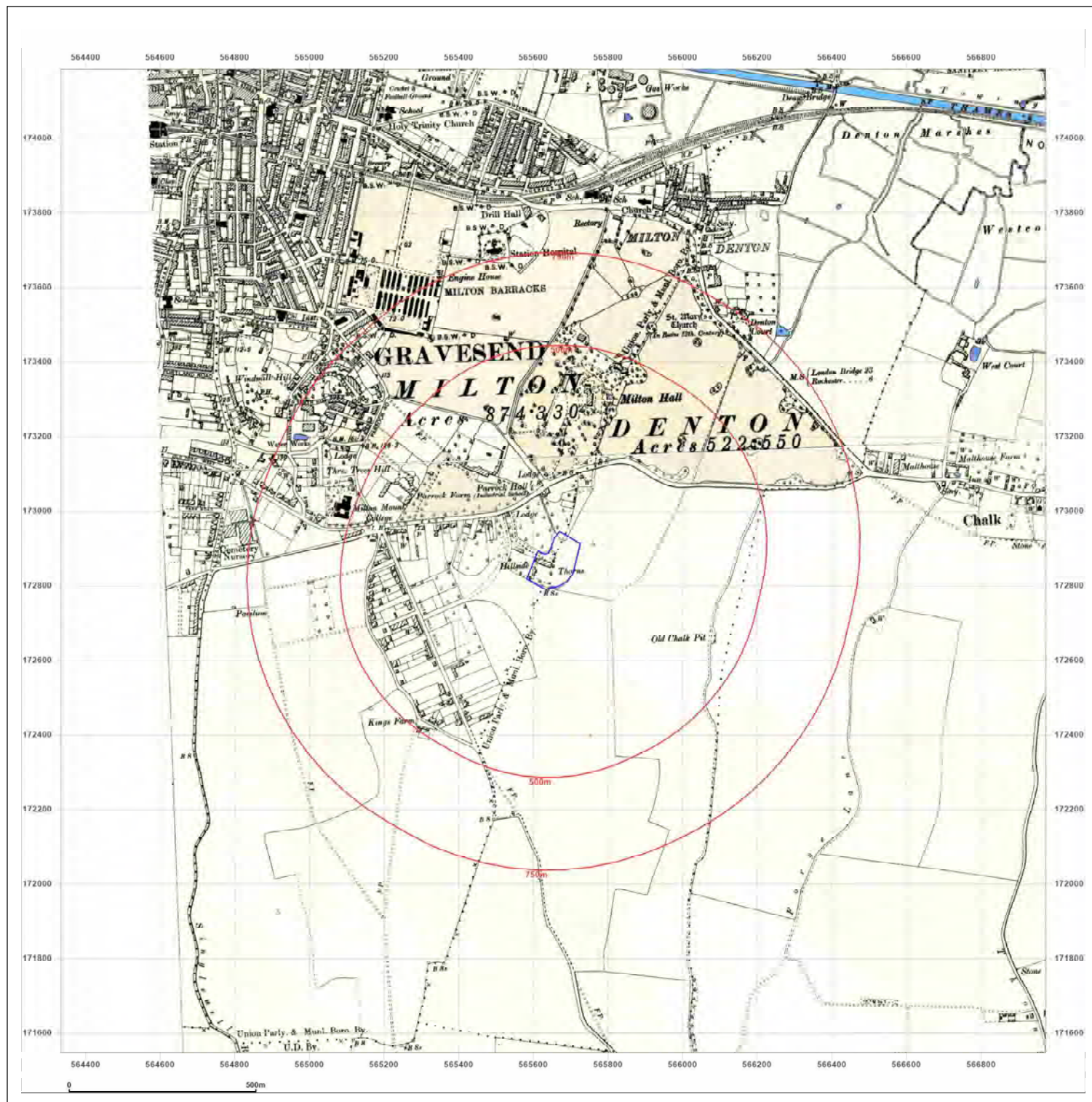


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

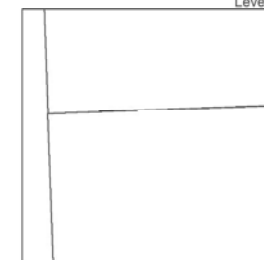
Map date: 1888

Scale: 1:10,560

Printed at: 1:10,560



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



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



Produced by
Groundsure Insights
www.groundsure.com

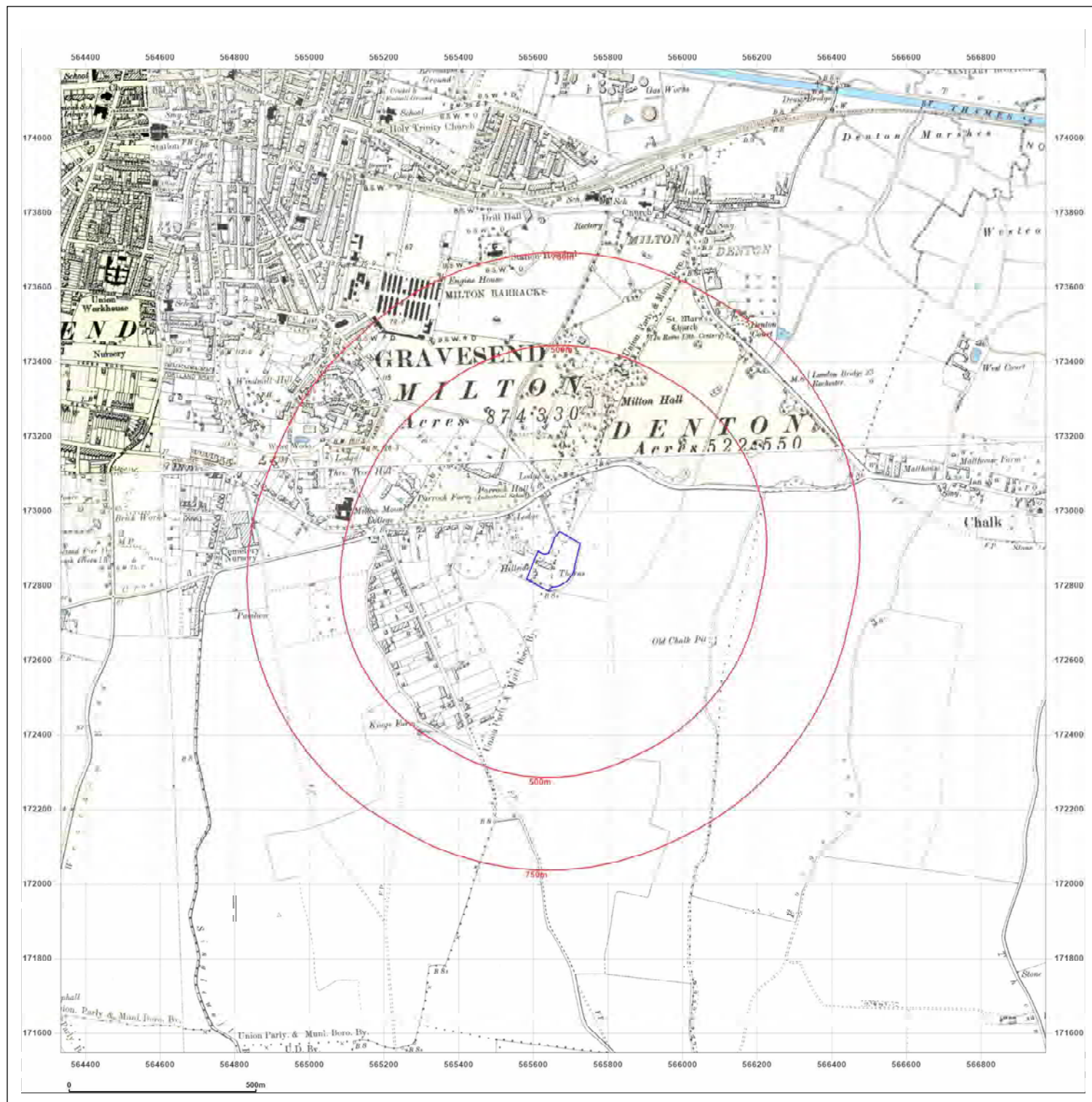


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

Map date: 1895

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1865
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1866
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

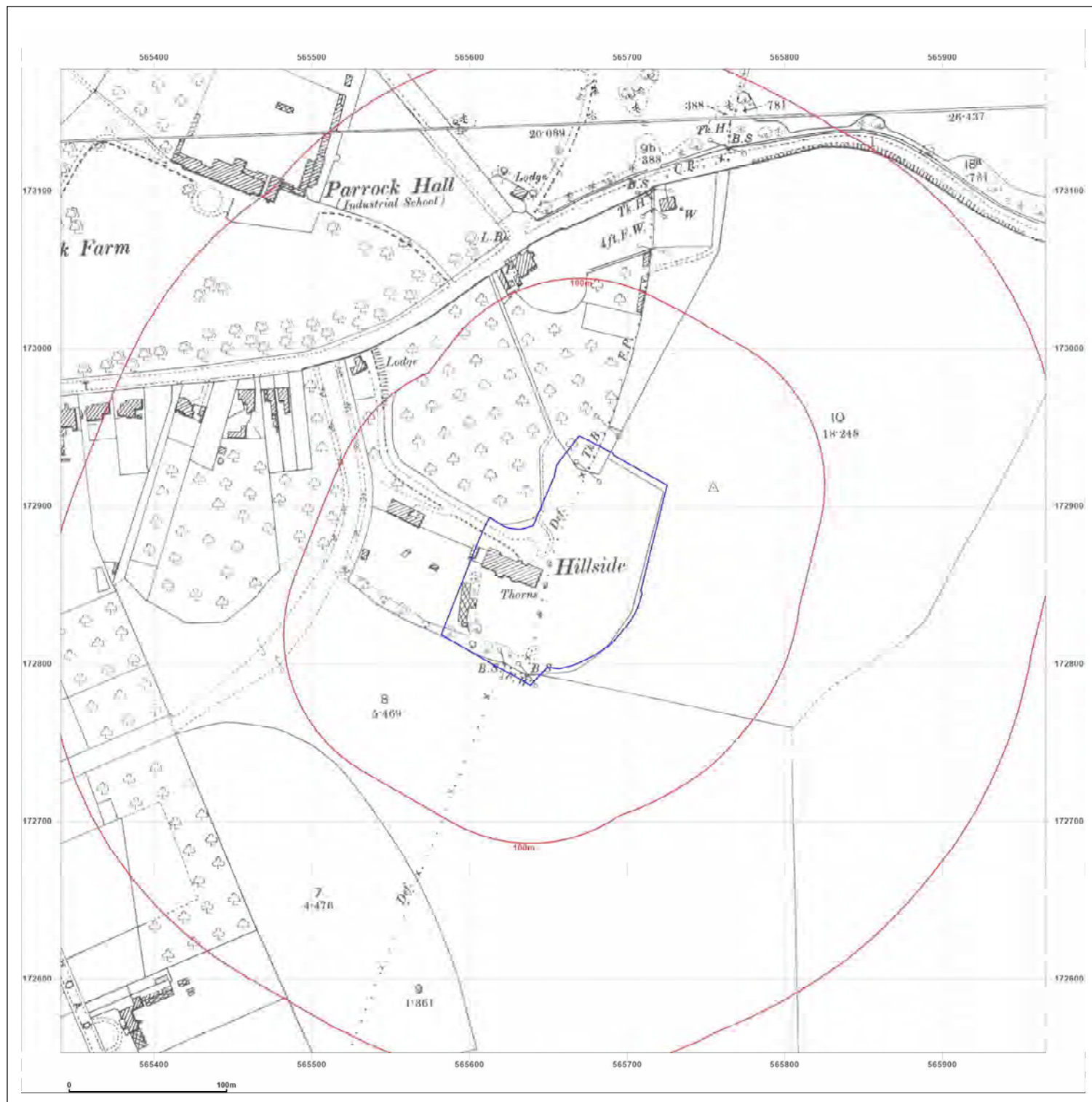


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

Map date: 1897

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1897
Revised 1897
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1897
Revised 1897
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

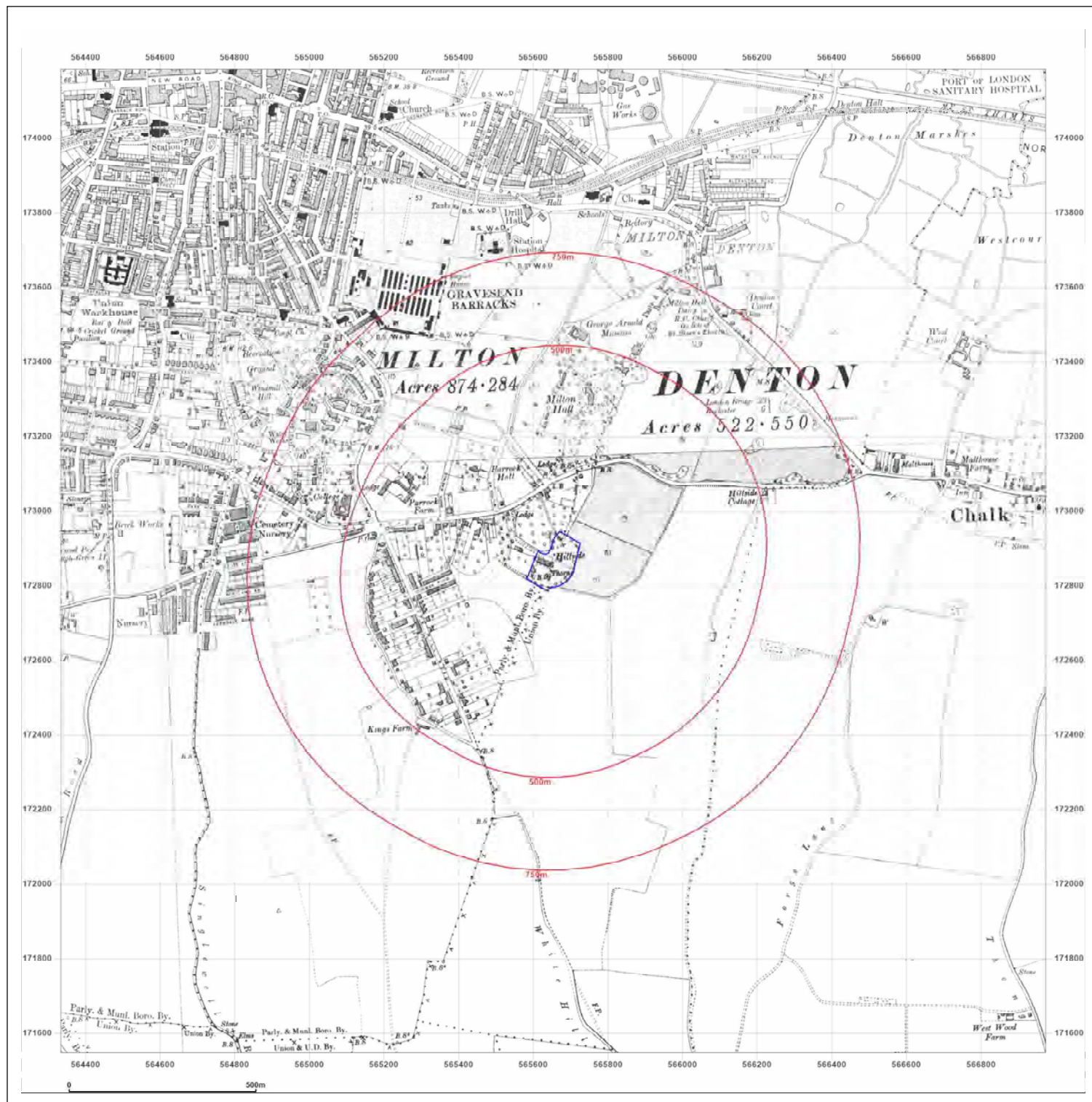


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

Map date: 1907

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1862
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

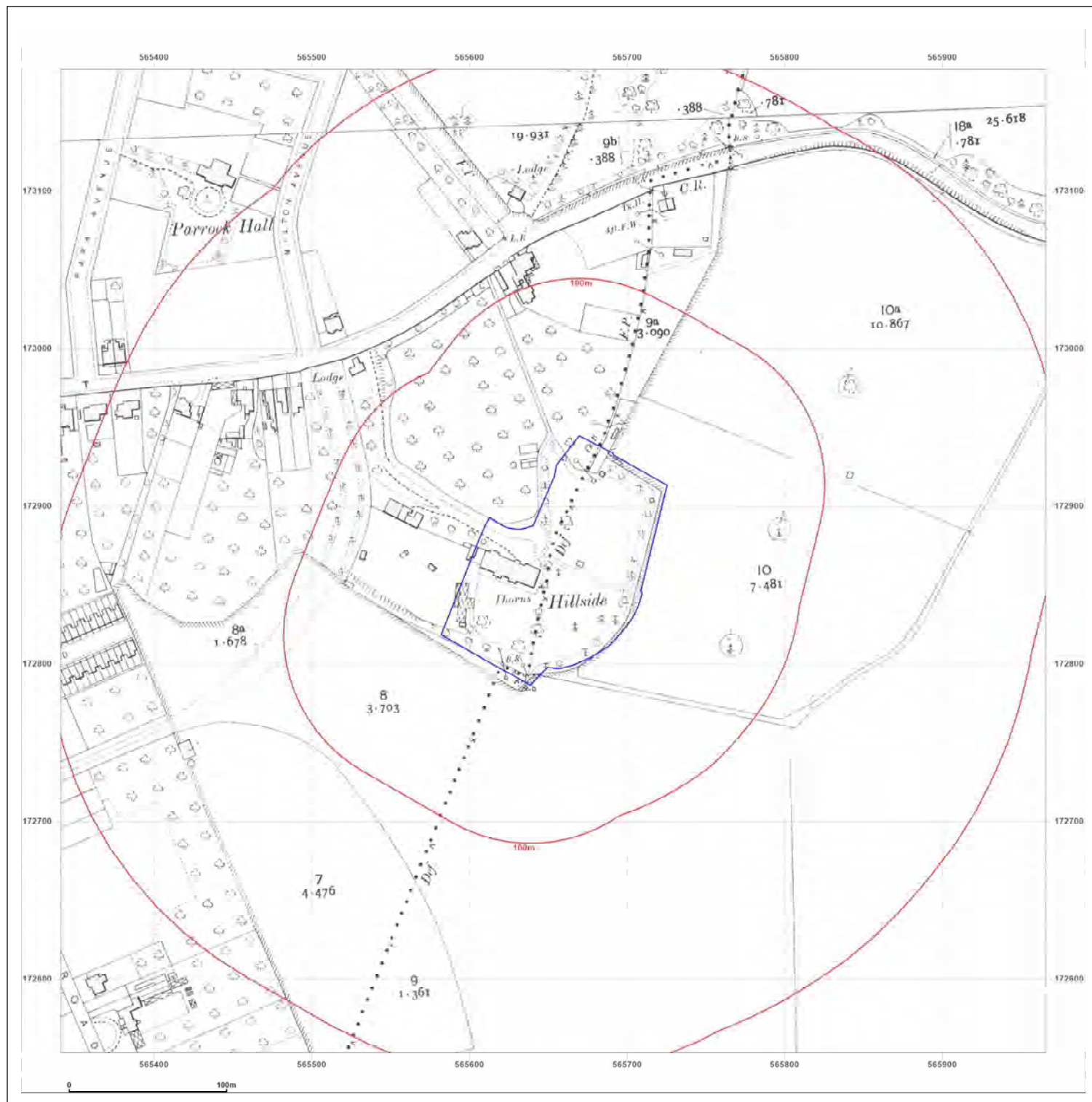


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

Map date: 1909

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1909
Revised 1909
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1909
Revised 1909
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

Map date: 1931-1932

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1931
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1862
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

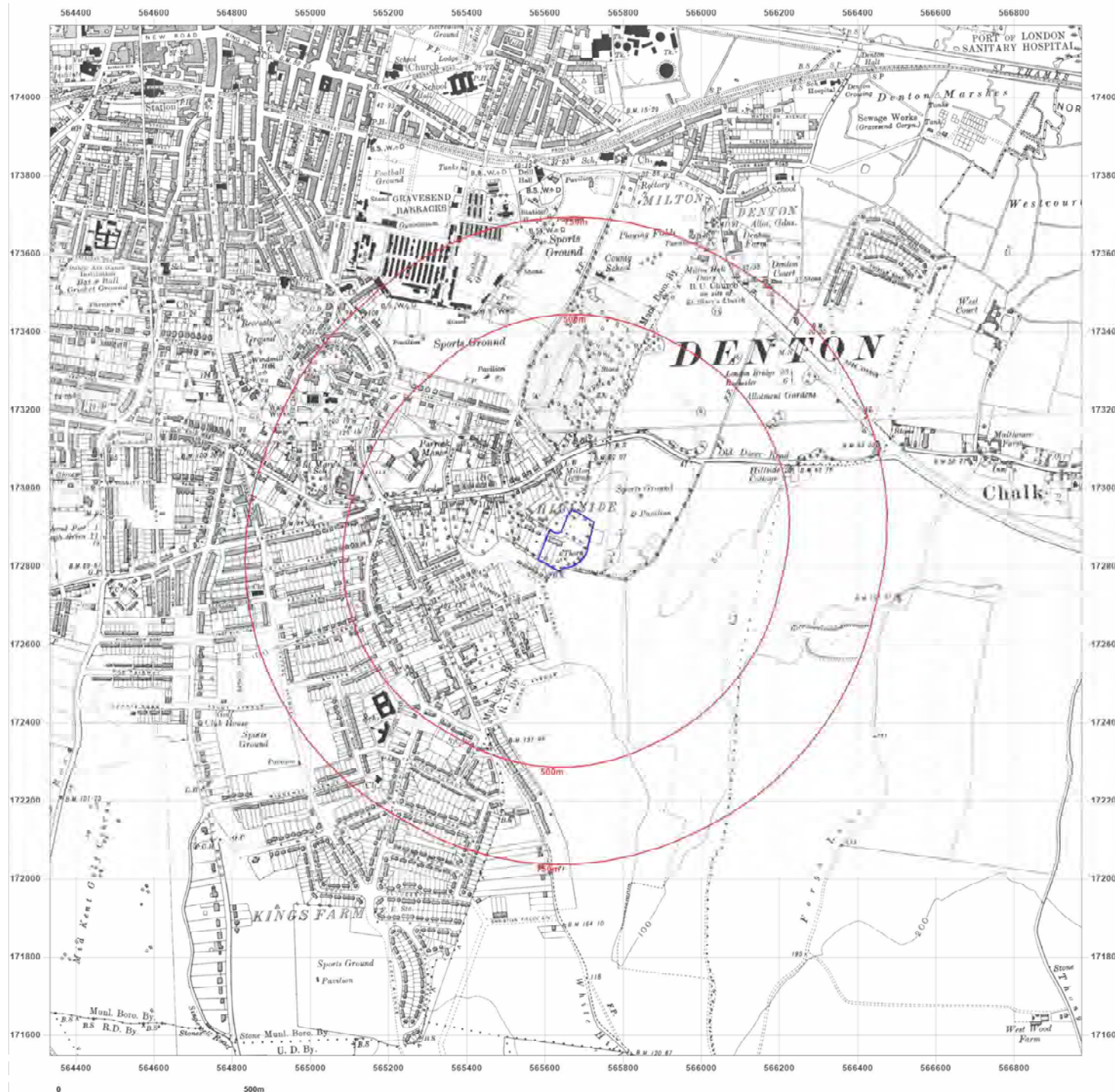


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

Map date: 1932-1933

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1933
Revised 1933
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

Map date: 1936

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1936
Revised 1936
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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





Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

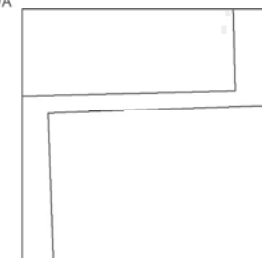
Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1862
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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





Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: County Series

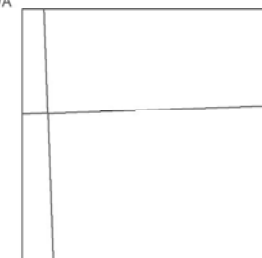
Map date: 1946

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1946
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1862
Revised 1946
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: National Grid

Map date: 1953-1954

Scale: 1:1,250

Printed at: 1:2,000



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

Surveyed 1953
Revised 1953
Edition N/A
Copyright N/A
Levelled 1952

Surveyed 1953
Revised 1953
Edition N/A
Copyright N/A
Levelled 1952

Surveyed 1953
Revised 1953
Edition N/A
Copyright N/A
Levelled 1952



Produced by
Groundsure Insights
www.groundsure.com

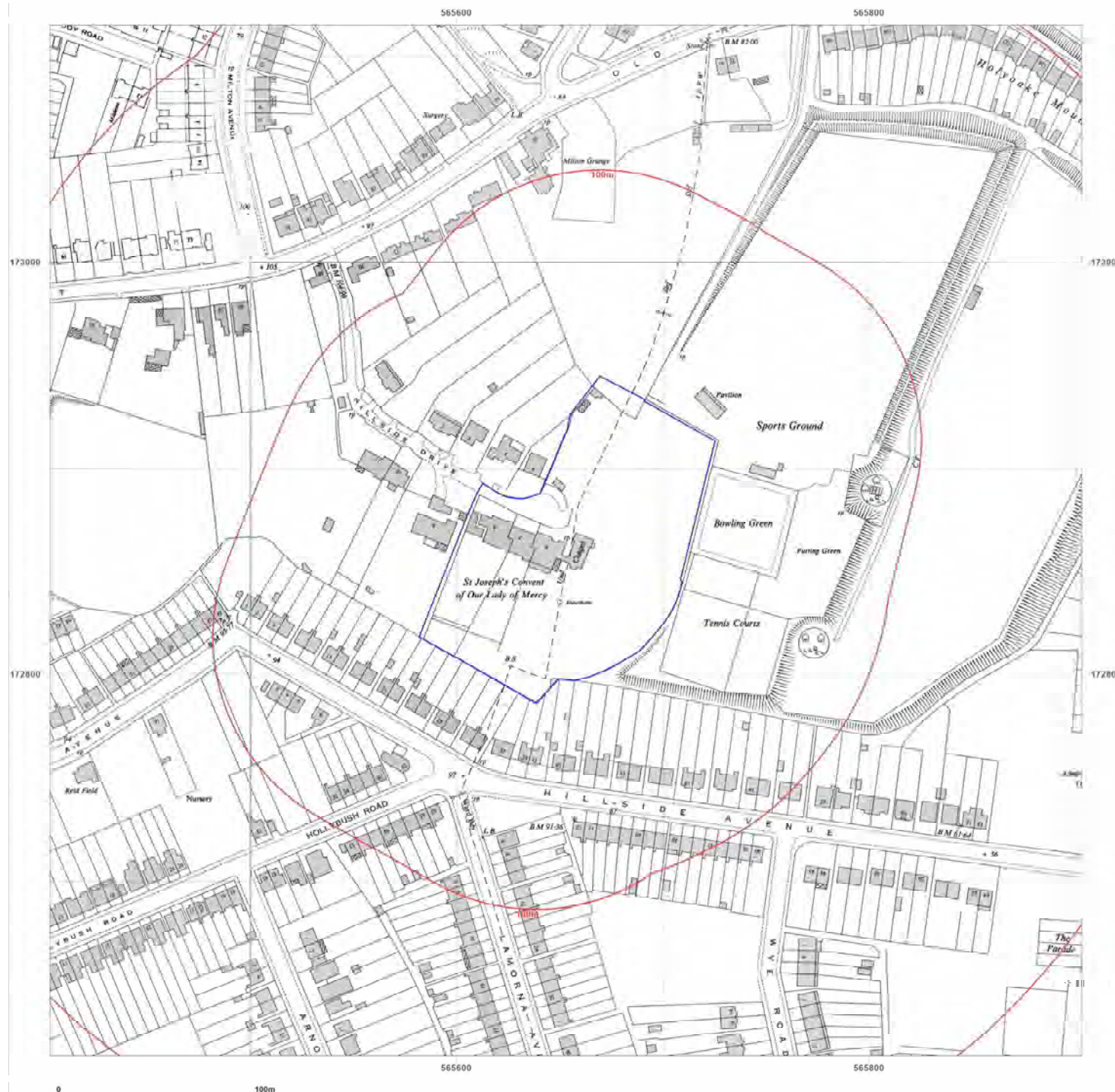


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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





Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: Provisional

Map date: 1955

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1955
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1955
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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





Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: National Grid

Map date: 1961-1964

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1953
Revised 1963
Edition N/A
Copyright 1964
Levelled 1952

Surveyed 1961
Revised 1961
Edition N/A
Copyright 1961
Levelled 1952



Produced by
Groundsure Insights
www.groundsure.com

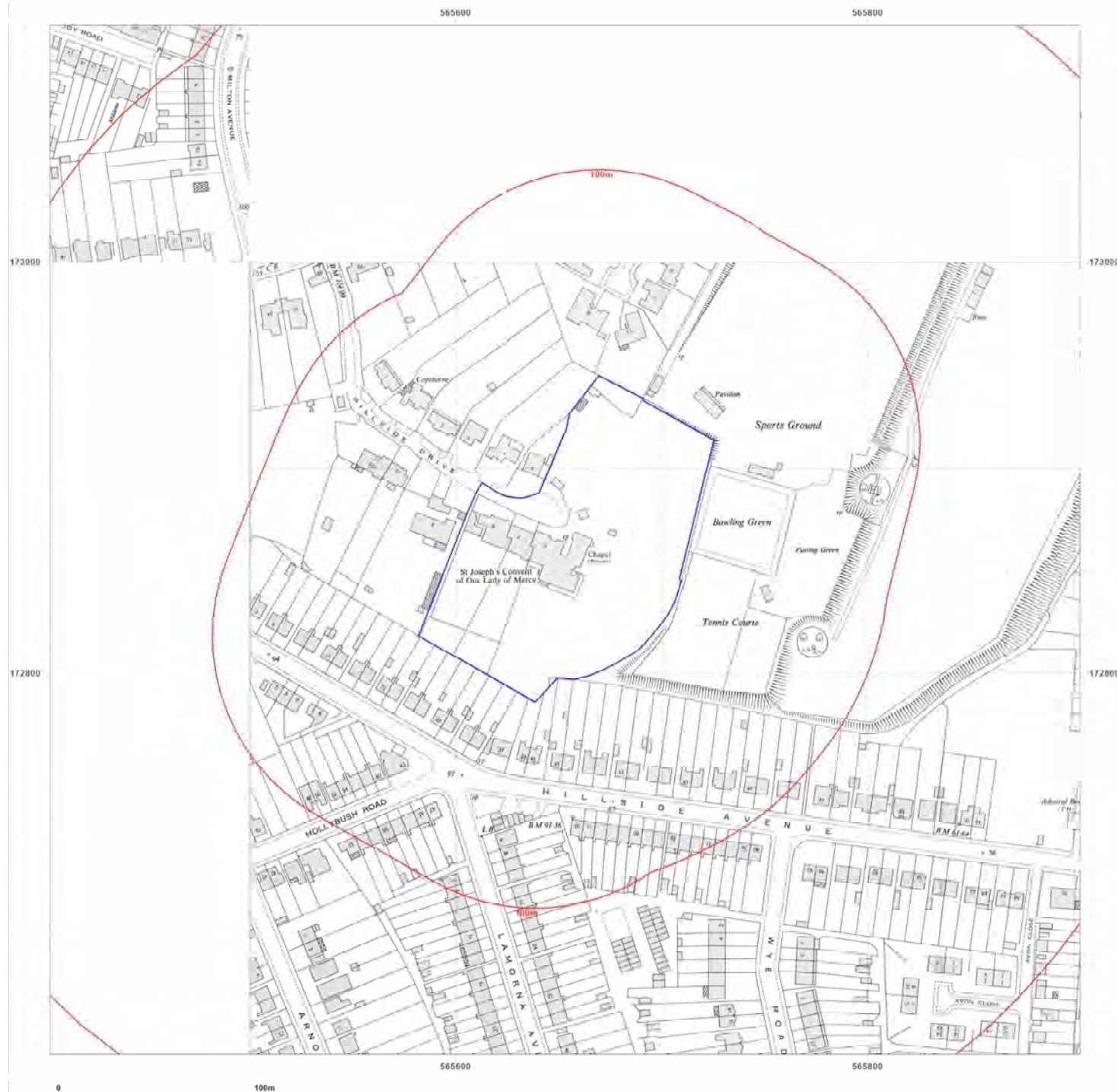


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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





Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: Provisional

Map date: 1966

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1966
Revised 1966
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1966
Revised 1966
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: National Grid

Map date: 1971-1973

Scale: 1:10,000

Printed at: 1:10,000



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

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



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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





Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: National Grid

Map date: 1979-1981

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1981
Levelled 1951

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1981
Levelled 1952

Surveyed 1953
Revised 1978
Edition N/A
Copyright 1979
Levelled 1972



Produced by
Groundsure Insights
www.groundsure.com

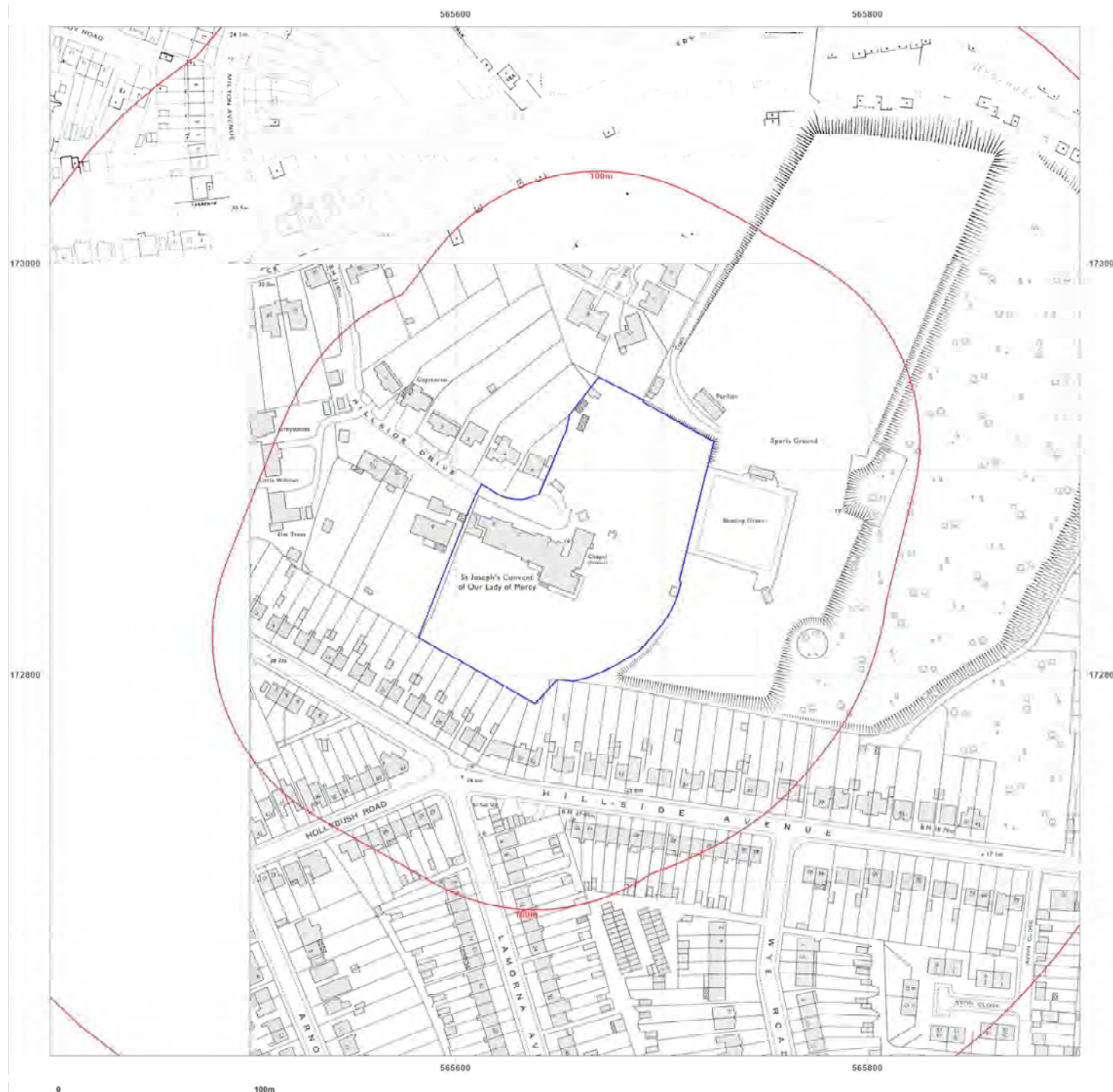


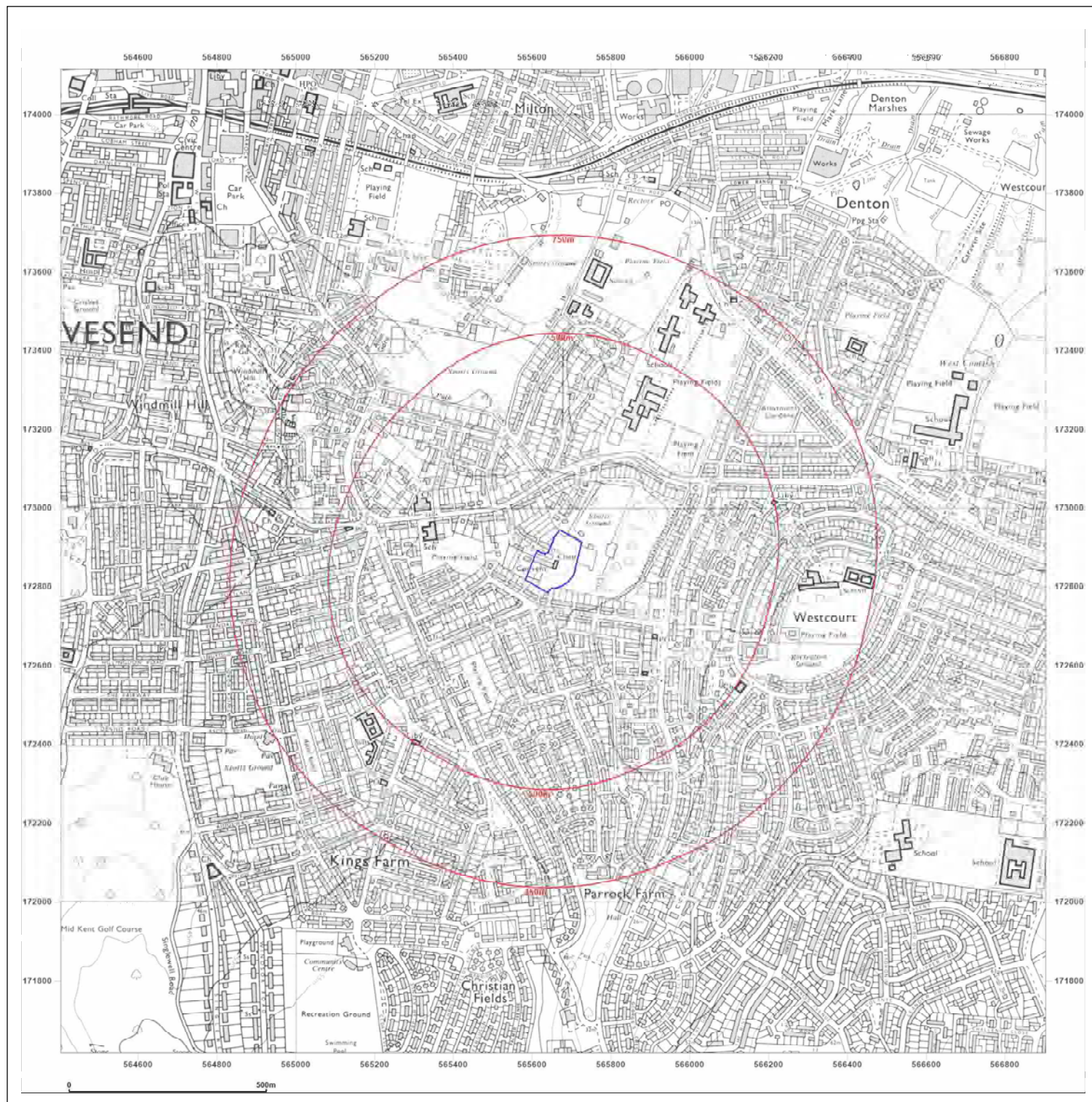
Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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





Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: National Grid

Map date: 1977-1981

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1977
Revised 1977
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1980
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: National Grid

Map date: 1986-1991

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised 1986
Edition N/A
Copyright 1986
Levelled 1980

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled 1952

Surveyed 1952
Revised 1987
Edition N/A
Copyright 1987
Levelled 1952

Surveyed 1979
Revised 1987
Edition N/A
Copyright 1987
Levelled 1979



Produced by
Groundsure Insights
www.groundsure.com

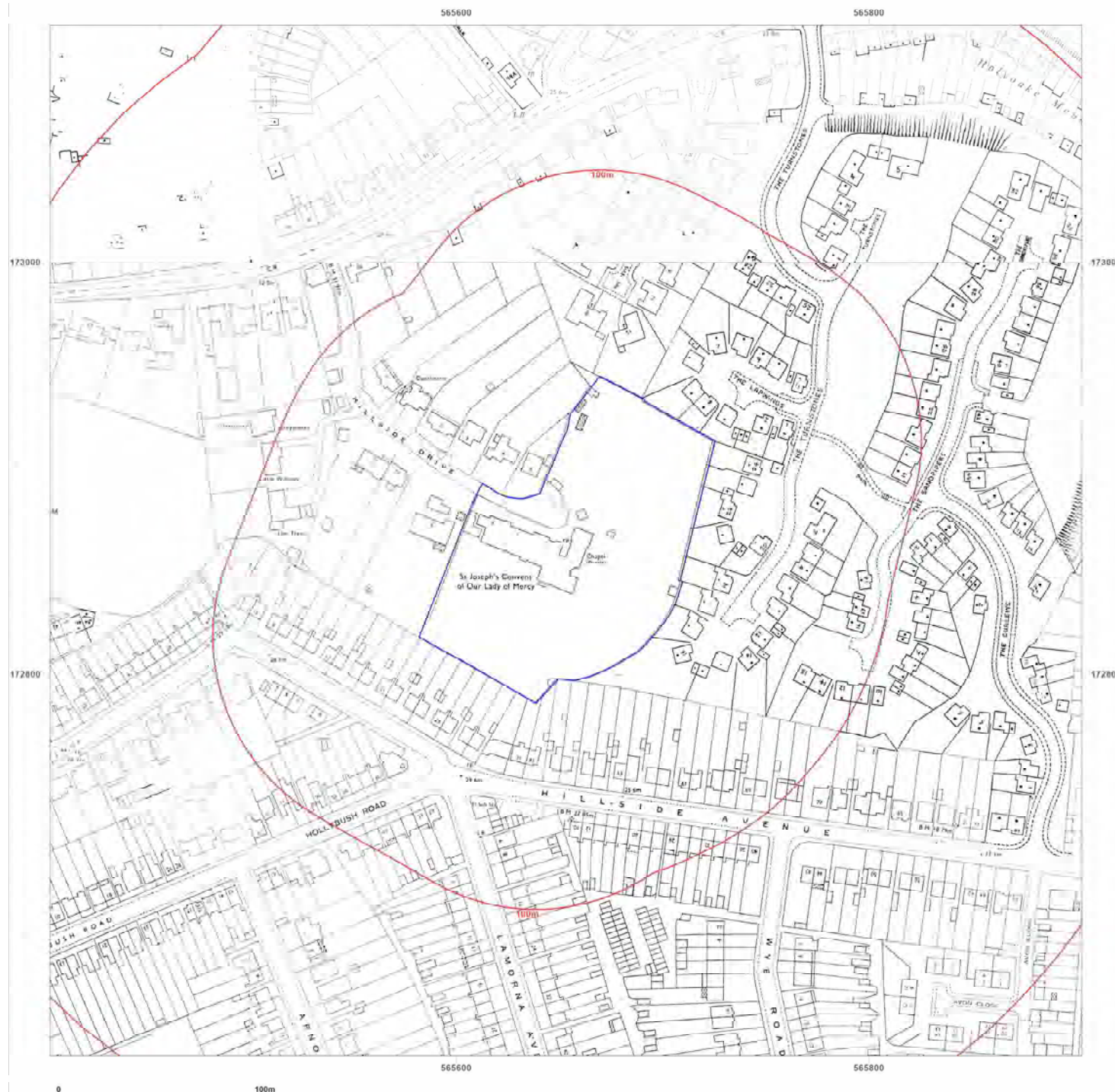


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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





Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: National Grid

Map date: 1988-1993

Scale: 1:1,250

Printed at: 1:2,000



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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A



Produced by
Groundsure Insights
www.groundsure.com

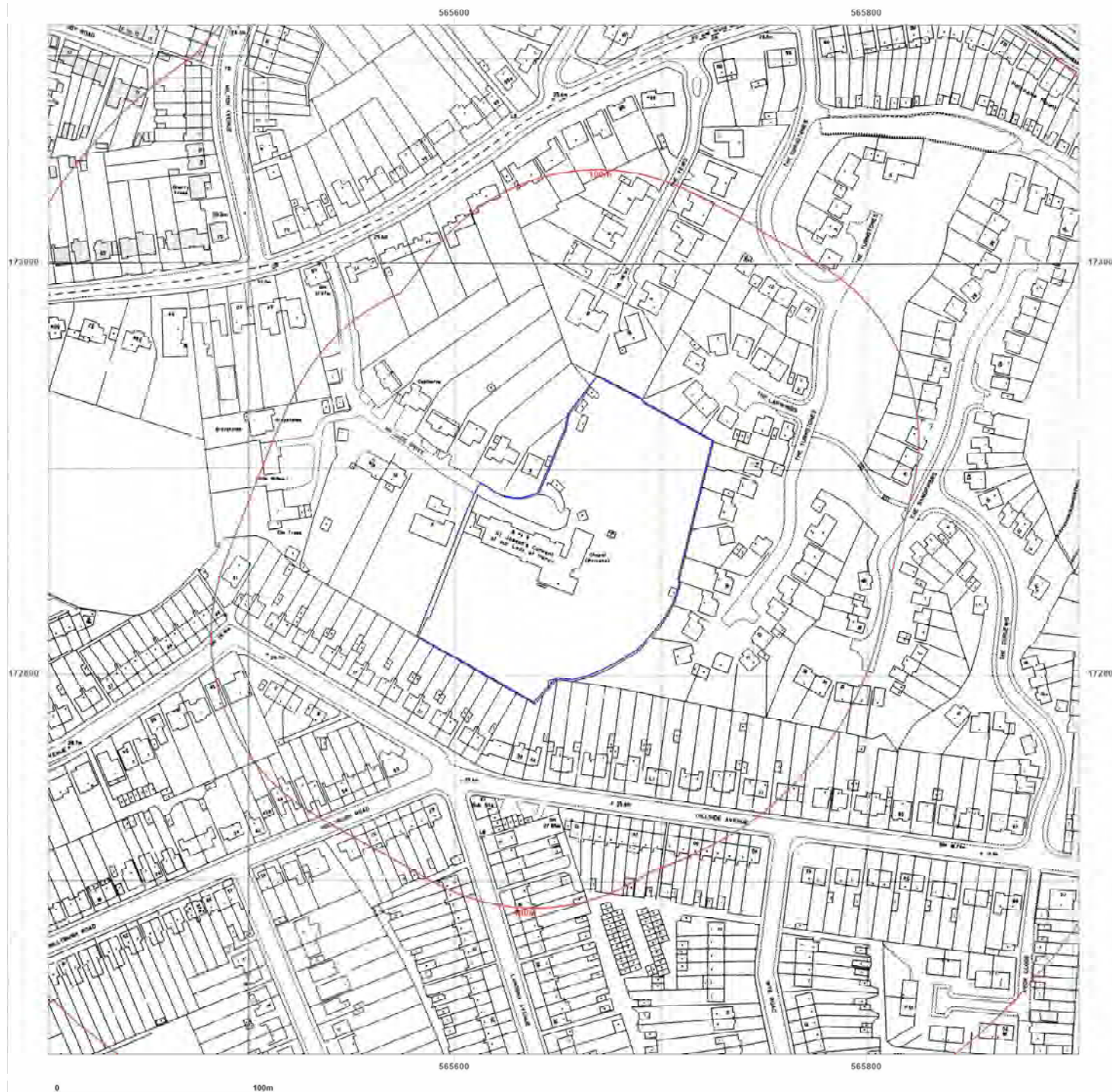


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



2001



Produced by
Groundsure Insights
www.groundsure.com

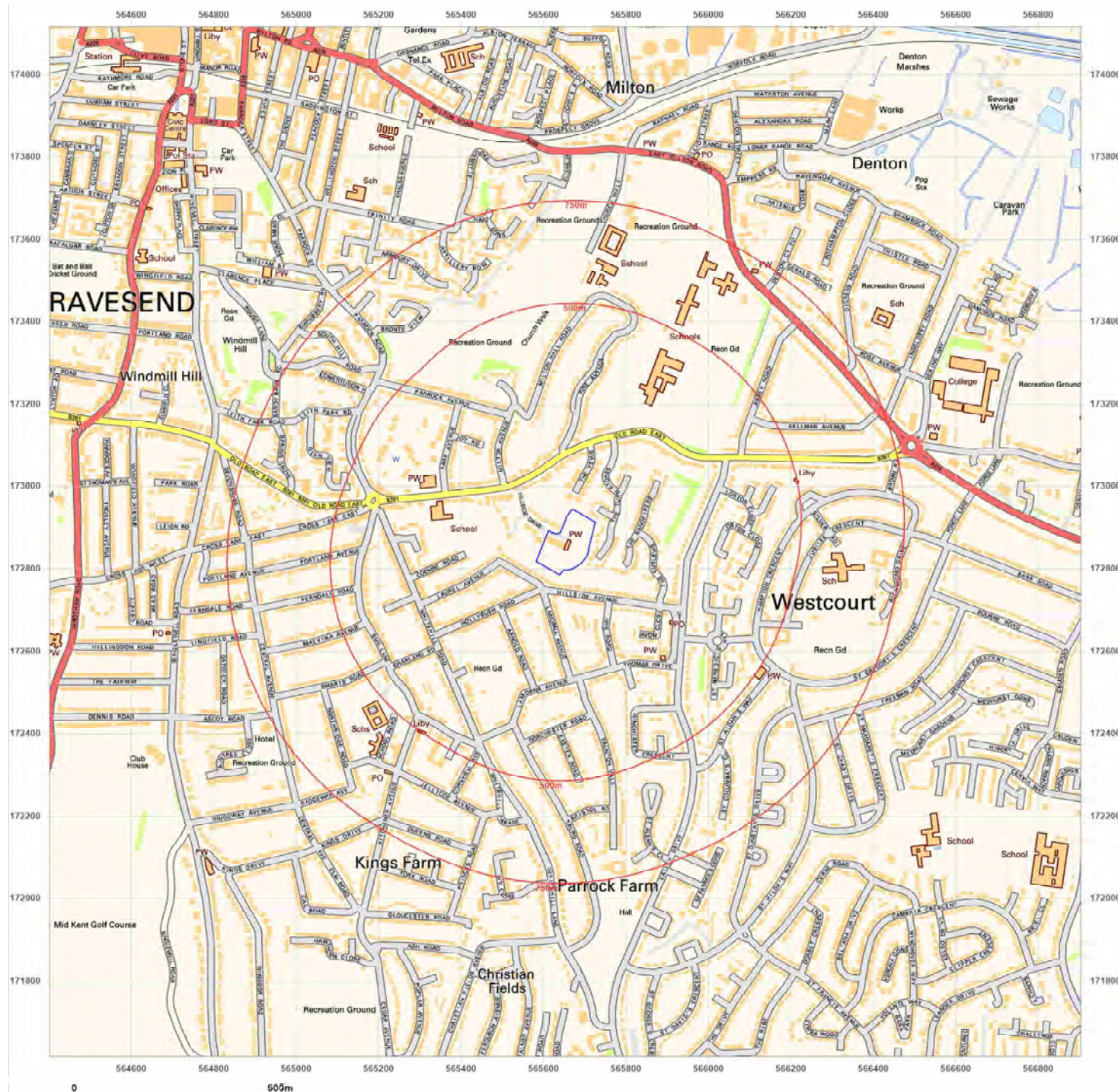


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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





Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003



Produced by
Groundsure Insights
www.groundsure.com

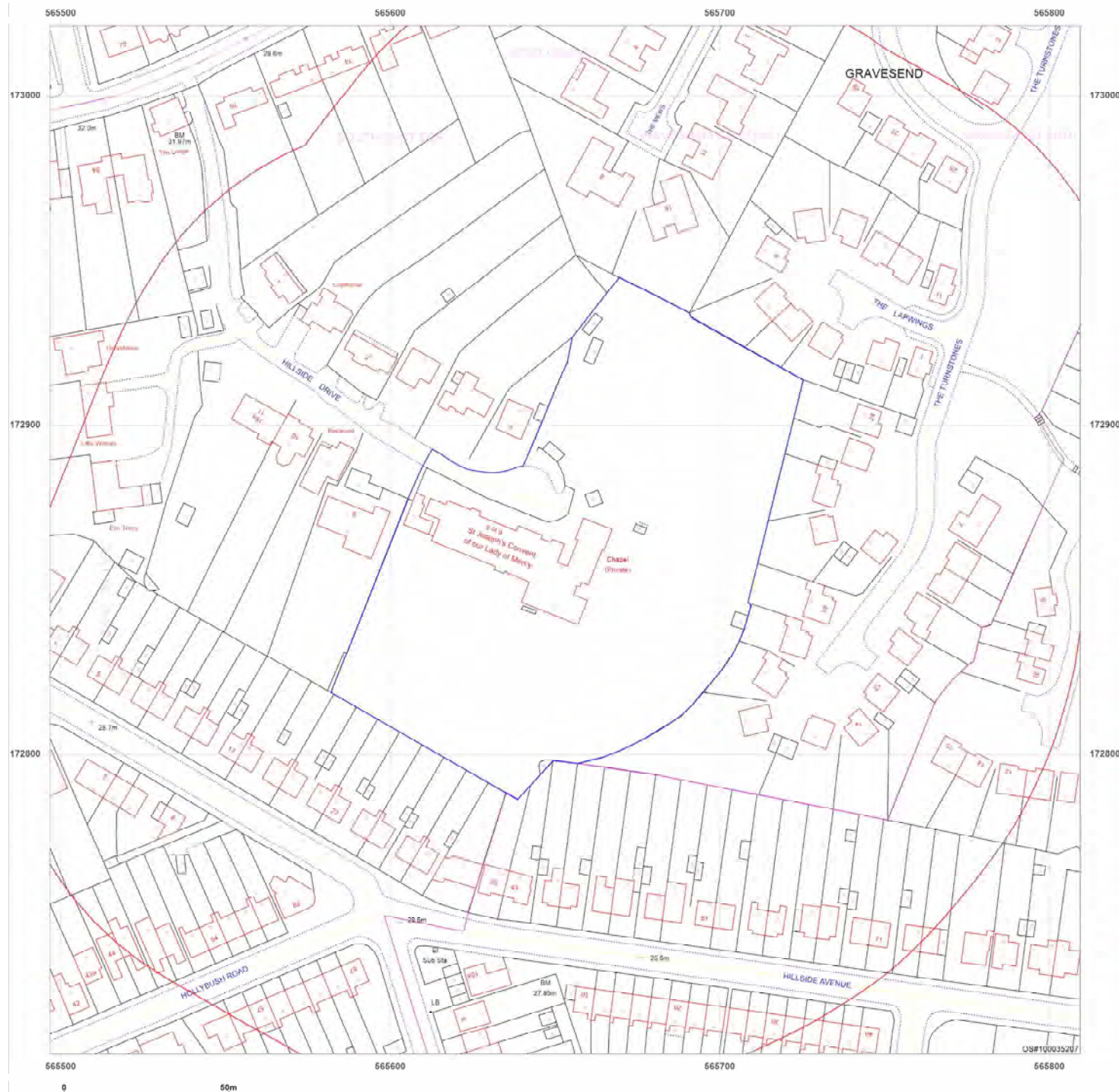


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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





Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010



Produced by
Groundsure Insights
www.groundsure.com

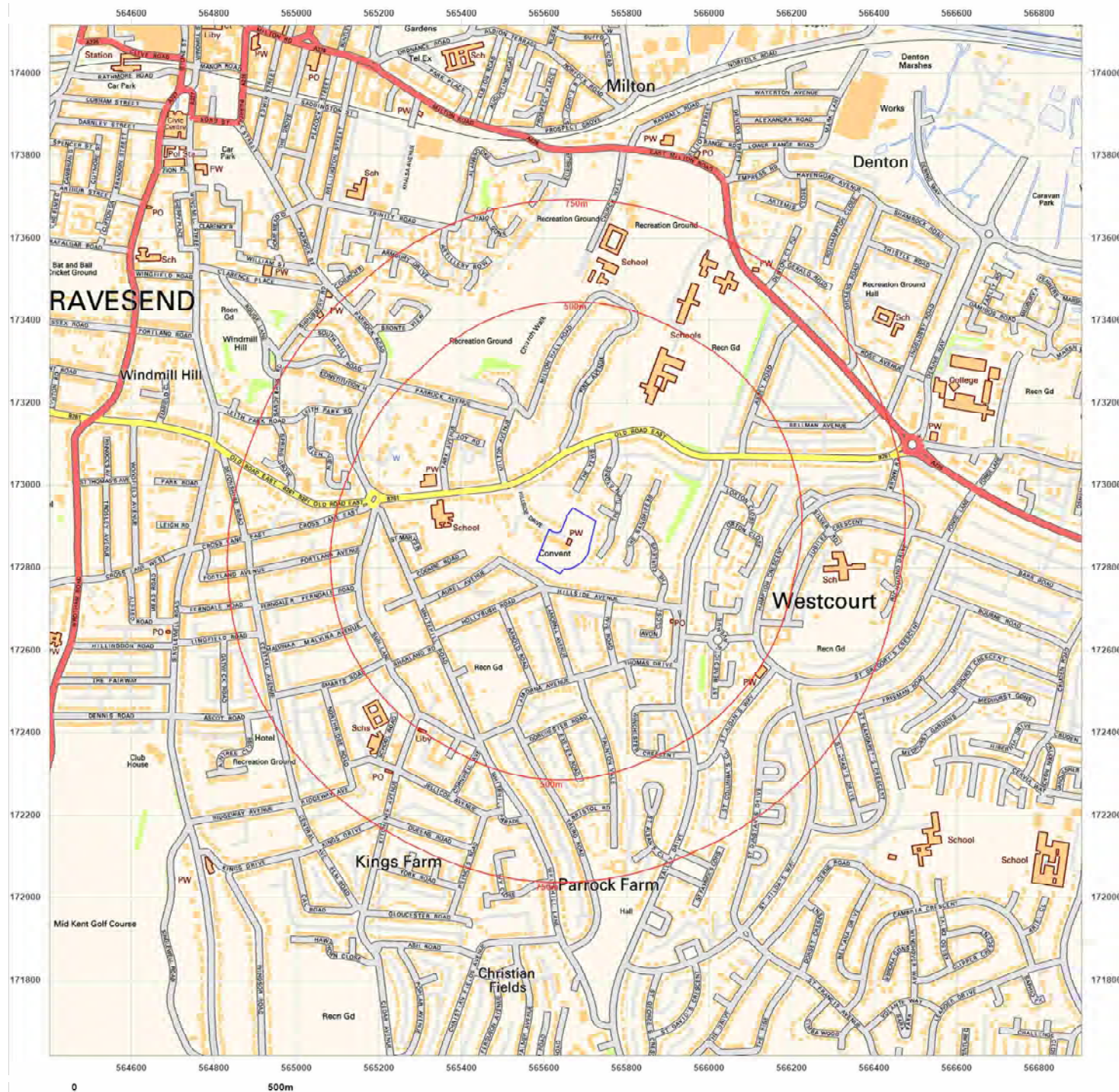


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



Site Details:

St. Josephs Convent Of Mercy,
Hillside Drive, Gravesend, DA12
1NY

Client Ref: CMAPS-CM-1191270-61952-251024
Report Ref: CMAPS-CM-1191270-61952-251024HIS
Grid Ref: 565653, 172865

Map Name: National Grid

Map date: 2024

Scale: 1:10,000

Printed at: 1:10,000



2024



Produced by
Groundsure Insights
www.groundsure.com

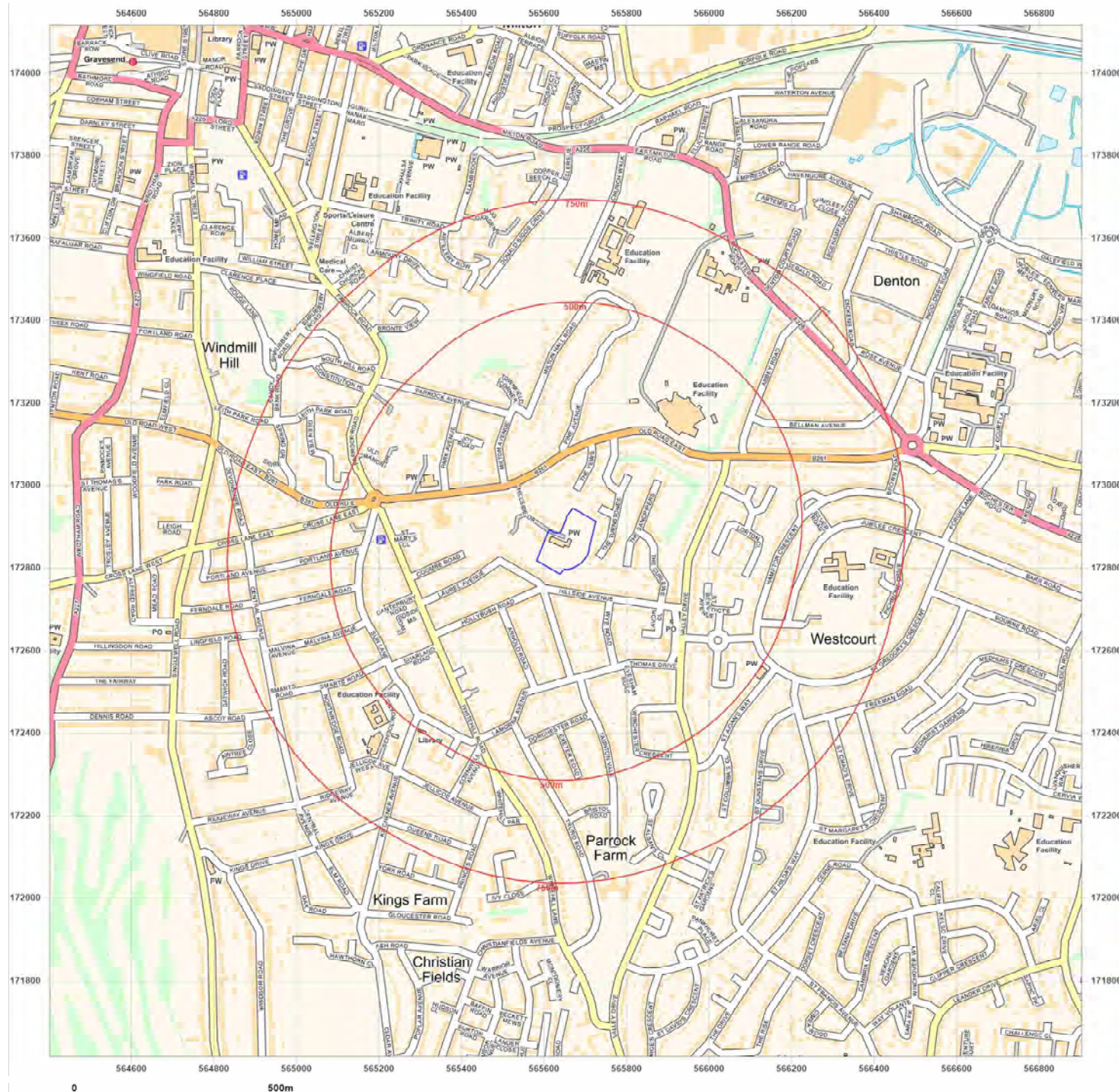


Supplied by:
www.centremapslive.com
groundsure@centremaps.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 25 October 2024

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



APPENDIX 5

GROUNDSURE ENVIRO AND GEO INSIGHT REPORT

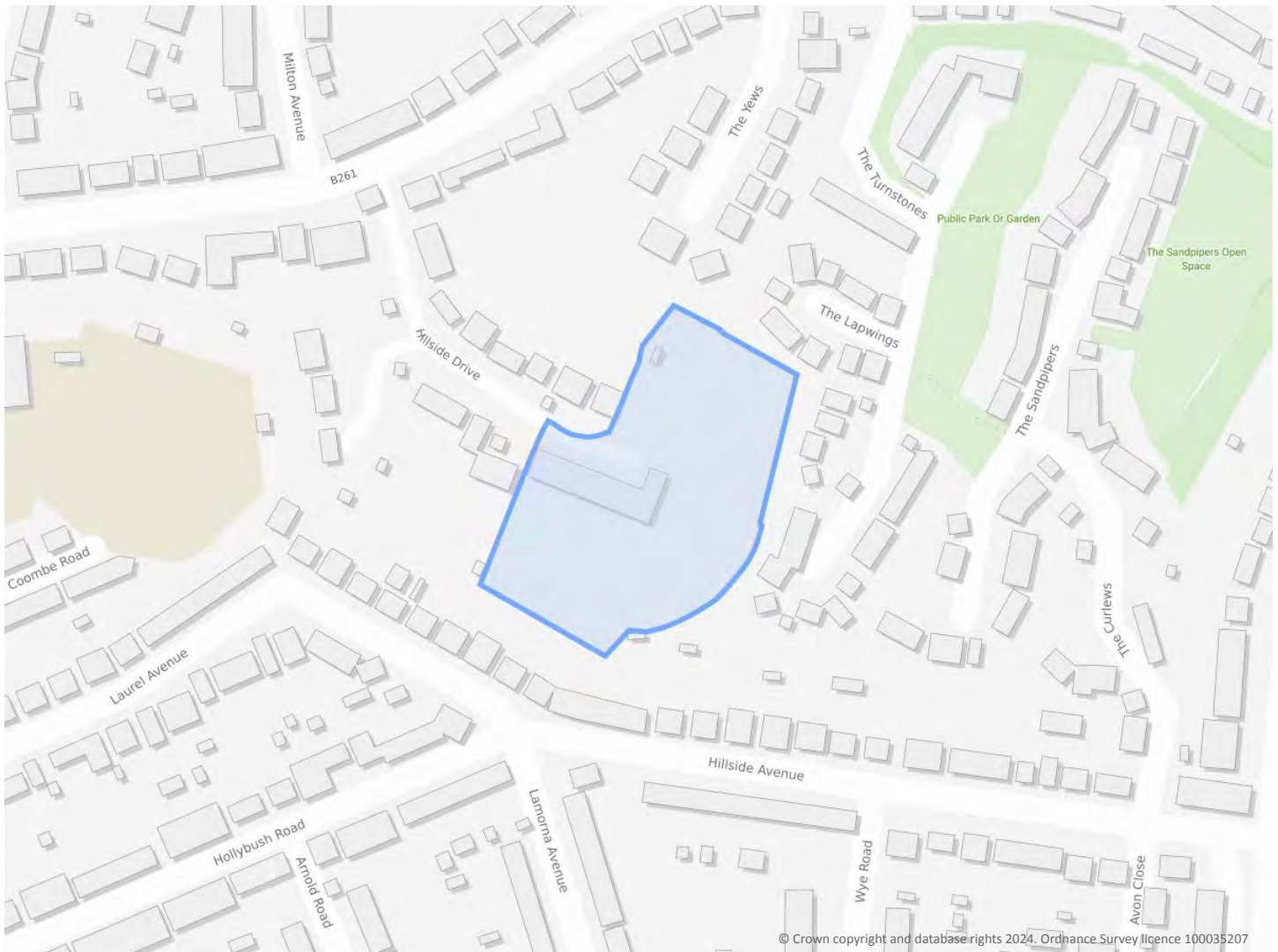
St. Josephs Convent Of Mercy, Hillside Drive, Gravesend, DA12 1NY

Order Details

Date: 25/10/2024
Your ref: CMAPS-CM-1191270-61952-251024
Our Ref: CMAPS-CM-1191270-61952-251024EDRGEO

Site Details

Location: 565658 172860
Area: 1.3 ha
Authority: [Gravesham Borough Council](#) ↗



© Crown copyright and database rights 2024. Ordnance Survey licence 100035207

[Summary of findings](#)

[p.2 >](#) [Aerial image](#)

[p.9 >](#)

[OS MasterMap site plan](#)

[p.14 >](#) [Insight User Guide](#) ↗

Contact us with any questions at:

info@groundsure.com ↗

01273 257 755

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	0	1	8	5	-
16 >	1.2 >	Historical tanks >	0	1	3	3	-
17 >	1.3 >	Historical energy features >	0	1	3	9	-
18	1.4	Historical petrol stations	0	0	0	0	-
18 >	1.5 >	Historical garages >	0	0	0	6	-
18	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
19 >	2.1 >	Historical industrial land uses >	0	1	10	7	-
20 >	2.2 >	Historical tanks >	0	1	3	6	-
21 >	2.3 >	Historical energy features >	0	1	6	13	-
22	2.4	Historical petrol stations	0	0	0	0	-
22 >	2.5 >	Historical garages >	0	0	0	10	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
24	3.1	Active or recent landfill	0	0	0	0	-
24	3.2	Historical landfill (BGS records)	0	0	0	0	-
25	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
25 >	3.4 >	Historical landfill (EA/NRW records) >	1	0	0	0	-
25	3.5	Historical waste sites	0	0	0	0	-
25	3.6	Licensed waste sites	0	0	0	0	-
26	3.7	Waste exemptions	0	0	0	0	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
27 >	4.1 >	Recent industrial land uses >	0	0	3	-	-
28 >	4.2 >	Current or recent petrol stations >	0	0	0	1	-
28	4.3	Electricity cables	0	0	0	0	-
28	4.4	Gas pipelines	0	0	0	0	-
28	4.5	Sites determined as Contaminated Land	0	0	0	0	-



28	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
29	4.7	Regulated explosive sites	0	0	0	0	-
29	4.8	Hazardous substance storage/usage	0	0	0	0	-
29	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
29	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
29 >	4.11 >	<u>Licensed pollutant release (Part A(2)/B) ></u>	0	0	0	1	-
30	4.12	Radioactive Substance Authorisations	0	0	0	0	-
30	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
30	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
30	4.15	Pollutant release to public sewer	0	0	0	0	-
31	4.16	List 1 Dangerous Substances	0	0	0	0	-
31	4.17	List 2 Dangerous Substances	0	0	0	0	-
31 >	4.18 >	<u>Pollution Incidents (EA/NRW) ></u>	0	0	0	3	-
32	4.19	Pollution inventory substances	0	0	0	0	-
32	4.20	Pollution inventory waste transfers	0	0	0	0	-
32	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	<u>Hydrogeology ></u>	On site	0-50m	50-250m	250-500m	500-2000m
33 >	5.1 >	<u>Superficial aquifer ></u>	Identified (within 500m)				
34 >	5.2 >	<u>Bedrock aquifer ></u>	Identified (within 500m)				
36 >	5.3 >	<u>Groundwater vulnerability ></u>	Identified (within 50m)				
37 >	5.4 >	<u>Groundwater vulnerability- soluble rock risk ></u>	Identified (within 0m)				
37	5.5	Groundwater vulnerability- local information	None (within 0m)				
38 >	5.6 >	<u>Groundwater abstractions ></u>	0	0	0	0	9
41	5.7	Surface water abstractions	0	0	0	0	0
41 >	5.8 >	<u>Potable abstractions ></u>	0	0	0	0	1
41 >	5.9 >	<u>Source Protection Zones ></u>	1	1	1	0	-
42	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	<u>Hydrology ></u>	On site	0-50m	50-250m	250-500m	500-2000m
43	6.1	Water Network (OS MasterMap)	0	0	0	-	-



43	6.2	Surface water features	0	0	0	-	-
44 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
44	6.4	WFD Surface water bodies	0	0	0	-	-
44 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
46	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
46	7.2	Historical Flood Events	0	0	0	-	-
46	7.3	Flood Defences	0	0	0	-	-
47	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
47	7.5	Flood Storage Areas	0	0	0	-	-
48	7.6	Flood Zone 2	None (within 50m)				
48	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
49 >	8.1 >	Surface water flooding >	1 in 30 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding >					
51 >	9.1 >	Groundwater flooding >	Moderate (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
52 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	1
53 >	10.2 >	Conserved wetland sites (Ramsar sites) >	0	0	0	0	1
53	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
53	10.4	Special Protection Areas (SPA)	0	0	0	0	0
54	10.5	National Nature Reserves (NNR)	0	0	0	0	0
54	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
54	10.7	Designated Ancient Woodland	0	0	0	0	0
54	10.8	Biosphere Reserves	0	0	0	0	0
55	10.9	Forest Parks	0	0	0	0	0
55	10.10	Marine Conservation Zones	0	0	0	0	0
55 >	10.11 >	Green Belt >	0	0	0	0	1
55	10.12	Proposed Ramsar sites	0	0	0	0	0

56	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
56	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
56	10.15	Nitrate Sensitive Areas	0	0	0	0	0
56 >	10.16 >	Nitrate Vulnerable Zones >	0	0	0	0	2
58 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
59 >	10.18 >	SSSI Units >	0	0	0	0	1
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
61	11.1	World Heritage Sites	0	0	0	-	-
61	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
61	11.3	National Parks	0	0	0	-	-
61	11.4	Listed Buildings	0	0	0	-	-
62	11.5	Conservation Areas	0	0	0	-	-
62	11.6	Scheduled Ancient Monuments	0	0	0	-	-
62	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
63 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
64	12.2	Open Access Land	0	0	0	-	-
64	12.3	Tree Felling Licences	0	0	0	-	-
64	12.4	Environmental Stewardship Schemes	0	0	0	-	-
64	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
65	13.1	Priority Habitat Inventory	0	0	0	-	-
65	13.2	Habitat Networks	0	0	0	-	-
65	13.3	Open Mosaic Habitat	0	0	0	-	-
65	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
66 >	14.1 >	10k Availability >	Identified (within 500m)				
67 >	14.2 >	Artificial and made ground (10k) >	0	0	0	6	-
69 >	14.3 >	Superficial geology (10k) >	0	0	2	0	-

70	14.4	Landslip (10k)	0	0	0	0	-
71 >	14.5 >	Bedrock geology (10k) >	1	0	1	0	-
72	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
73 >	15.1 >	50k Availability >	Identified (within 500m)				
74 >	15.2 >	Artificial and made ground (50k) >	0	0	0	5	-
75	15.3	Artificial ground permeability (50k)	0	0	-	-	-
76 >	15.4 >	Superficial geology (50k) >	0	0	2	0	-
77	15.5	Superficial permeability (50k)	None (within 50m)				
77	15.6	Landslip (50k)	0	0	0	0	-
77	15.7	Landslip permeability (50k)	None (within 50m)				
78 >	15.8 >	Bedrock geology (50k) >	1	0	1	0	-
79 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
79	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
80	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence >					
81 >	17.1 >	Shrink swell clays >	Negligible (within 50m)				
82 >	17.2 >	Running sands >	Low (within 50m)				
83 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
84 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
85 >	17.5 >	Landslides >	Very low (within 50m)				
86 >	17.6 >	Ground dissolution of soluble rocks >	Low (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
88 >	18.1 >	BritPits >	0	0	1	4	-
90 >	18.2 >	Surface ground workings >	0	1	2	-	-
90	18.3	Underground workings	0	0	0	0	0
90	18.4	Underground mining extents	0	0	0	0	-
90	18.5	Historical Mineral Planning Areas	0	0	0	0	-



91 >	18.6 >	Non-coal mining >	1	0	3	5	9
93	18.7	JPB mining areas	None (within 0m)				
93	18.8	The Coal Authority non-coal mining	0	0	0	0	-
93 >	18.9 >	Researched mining >	0	0	3	1	-
94	18.10	Mining record office plans	0	0	0	0	-
94	18.11	BGS mine plans	0	0	0	0	-
94	18.12	Coal mining	None (within 0m)				
94	18.13	Brine areas	None (within 0m)				
94	18.14	Gypsum areas	None (within 0m)				
95	18.15	Tin mining	None (within 0m)				
95	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes >	On site	0-50m	50-250m	250-500m	500-2000m
96	19.1	Natural cavities	0	0	0	0	-
97 >	19.2 >	Mining cavities >	0	0	1	2	2
97	19.3	Reported recent incidents	0	0	0	0	-
97	19.4	Historical incidents	0	0	0	0	-
98	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
99 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
101 >	21.1 >	BGS Estimated Background Soil Chemistry >	1	0	-	-	-
101	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
101	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
102	22.1	Underground railways (London)	0	0	0	-	-
102	22.2	Underground railways (Non-London)	0	0	0	-	-
102	22.3	Railway tunnels	0	0	0	-	-
102	22.4	Historical railway and tunnel features	0	0	0	-	-
102	22.5	Royal Mail tunnels	0	0	0	-	-



103	22.6	Historical railways	0	0	0	-	-
103	22.7	Railways	0	0	0	-	-
103	22.8	Crossrail 1	0	0	0	0	-
103	22.9	Crossrail 2	0	0	0	0	-
103	22.10	HS2	0	0	0	0	-

Recent aerial photograph

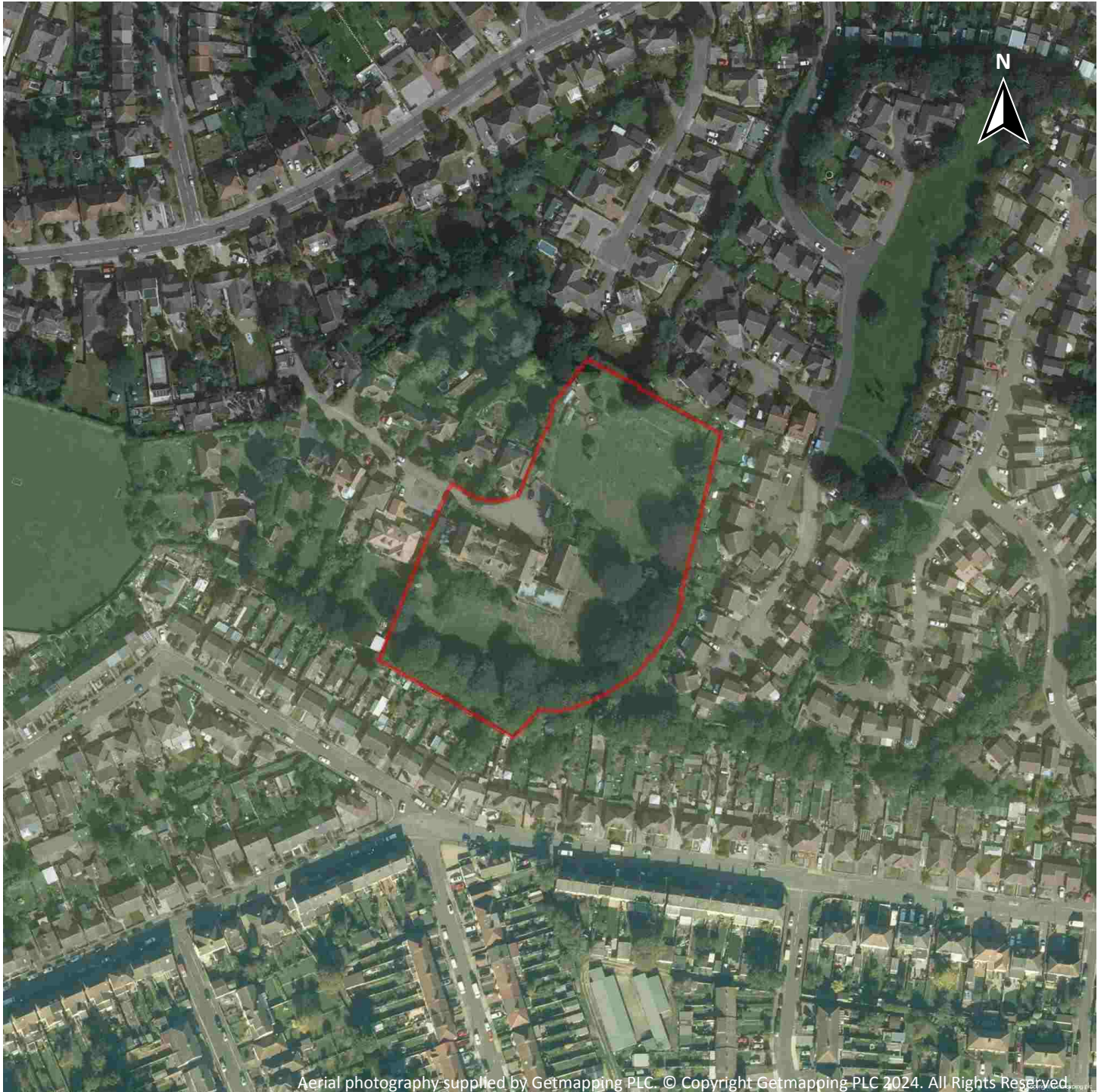


Capture Date: 31/05/2021

Site Area: 1.3ha



Recent site history - 2018 aerial photograph



Capture Date: 01/09/2018

Site Area: 1.3ha



Recent site history - 2012 aerial photograph

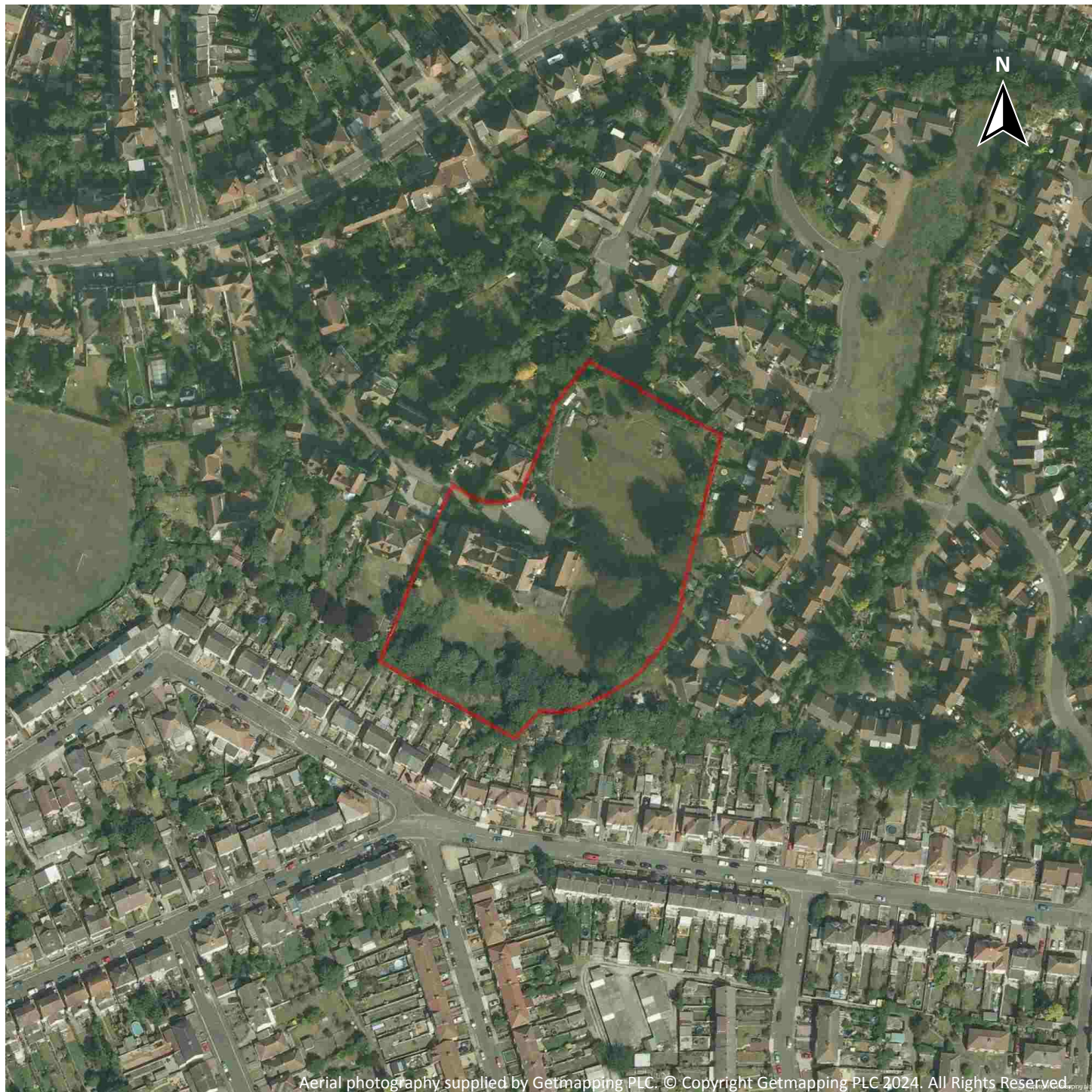


Capture Date: 25/05/2012

Site Area: 1.3ha



Recent site history - 2009 aerial photograph



Capture Date: 27/09/2009

Site Area: 1.3ha



Recent site history - 1999 aerial photograph

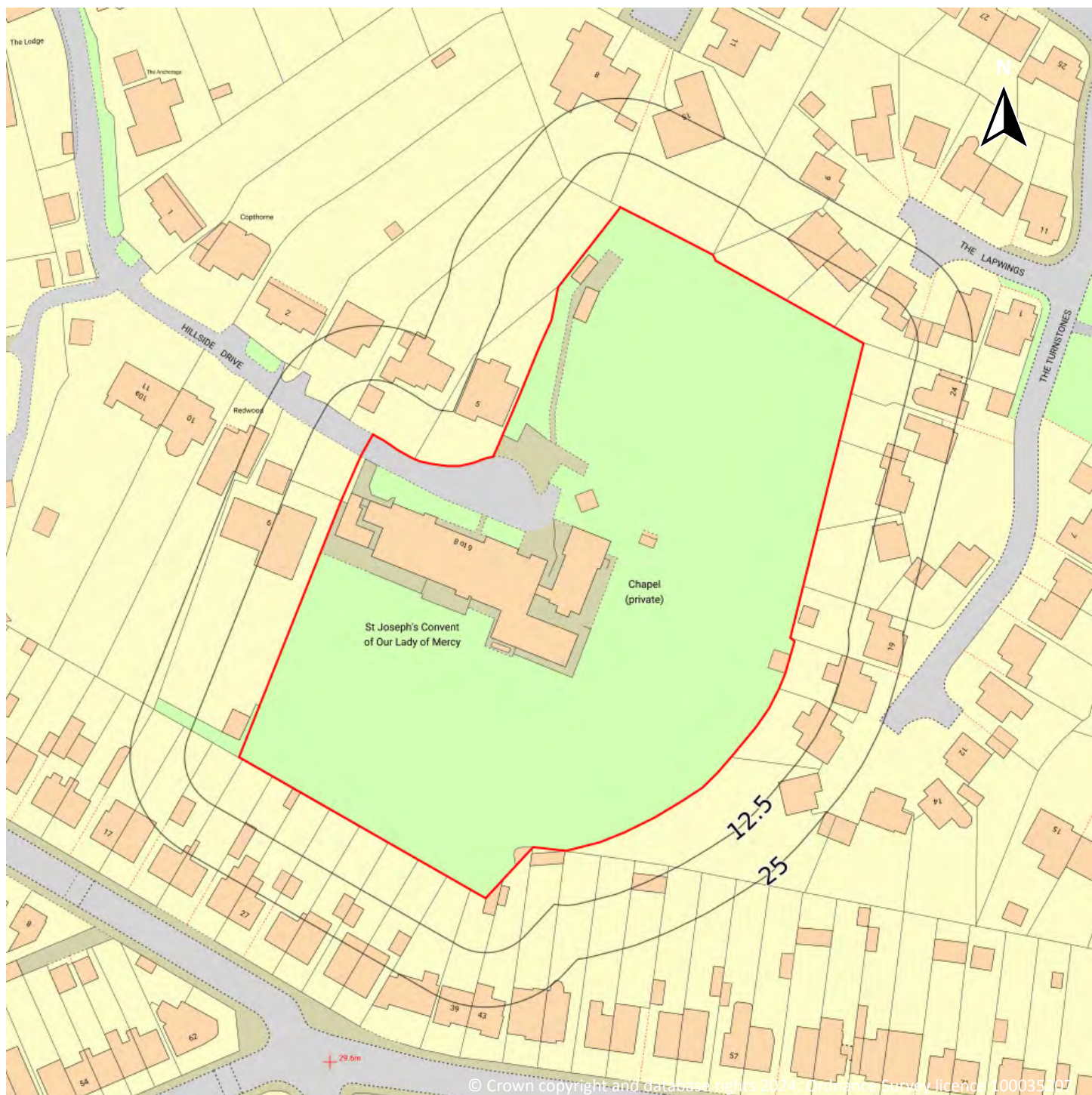


Capture Date: 03/09/1999

Site Area: 1.3ha



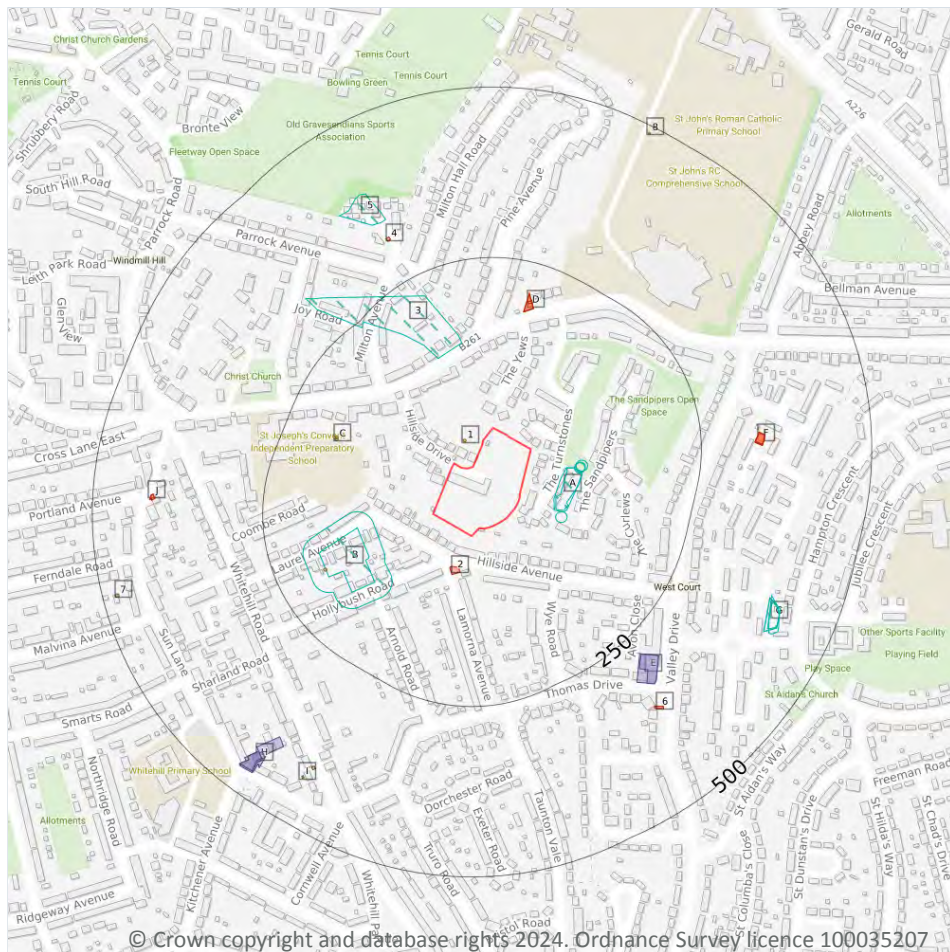
OS MasterMap site plan



Site Area: 1.3ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

1.1 Historical industrial land uses

Records within 500m

14

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15](#) >

ID	Location	Land use	Dates present	Group ID
A	50m E	Unspecified Heaps	1932	2290533



ID	Location	Land use	Dates present	Group ID
A	52m E	Unspecified Heaps	1938	2261469
A	59m SE	Unspecified Tank	1955	2190540
A	69m E	Unspecified Tank	1946	2245798
A	70m E	Unspecified Tank	1932	2325280
A	70m E	Unspecified Tank	1955	2313734
B	87m SW	Nursery	1932	2211557
B	111m SW	Nursery	1938 - 1946	2319017
3	129m N	Industrial School	1895	2200031
5	343m N	Unspecified Quarry	1966	2185179
G	395m E	Unspecified Pit	1946	2175175
G	395m E	Unspecified Quarry	1907 - 1932	2246877
G	396m E	Unspecified Quarry	1938	2328343
G	401m E	Old Chalk Pit	1888 - 1895	2267877

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

7

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
1	24m NW	Unspecified Tank	1909	388815
C	170m W	Unspecified Tank	1909	430174
C	171m W	Unspecified Tank	1933	427217
B	176m SW	Unspecified Tank	1909	388816
I	428m SW	Unspecified Tank	1953 - 1955	409355



ID	Location	Land use	Dates present	Group ID
7	476m W	Unspecified Tank	1933 - 1936	401571
8	488m NE	Unspecified Tank	1981 - 1991	431043

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	13
----------------------------	-----------

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
2	50m S	Electricity Substation	1979 - 1987	316878
D	177m N	Electricity Substation	1970 - 1991	310688
D	177m N	Electricity Substation	1953	319582
D	189m N	Electricity Substation	1955	292273
4	314m N	Electricity Substation	1981 - 1991	280450
F	329m E	Electricity Substation	1955	293379
F	329m E	Electricity Substation	1953	306001
F	329m E	Electricity Substation	1975	310663
F	329m E	Electricity Substation	1996	306602
6	351m SE	Electricity Substation	1979 - 1987	299407
I	408m SW	Electricity Substation	1993	269805
J	408m W	Electricity Transformer	1973	276842
J	408m W	Electricity Substation	1987 - 1993	316426

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m**6**

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
E	279m SE	Garage	1987	93314
E	281m SE	Garage	1961 - 1979	82672
H	397m SW	Garage	1953	85593
H	429m SW	Garage	1955	86435
H	432m SW	Garage	1985 - 1993	82877
H	432m SW	Garage	1974	94491

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

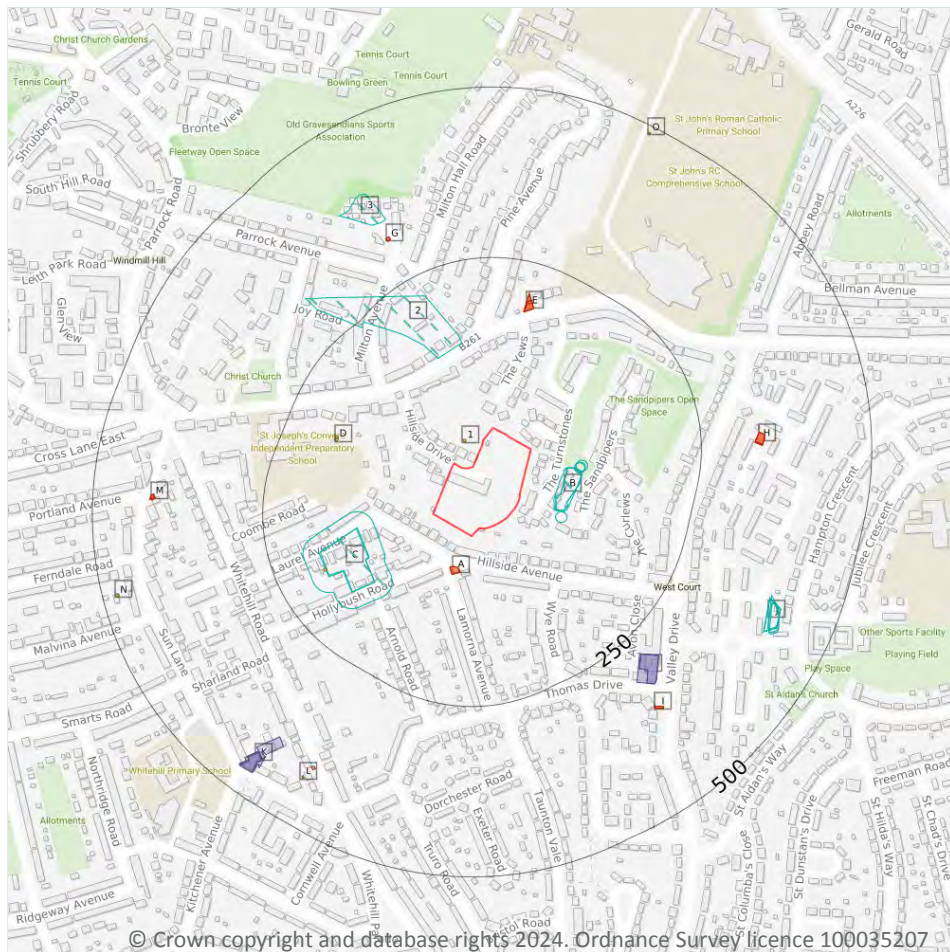
Records within 500m**0**

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

2.1 Historical industrial land uses

Records within 500m

18

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19](#) >

ID	Location	Land Use	Date	Group ID
B	50m E	Unspecified Heaps	1932	2290533
B	52m E	Unspecified Heaps	1938	2261469
B	52m E	Unspecified Heaps	1938	2261469



ID	Location	Land Use	Date	Group ID
B	59m SE	Unspecified Tank	1955	2190540
B	69m E	Unspecified Tank	1946	2245798
B	70m E	Unspecified Tank	1932	2325280
B	70m E	Unspecified Tank	1955	2313734
C	87m SW	Nursery	1932	2211557
C	111m SW	Nursery	1938	2319017
C	112m SW	Nursery	1946	2319017
2	129m N	Industrial School	1895	2200031
3	343m N	Unspecified Quarry	1966	2185179
J	395m E	Unspecified Pit	1946	2175175
J	395m E	Unspecified Quarry	1932	2246877
J	395m E	Unspecified Quarry	1907	2246877
J	396m E	Unspecified Quarry	1938	2328343
J	401m E	Old Chalk Pit	1888	2267877
J	401m E	Old Chalk Pit	1895	2267877

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

10

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19 >](#)

ID	Location	Land Use	Date	Group ID
1	24m NW	Unspecified Tank	1909	388815
D	170m W	Unspecified Tank	1909	430174
D	171m W	Unspecified Tank	1933	427217
C	176m SW	Unspecified Tank	1909	388816
L	428m SW	Unspecified Tank	1955	409355



ID	Location	Land Use	Date	Group ID
L	428m SW	Unspecified Tank	1953	409355
N	476m W	Unspecified Tank	1933	401571
N	476m W	Unspecified Tank	1936	401571
O	488m NE	Unspecified Tank	1981	431043
O	488m NE	Unspecified Tank	1991	431043

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	20
----------------------------	-----------

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19](#) >

ID	Location	Land Use	Date	Group ID
A	50m S	Electricity Substation	1979	316878
A	50m S	Electricity Substation	1987	316878
E	177m N	Electricity Substation	1970	310688
E	177m N	Electricity Substation	1953	319582
E	177m N	Electricity Substation	1981	310688
E	177m N	Electricity Substation	1991	310688
E	189m N	Electricity Substation	1955	292273
G	314m N	Electricity Substation	1981	280450
G	314m N	Electricity Substation	1991	280450
H	329m E	Electricity Substation	1955	293379
H	329m E	Electricity Substation	1953	306001
H	329m E	Electricity Substation	1975	310663
H	329m E	Electricity Substation	1996	306602
H	329m E	Electricity Substation	1996	306602
I	351m SE	Electricity Substation	1987	299407



ID	Location	Land Use	Date	Group ID
I	352m SE	Electricity Substation	1979	299407
L	408m SW	Electricity Substation	1993	269805
M	408m W	Electricity Transformer	1973	276842
M	408m W	Electricity Substation	1993	316426
M	410m W	Electricity Substation	1987	316426

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0
----------------------------	----------

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	10
----------------------------	-----------

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 19](#) >

ID	Location	Land Use	Date	Group ID
F	279m SE	Garage	1987	93314
F	281m SE	Garage	1979	82672
F	281m SE	Garage	1961	82672
K	397m SW	Garage	1953	85593
K	429m SW	Garage	1955	86435
K	432m SW	Garage	1990	82877
K	432m SW	Garage	1985	82877
K	432m SW	Garage	1986	82877

ID	Location	Land Use	Date	Group ID
K	432m SW	Garage	1974	94491
K	434m SW	Garage	1993	82877

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Historical landfill (EA/NRW)

3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m	0
---------------------	---

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	1
---------------------	---

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on [page 24 >](#)

ID	Location	Details		
1	On site	Site Address: Holyoake Mount, Gravesend, Kent Licence Holder Address: -	Waste Licence: Yes Site Reference: GR2 Waste Type: Inert, Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 01/01/1976 Licence Surrender: -	Operator: Gravesham Borough Council Licence Holder: Gravesham Borough Council First Recorded: - Last Recorded: -

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	0
---------------------	---

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	0
---------------------	---

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m

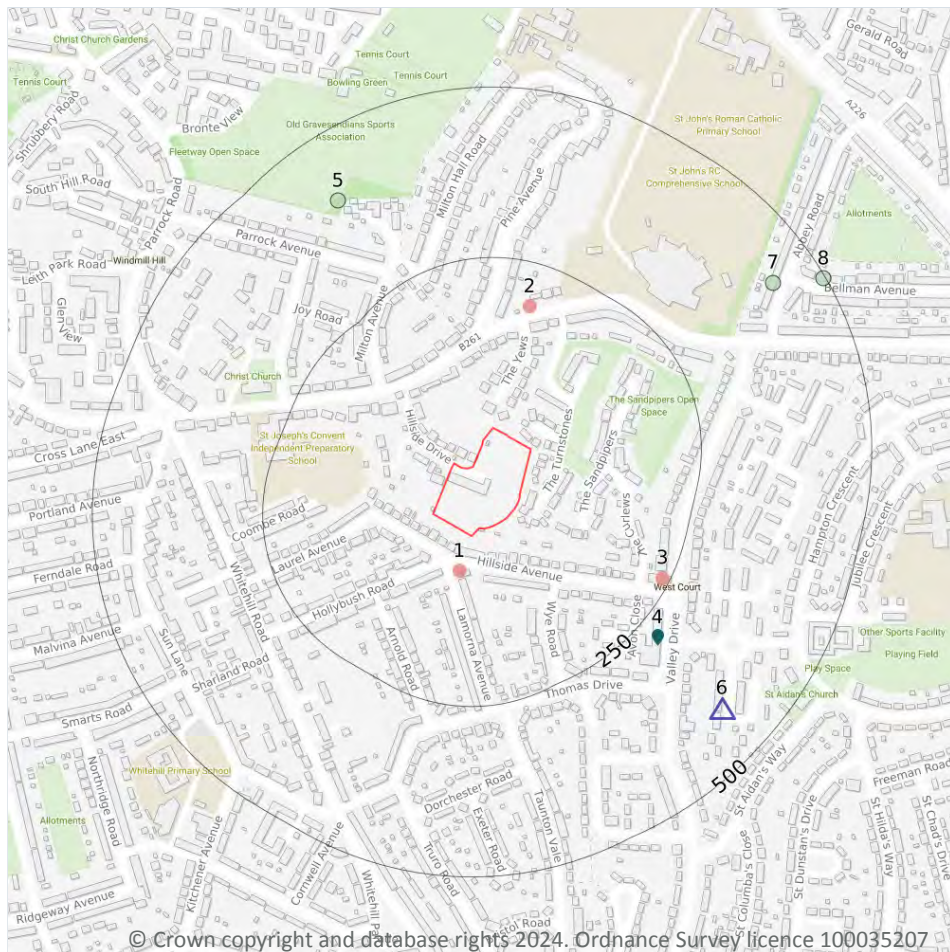
0

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

This data is sourced from the Environment Agency and Natural Resources Wales.



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- △ Current or recent petrol stations
- Licensed pollutant release (Part A(2)/B)
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

3

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on [page 27 >](#)

ID	Location	Company	Address	Activity	Category
1	55m S	Electricity Sub Station	Kent, DA12	Electrical Features	Infrastructure and Facilities
2	186m N	Electricity Sub Station	Kent, DA12	Electrical Features	Infrastructure and Facilities
3	239m SE	I C U Alarms	105, Hillside Avenue, Gravesend, Kent, DA12 5QN	Electronic Equipment	Industrial Products



This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m

1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on [page 27](#) >

ID	Location	Company	Address	LPG	Status
6	421m SE	OBSOLETE	Valley Drive, Gravesend, Kent, DA12 5RT	Not Applicable	Obsolete

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m

0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m

0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m

0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m

0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.



4.7 Regulated explosive sites

Records within 500m

0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m

0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m

1

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on [page 27 >](#)

ID	Location	Address	Details	
4	282m SE	Valley Dry Cleaners, 8 The Parade, Valley Drive, Gravesend, DA12 5RT	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0
---------------------	---

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	0
---------------------	---

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0
---------------------	---

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0
---------------------	---

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m

0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m

0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m

3

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on [page 27 >](#)

ID	Location	Details	
5	403m NW	Incident Date: 01/04/2003 Incident Identification: 147742 Pollutant: Specific Waste Materials Pollutant Description: Other Specific Waste Material	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
7	431m NE	Incident Date: 18/04/2003 Incident Identification: 152398 Pollutant: Specific Waste Materials Pollutant Description: Asbestos	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
8	496m NE	Incident Date: 29/07/2003 Incident Identification: 177607 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m**0**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m**0**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

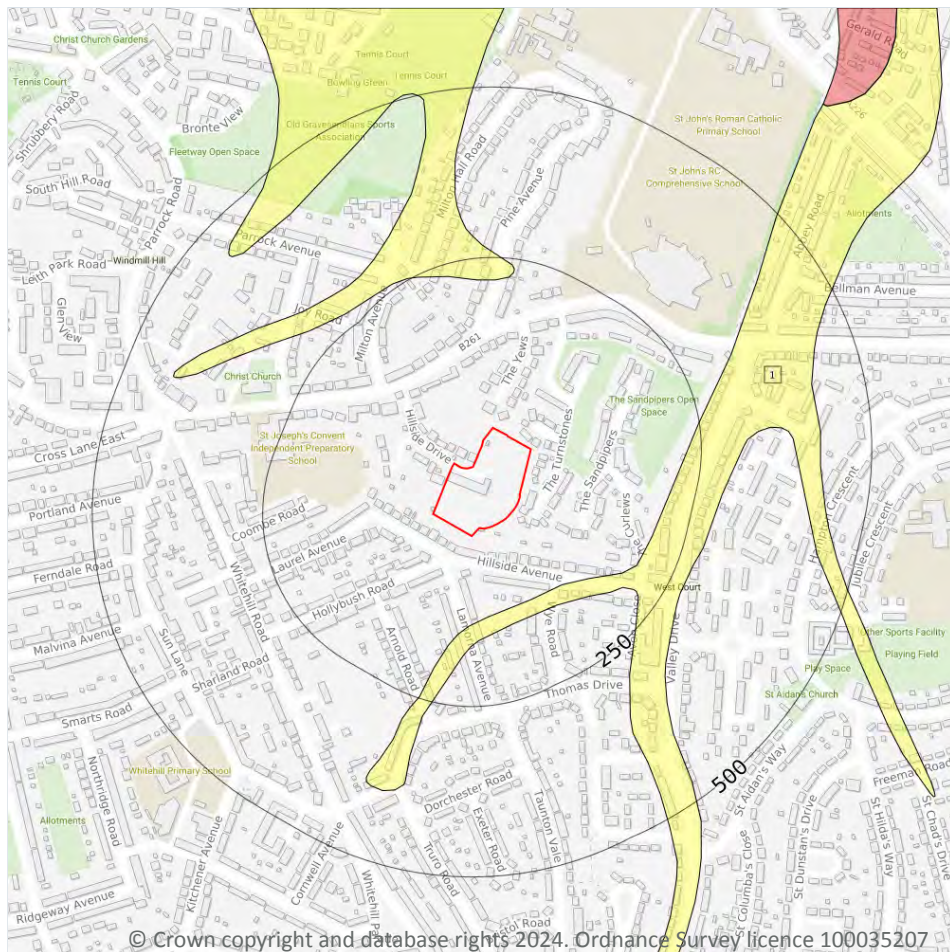
4.21 Pollution inventory radioactive waste

Records within 500m**0**

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



- Site Outline**
- Search buffers in metres (m)**
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive
 - Unknown

5.1 Superficial aquifer

Records within 500m

1

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on [page 33](#) >

ID	Location	Designation	Description
1	119m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

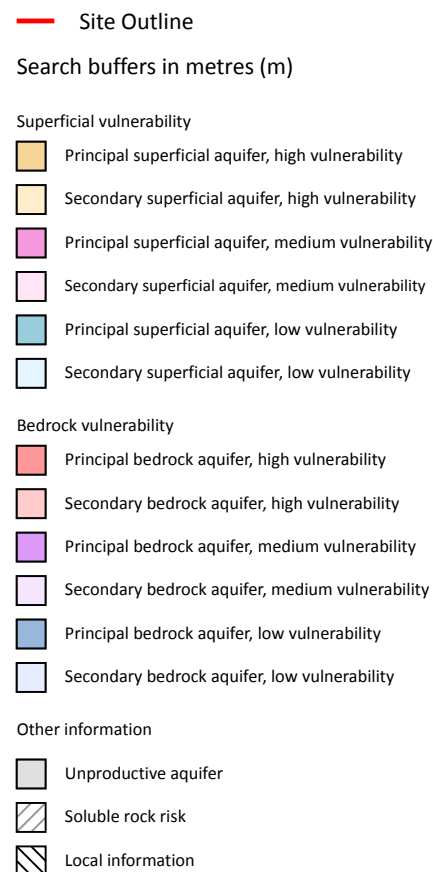
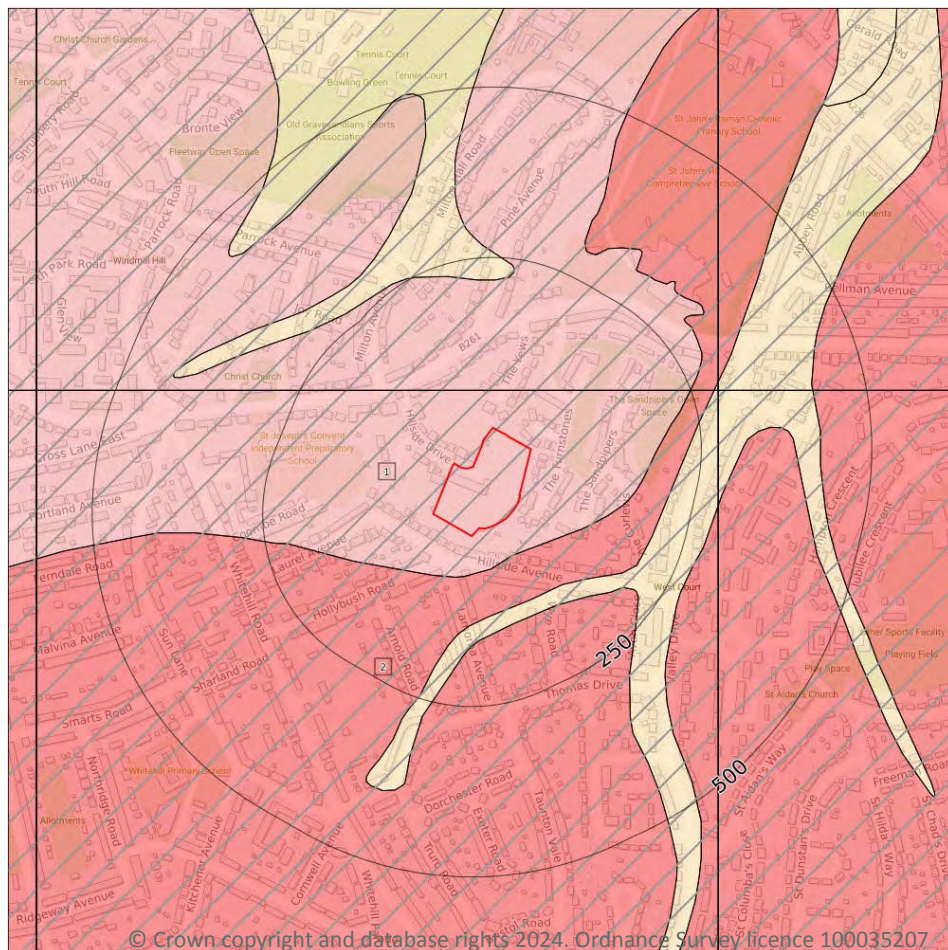
This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

1

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on [page 36](#) >



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	1
------------------------	----------

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
2	Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.	2.0%

This data is sourced from the British Geological Survey and the Environment Agency.

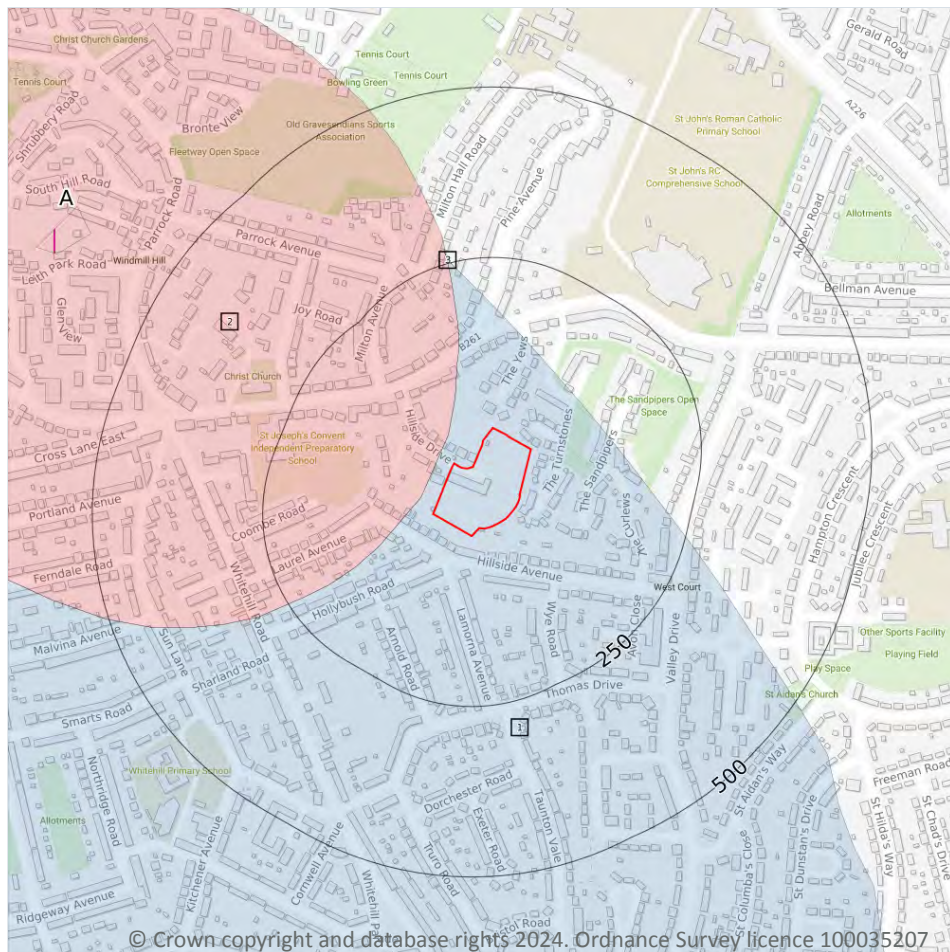
5.5 Groundwater vulnerability- local information

Records on site	0
------------------------	----------

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk ↗.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)
- Source Protection Zone 1
Inner catchment
- Source Protection Zone 2
Outer catchment
- Source Protection Zone 3
Total catchment
- Source Protection Zone 4
Zone of Special Interest
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

9

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on [page 38](#) >

ID	Location	Details	
A	630m NW	Status: Active Licence No: 9/40/01/0511/G Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BOREHOLES, ADITS AND CATCHPITS AT WINDMILL HILL PS Data Type: Poly4 Name: Southern Water Services Ltd Easting: 565060 Northing: 173270	Annual Volume (m ³): 17700000 Max Daily Volume (m ³): 92000 Original Application No: 169/0639D Original Start Date: 24/03/1986 Expiry Date: - Issue No: 100 Version Start Date: 27/11/2006 Version End Date: -
-	1440m NE	Status: Active Licence No: 9/40/01/0508/G Details: General Washing/Process Washing Direct Source: Southern Region Groundwater Point: POINT 1, BOREHOLE AT GRAVESEND SEWAGE WORKS IN KENT. Data Type: Point Name: Southern Water Services Ltd Easting: 566670 Northing: 174000	Annual Volume (m ³): 55000 Max Daily Volume (m ³): 340 Original Application No: 169/0449 Original Start Date: 23/03/1989 Expiry Date: - Issue No: 100 Version Start Date: 27/11/2006 Version End Date: -
-	1575m SW	Status: Historical Licence No: SO/040/0001/019 Details: Spray Irrigation - Storage Direct Source: Southern Region Groundwater Point: MID KENT GOLF CLUB BOREHOLE Data Type: Point Name: Mid Kent Golf Club Limited Easting: 564325 Northing: 171869	Annual Volume (m ³): 10000 Max Daily Volume (m ³): 50 Original Application No: NPS/WR/013047 Original Start Date: 29/10/2014 Expiry Date: 31/03/2024 Issue No: 1 Version Start Date: 29/10/2014 Version End Date: -
-	1575m SW	Status: Active Licence No: SO/040/0001/019/R01 Details: Spray Irrigation - Storage Direct Source: Southern Region Groundwater Point: MID KENT GOLF CLUB BOREHOLE Data Type: Point Name: Mid Kent Golf Club Limited Easting: 564325 Northing: 171869	Annual Volume (m ³): 10000 Max Daily Volume (m ³): 50 Original Application No: NPS/WR/0039714 Original Start Date: 24/04/2024 Expiry Date: 31/03/2036 Issue No: 1 Version Start Date: 24/04/2024 Version End Date: -
-	1724m NE	Status: Historical Licence No: 9/40/01/0498/G Details: Mineral Washing Direct Source: Southern Region Groundwater Point: POINT A, S DRIFT, UNDERGROUND GRAVEL STRATA (THAMES BALLAST) Data Type: Point Name: J Clubb Ltd Easting: 566925 Northing: 174152	Annual Volume (m ³): 83969 Max Daily Volume (m ³): 336 Original Application No: NPS/WR/022001 Original Start Date: 03/05/1976 Expiry Date: - Issue No: 101 Version Start Date: 26/05/2016 Version End Date: -



ID	Location	Details	
-	1724m NE	Status: Active Licence No: 9/40/01/0498/G Details: Mineral Washing Direct Source: Southern Region Groundwater Point: POINT A, S DRIFT, UNDERGROUND GRAVEL STRATA (THAMES BALLAST) Data Type: Point Name: J Clubb Ltd Easting: 566925 Northing: 174152	Annual Volume (m ³): 83689 Max Daily Volume (m ³): 336 Original Application No: NPS/WR/022001 Original Start Date: 03/05/1976 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2024 Version End Date: -
-	1726m NE	Status: Historical Licence No: 9/40/01/0498/G Details: Mineral Washing Direct Source: Southern Region Groundwater Point: POINT A, S DRIFT, UNDERGROUND GRAVEL STRATA (THAMES BALLAST) Data Type: Point Name: J Clubb Ltd Easting: 566960 Northing: 174120	Annual Volume (m ³): 33186 Max Daily Volume (m ³): 91 Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
-	1727m NE	Status: Historical Licence No: 9/40/01/0498/G Details: Mineral Washing Direct Source: Southern Region Groundwater Point: BOREHOLE B, UNDERGROUND STRATA RIVER TERRACE GRAVELS Data Type: Point Name: J Clubb Ltd Easting: 566929 Northing: 174152	Annual Volume (m ³): 83969 Max Daily Volume (m ³): 336 Original Application No: NPS/WR/022001 Original Start Date: 03/05/1976 Expiry Date: - Issue No: 101 Version Start Date: 26/05/2016 Version End Date: -
-	1727m NE	Status: Active Licence No: 9/40/01/0498/G Details: Mineral Washing Direct Source: Southern Region Groundwater Point: BOREHOLE B, UNDERGROUND STRATA RIVER TERRACE GRAVELS Data Type: Point Name: J Clubb Ltd Easting: 566929 Northing: 174152	Annual Volume (m ³): 83689 Max Daily Volume (m ³): 336 Original Application No: NPS/WR/022001 Original Start Date: 03/05/1976 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2024 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.



5.7 Surface water abstractions

Records within 2000m

0

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m

1

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on [page 38 >](#)

ID	Location	Details	
A	630m NW	Status: Active Licence No: 9/40/01/0511/G Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BOREHOLES, ADITS AND CATCHPITS AT WINDMILL HILL PS Data Type: Poly4 Name: Southern Water Services Ltd Easting: 565060 Northing: 173270	Annual Volume (m ³): 17700000 Max Daily Volume (m ³): 92000 Original Application No: 169/0639D Original Start Date: 24/03/1986 Expiry Date: - Issue No: 100 Version Start Date: 27/11/2006 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m

3

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

Features are displayed on the Abstractions and Source Protection Zones map on [page 38 >](#)

ID	Location	Type	Description
1	On site	2	Outer catchment
2	24m W	1	Inner catchment
3	248m N	3	Total catchment



This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m

0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.



6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

0

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

0

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1
------------------------	----------

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on [page 43](#) >

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	On site	Coastal Catchment	Not part of a river WB catchment	130	Lower Medway	Medway

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	0
---------------------------	----------

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	1
------------------------	----------

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on [page 43](#) >

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	North Kent Medway Chalk	GB40601G500300 ↗	Poor	Poor	Poor	2019



This data is sourced from the Environment Agency and Natural Resources Wales.



7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m

0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m

0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m

0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.



7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m

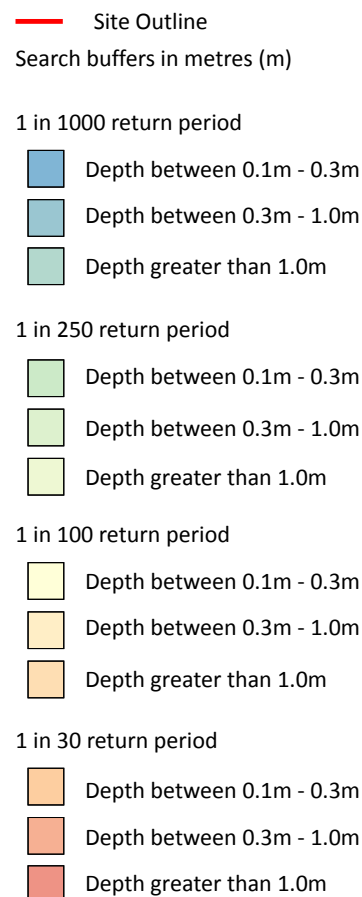
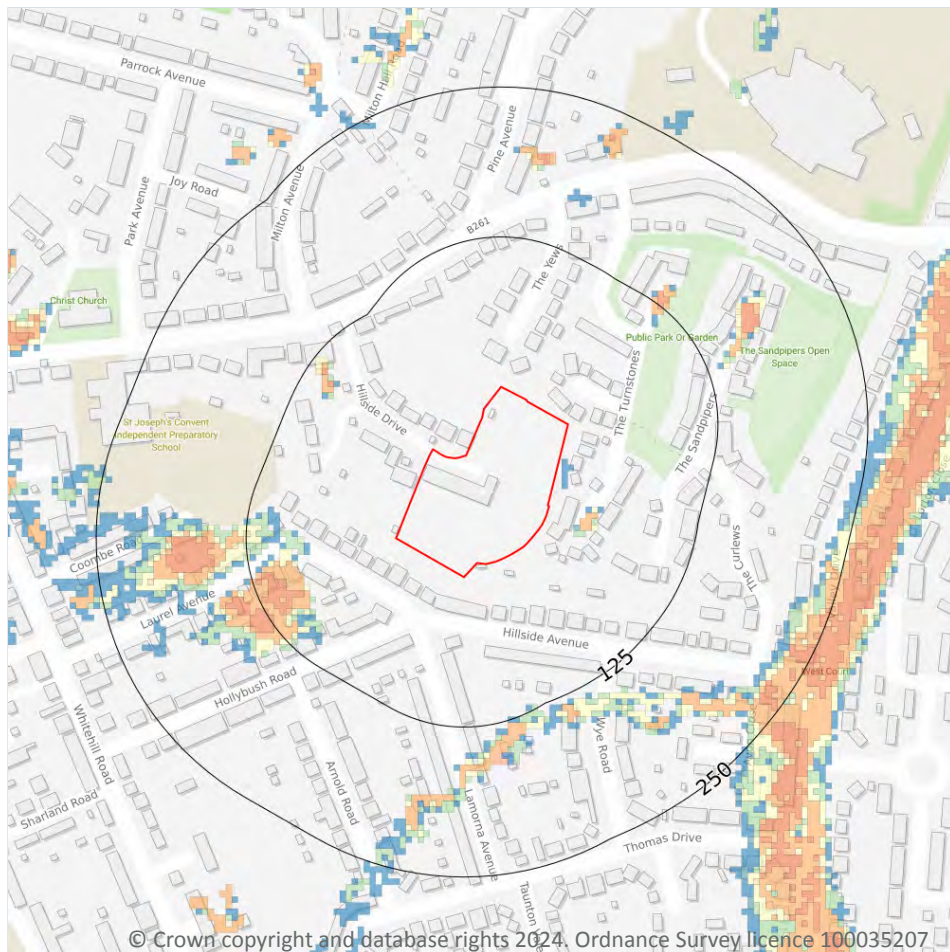
0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.



8 Surface water flooding



8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

1 in 30 year, 0.1m - 0.3m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on [page 49 >](#)

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

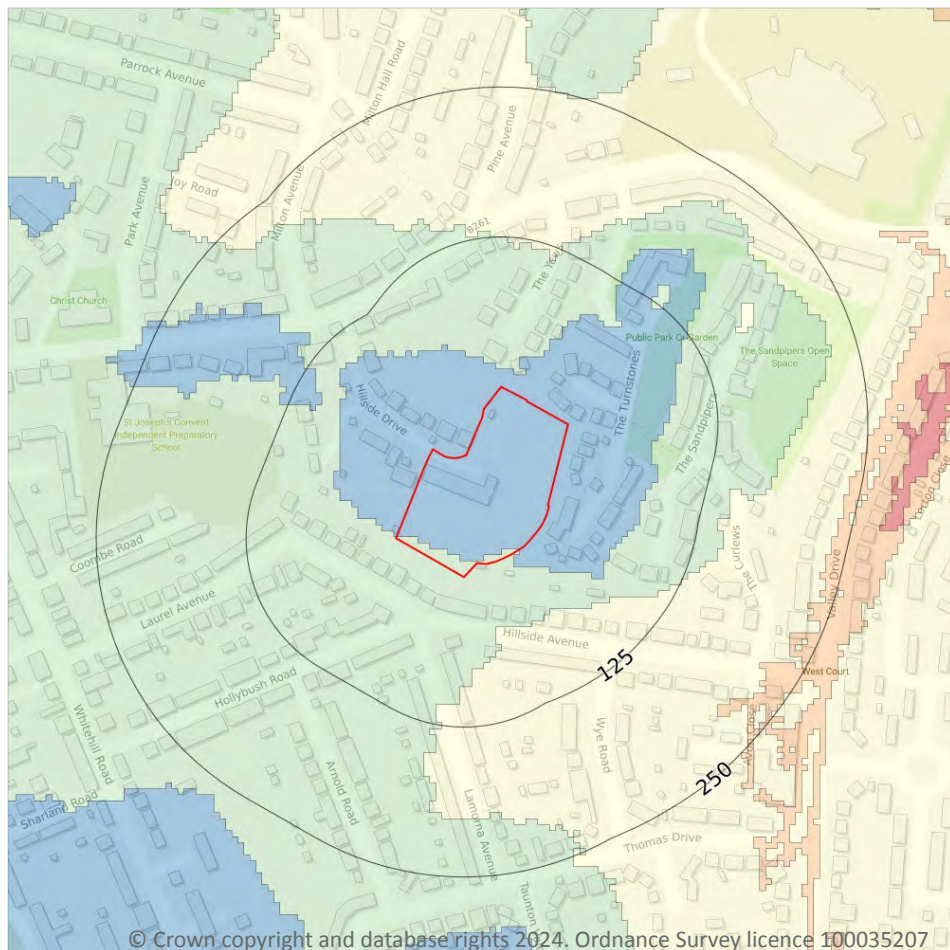
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



— Site Outline
Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

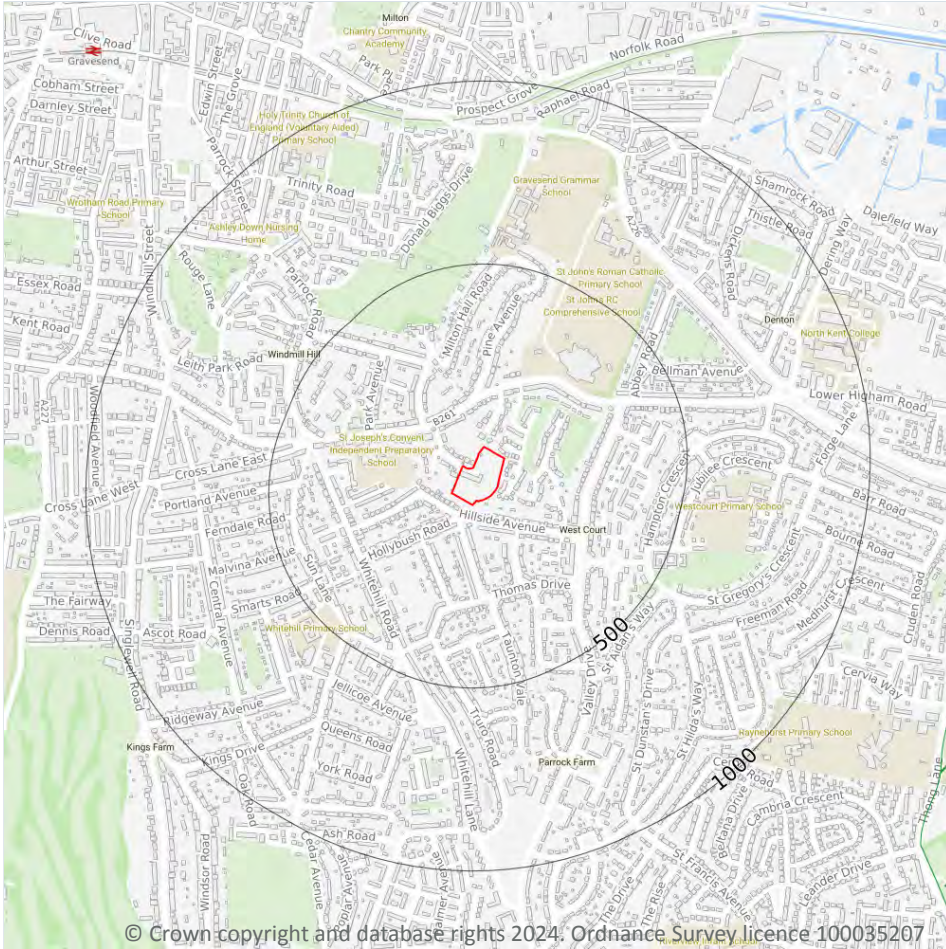
Moderate

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on [page 51](#) >

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- X Conserved wetland sites (Ramsar sites)
- Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

1

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on [page 52 >](#)

ID	Location	Name	Data source
-	1497m NE	South Thames Estuary and Marshes	Natural England



This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	1
-----------------------------	----------

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

Features are displayed on the Environmental designations map on [page 52 >](#)

ID	Location	Site	Details
-	1519m E	Name: Thames Estuary & Marshes Site status: Listed Data source: Natural England	Overview: A complex of brackish, floodplain grazing marsh ditches, saline lagoons and intertidal saltmarsh and mudflat. These habitats together support internationally important numbers of wintering waterfowl. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates. Ramsar criteria: Ramsar criterion 2 The site supports one endangered plant species and at least 14 nationally scarce plants of wetland habitats. The site also supports more than 20 British Red Data Book invertebrates.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0
-----------------------------	----------

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0
-----------------------------	----------

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m

0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m

0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m

0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m

0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m**0**

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m**0**

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m**1**

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on [page 52 >](#)

ID	Location	Name	Local Authority name
1	1339m E	London	Gravesham

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m**0**

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m

2

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

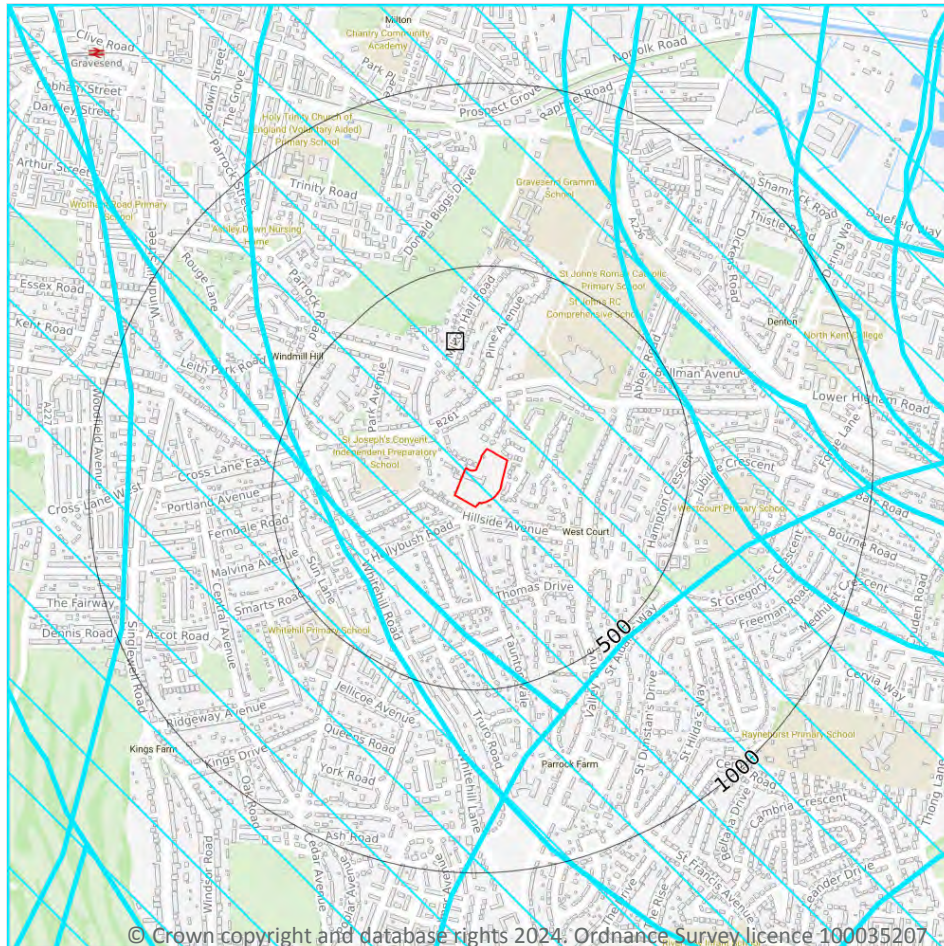
Location	Name	Type	NVZ ID	Status
904m NE	COASTAL STREAMS TO LOWER THAMES NVZ	Surface Water	665	Existing



Location	Name	Type	NVZ ID	Status
957m NE	North Kent	Groundwater	65	Existing

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site

1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on [page 58 >](#)

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha. Rural residential - Any residential development of 100 or more houses outside existing settlements/urban areas. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t). Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more. Notes: Strategic solutions for recreational impacts are in place. Please contact your Local Planning Authority as they have the information to advise on specific requirements.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	1
----------------------	---

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on [page 58 >](#)

ID: -

Location: 1497m NE

SSSI name: South Thames Estuary and Marshes

Unit name: Westcourt And Great Clane Marshes

Broad habitat: Neutral Grassland - Lowland

Condition: Unfavourable - No change

Reportable features:

Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Bearded tit, Panurus biarmicus	Not Recorded	01/01/1900
Aggregations of breeding birds - Garganey, Anas querquedula	Not Recorded	01/01/1900



Feature name	Feature condition	Date of assessment
Aggregations of breeding birds - Pintail, <i>Anas acuta</i>	Unfavourable - Declining	03/03/2021
Aggregations of breeding birds - Shoveler, <i>Anas clypeata</i>	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Avocet, <i>Recurvirostra avosetta</i>	Favourable	02/03/2021
Aggregations of non-breeding birds - Black-tailed godwit, <i>Limosa limosa islandica</i>	Favourable	03/03/2021
Aggregations of non-breeding birds - Curlew, <i>Numenius arquata</i>	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Dunlin, <i>Calidris alpina alpina</i>	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Gadwall, <i>Mareca strepera</i>	Favourable	03/03/2021
Aggregations of non-breeding birds - Greenshank, <i>Tringa nebularia</i>	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Grey plover, <i>Pluvialis squatarola</i>	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Hen harrier, <i>Circus cyaneus</i>	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Knot, <i>Calidris canutus</i>	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Pintail, <i>Anas acuta</i>	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Redshank, <i>Tringa totanus</i>	Unfavourable - Declining	03/03/2021
Aggregations of non-breeding birds - Ringed plover, <i>Charadrius hiaticula</i>	Favourable	03/03/2021
Aggregations of non-breeding birds - Shelduck, <i>Tadorna tadorna</i>	Not Recorded	01/01/1900
Aggregations of non-breeding birds - Shoveler, <i>Anas clypeata</i>	Favourable	03/03/2021
Aggregations of non-breeding birds - Teal, <i>Anas crecca</i>	Favourable	03/03/2021
Aggregations of non-breeding birds - White-fronted goose, <i>Anser albifrons albifrons</i>	Unfavourable - Declining	03/03/2021
Assemblages of breeding birds - Lowland damp grasslands	Not Recorded	01/01/1900
Ditches	Not Recorded	01/01/1900
Vascular plant assemblage	Not Recorded	01/01/1900

This data is sourced from Natural England and Natural Resources Wales.



11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m

0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.



This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m

0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m

0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m

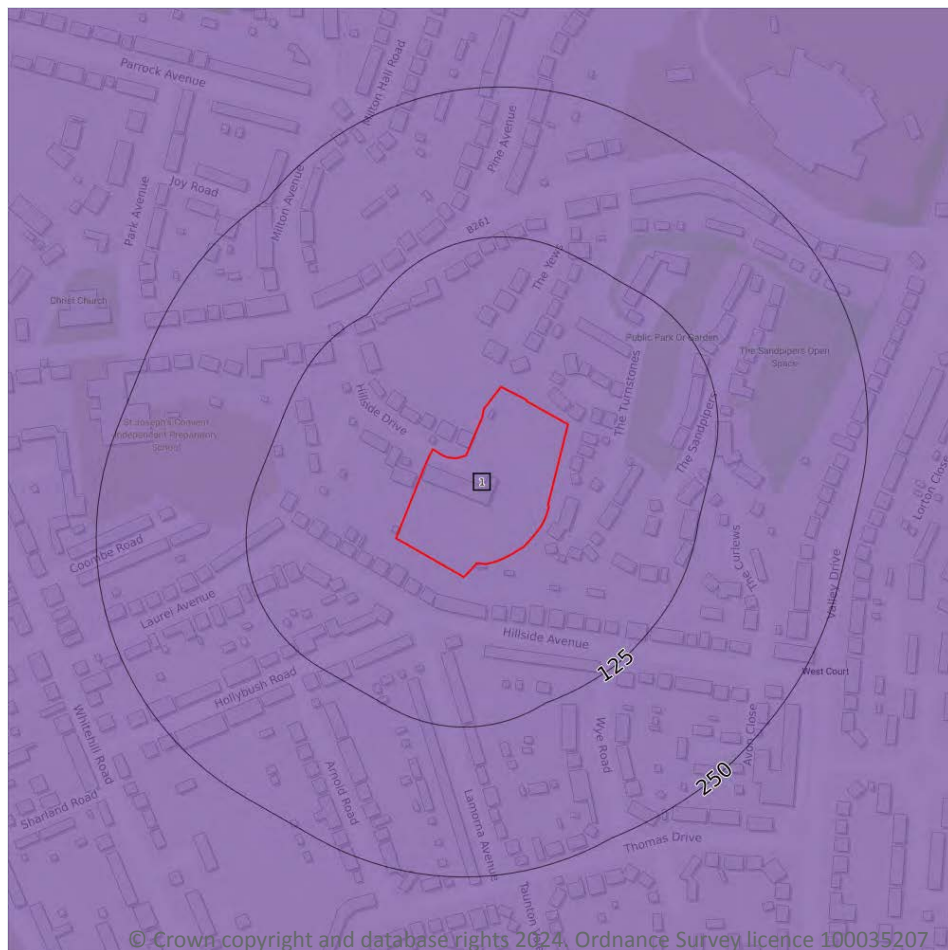
0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on [page 63](#) >

ID	Location	Classification	Description
1	On site	Urban	Non-agricultural/no quality assigned

This data is sourced from Natural England.



12.2 Open Access Land

Records within 250m

0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m

0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m

0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m

0

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m

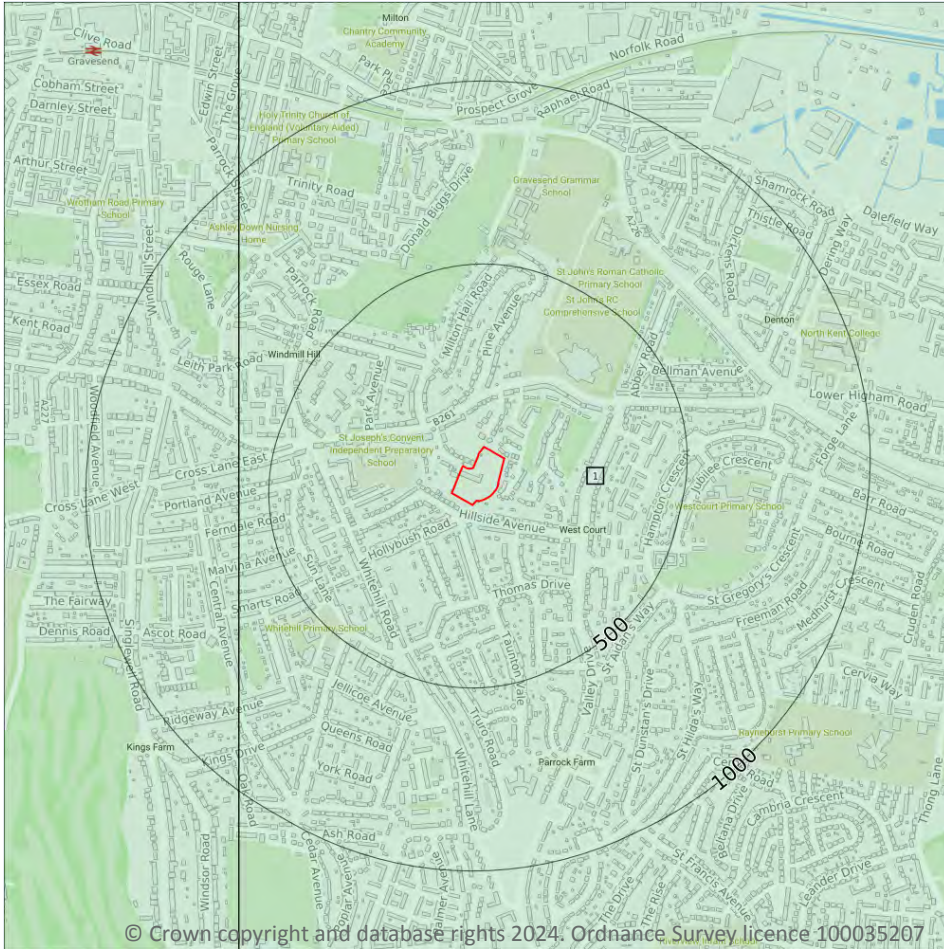
0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

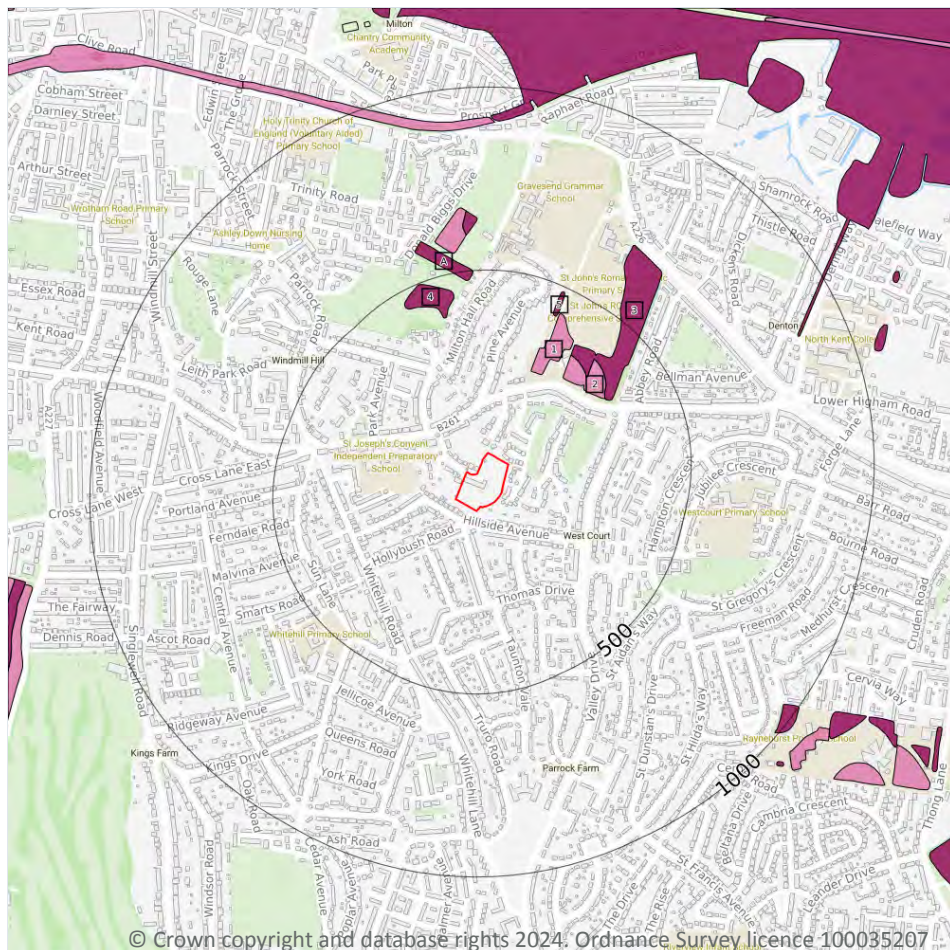
Features are displayed on the Geology 1:10,000 scale - Availability map on [page 66](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	TQ67SE

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Artificial and made ground



— Site Outline
Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m

6

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on [page 67](#) >

ID	Location	LEX Code	Description	Rock description
1	253m NE	WGR-VOID	Worked Ground (Undivided)	Void
2	279m NE	WGR-VOID	Worked Ground (Undivided)	Void
3	319m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	387m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

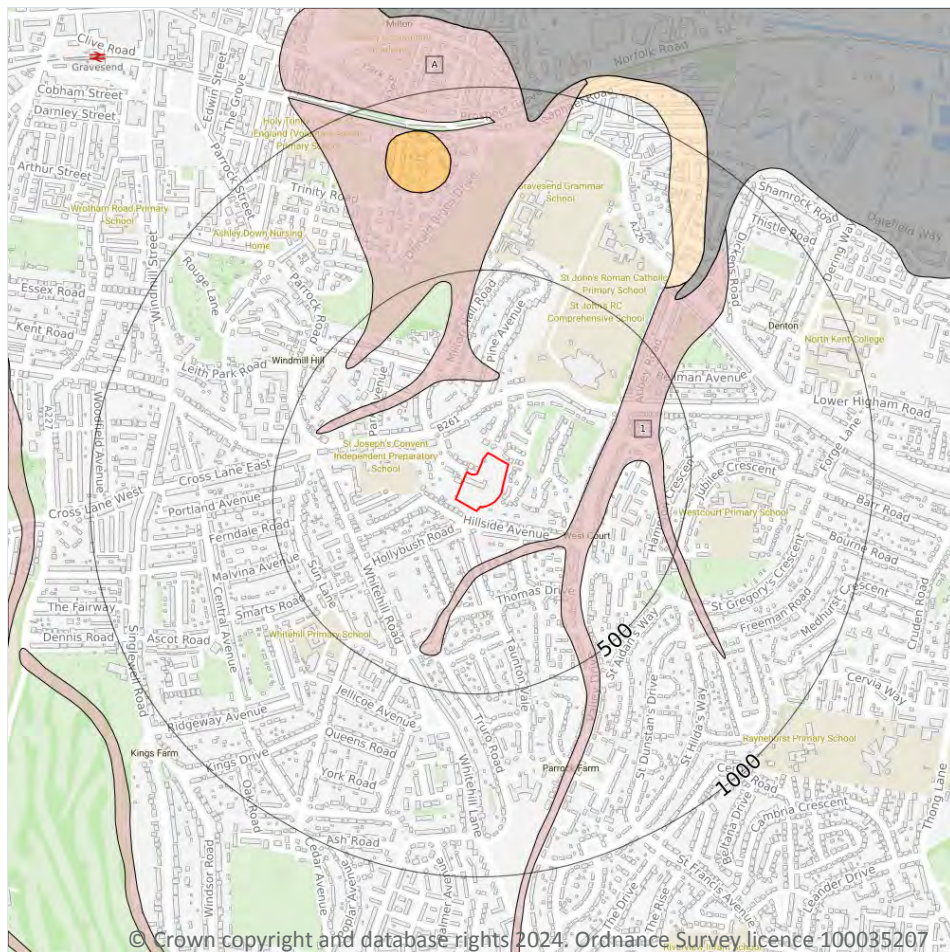


ID	Location	LEX Code	Description	Rock description
5	417m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	475m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



— Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m

2

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 69](#) >

ID	Location	LEX Code	Description	Rock description
1	138m S	HEAD-DMTN	Head - Diamicton	Diamicton
A	196m N	HEAD-DMTN	Head - Diamicton	Diamicton

This data is sourced from the British Geological Survey.



14.4 Landslip (10k)

Records within 500m

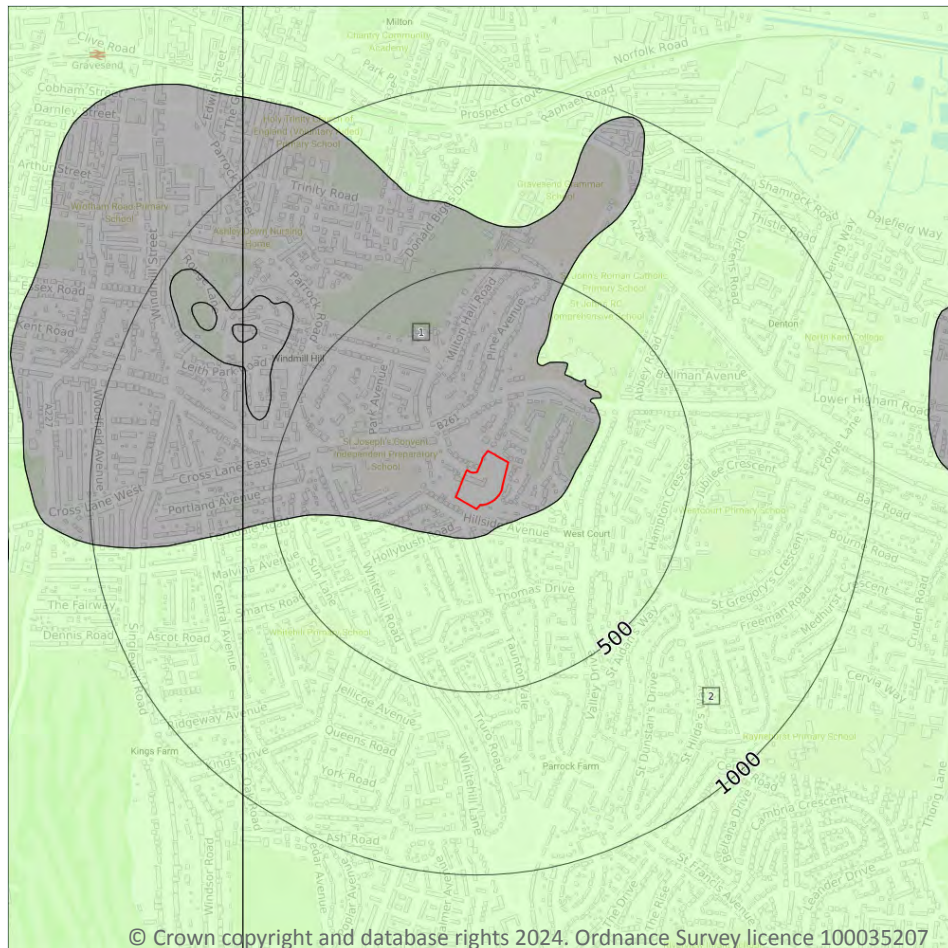
0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

..... Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m

2

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 71 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	TAB-SANDU	Thanet Sand Formation - Sand	Thanetian Age
2	70m S	SECK-CHLK	Seaford Chalk Formation - Chalk	Santonian Age - Coniacian Age

This data is sourced from the British Geological Survey.



14.6 Bedrock faults and other linear features (10k)

Records within 500m

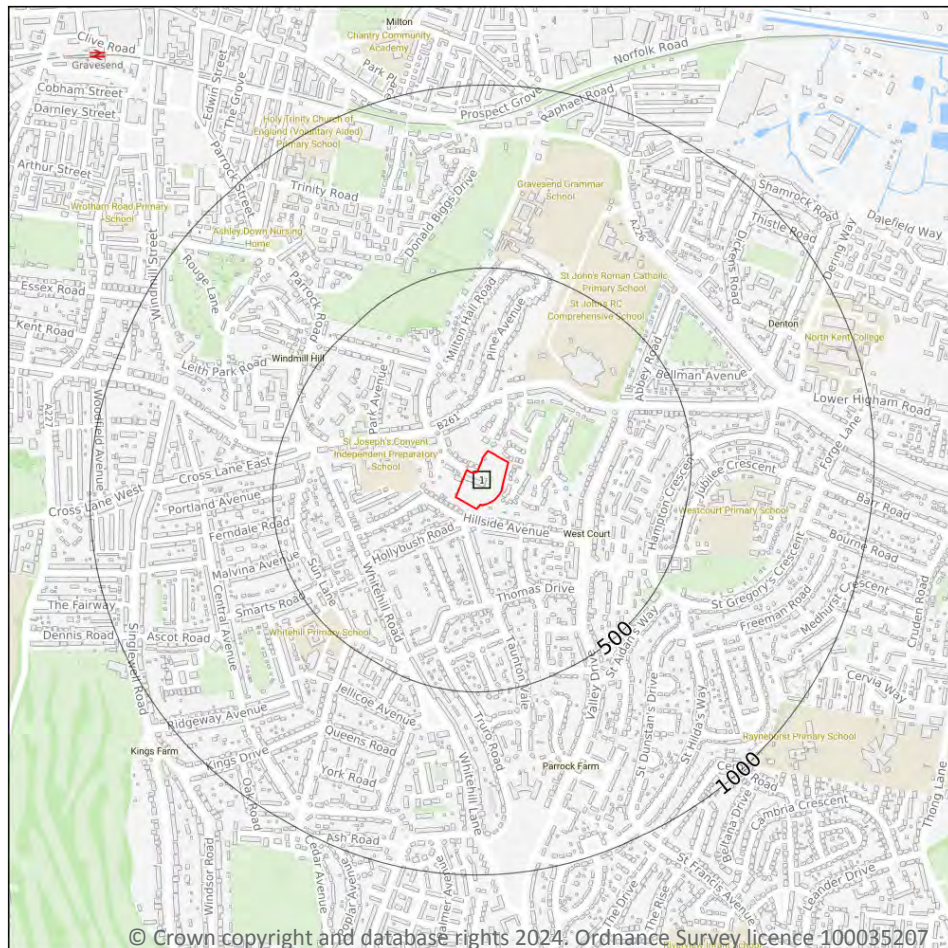
0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



— Site Outline
Search buffers in metres (m)

☐ Geological map tile

15.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

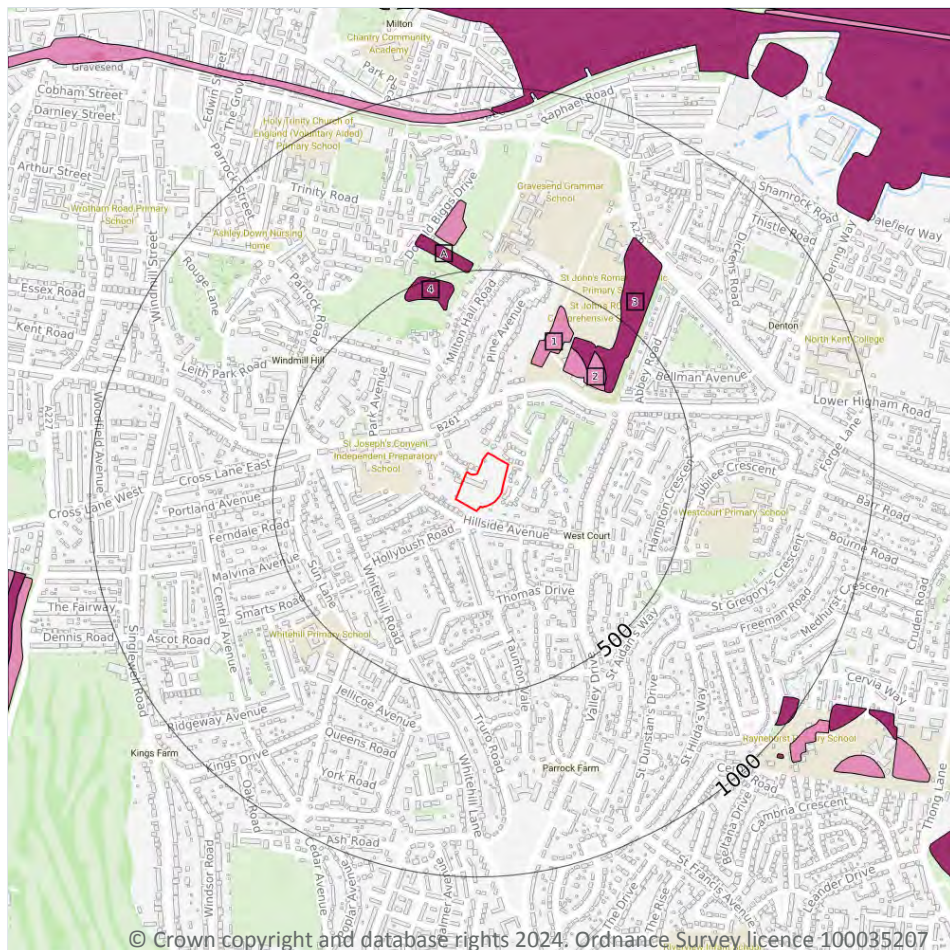
Features are displayed on the Geology 1:50,000 scale - Availability map on [page 73](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW271_dartford_v4

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Artificial and made ground



- Site Outline
- Search buffers in metres (m)
- Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m

5

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on [page 74](#) >

ID	Location	LEX Code	Description	Rock description
1	272m N	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
2	297m NE	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
3	331m NE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
4	407m N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT



ID	Location	LEX Code	Description	Rock description
A	496m N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m

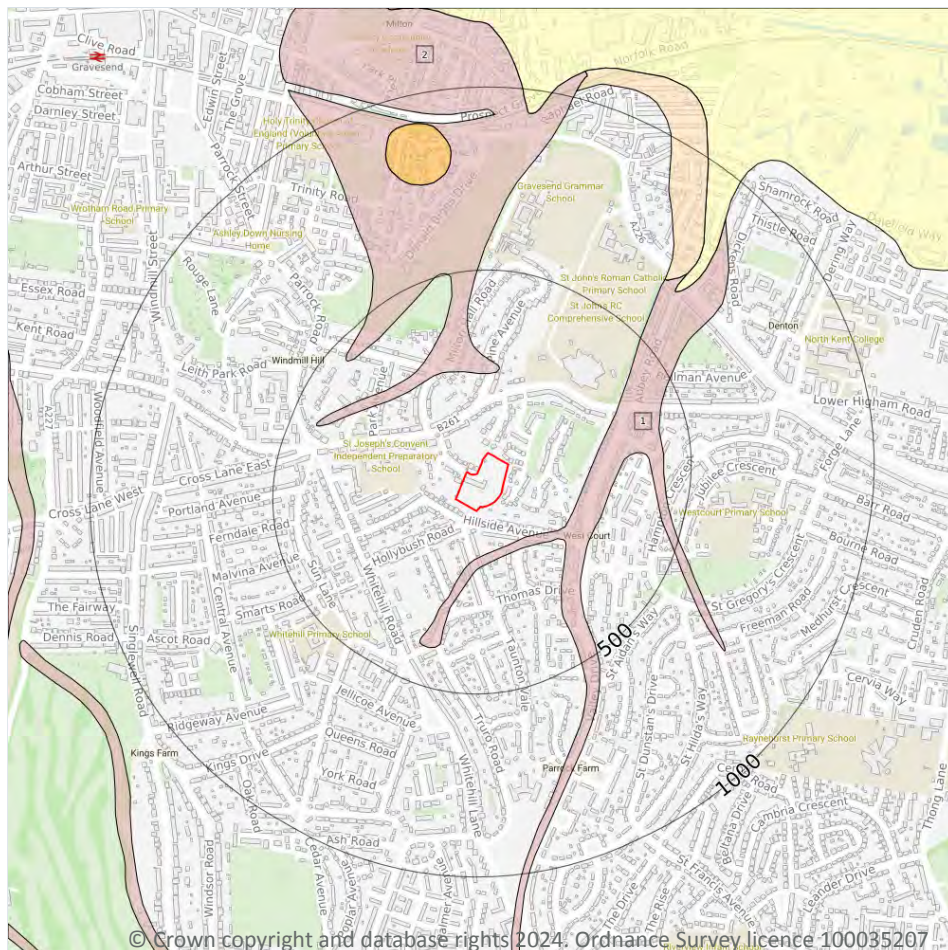
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

2

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on [page 76](#) >

ID	Location	LEX Code	Description	Rock description
1	119m S	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
2	217m N	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.



15.5 Superficial permeability (50k)

Records within 50m

0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

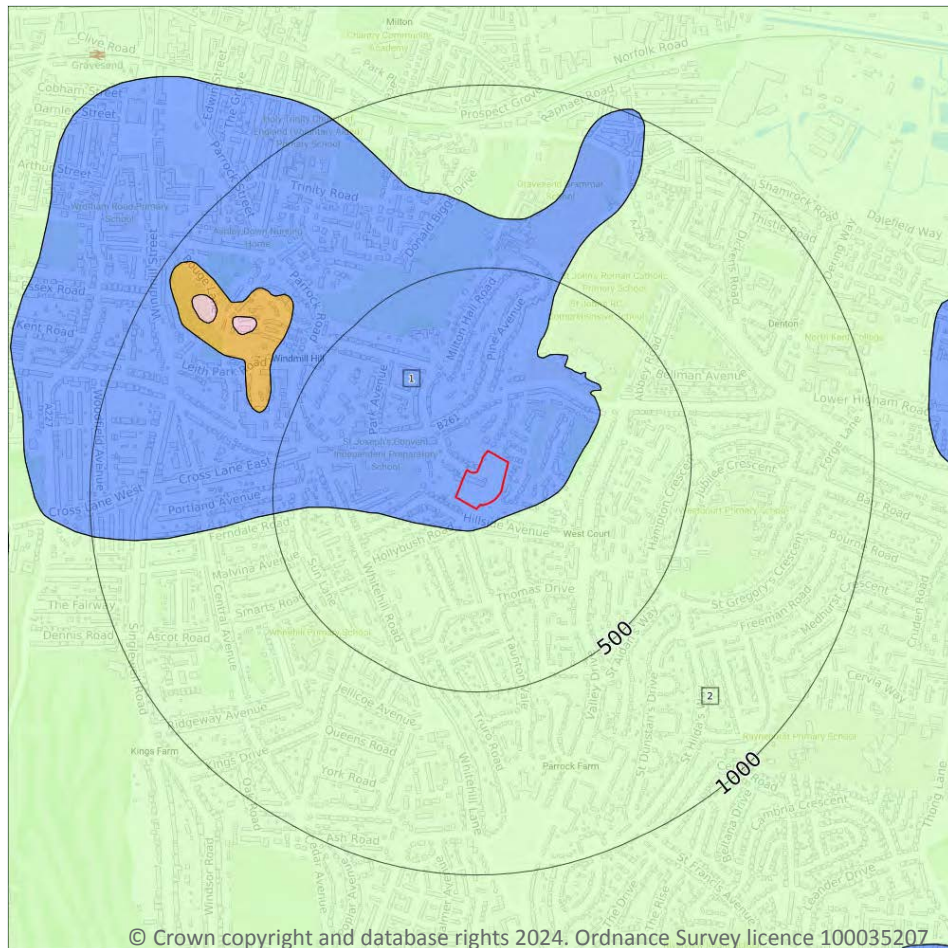
Records within 50m

0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

..... Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

2

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 78 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	TAB-S	THANET FORMATION - SAND	THANETIAN
2	51m S	LSNCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	TURONIAN

This data is sourced from the British Geological Survey.



15.9 Bedrock permeability (50k)

Records within 50m**1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Intergranular	High	High

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m**0**

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.



16 Boreholes

16.1 BGS Boreholes

Records within 250m

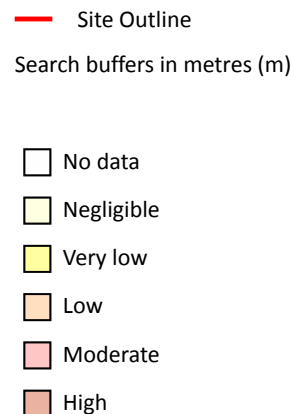
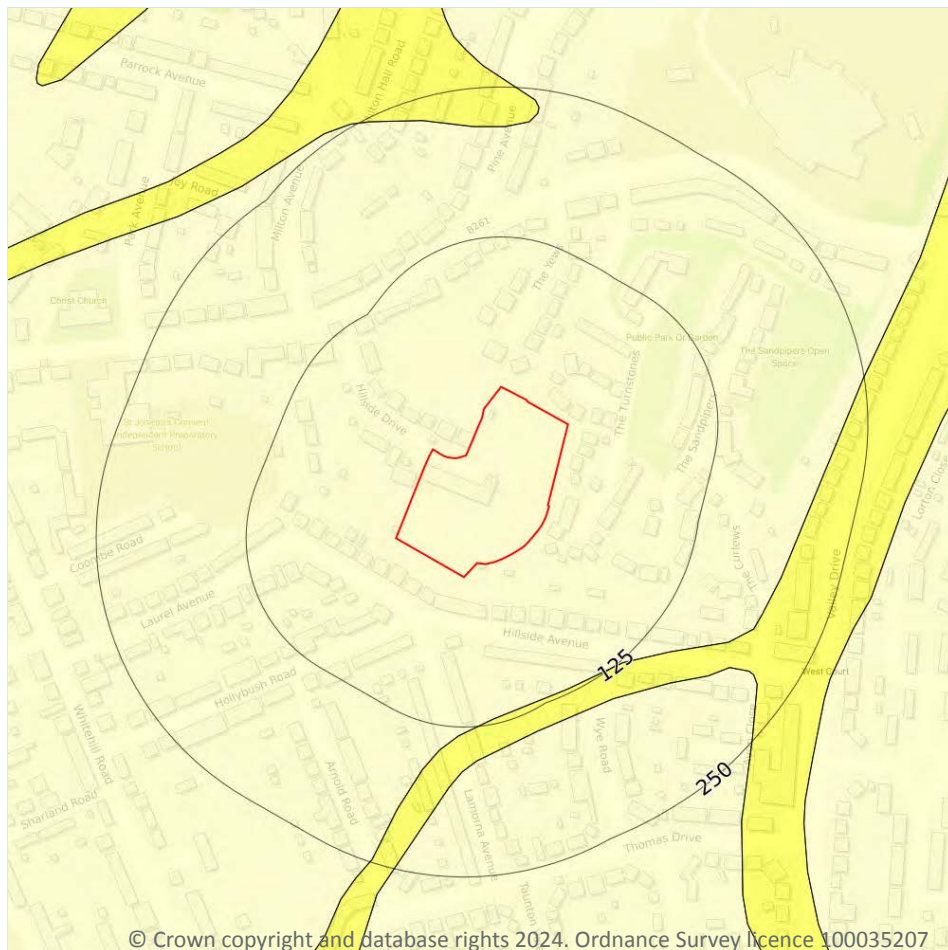
0

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



17.1 Shrink swell clays

Records within 50m

1

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

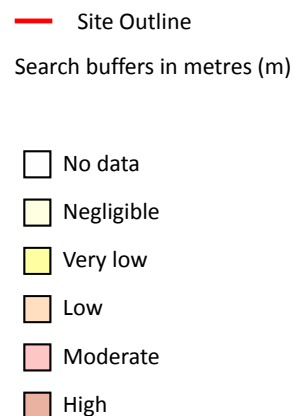
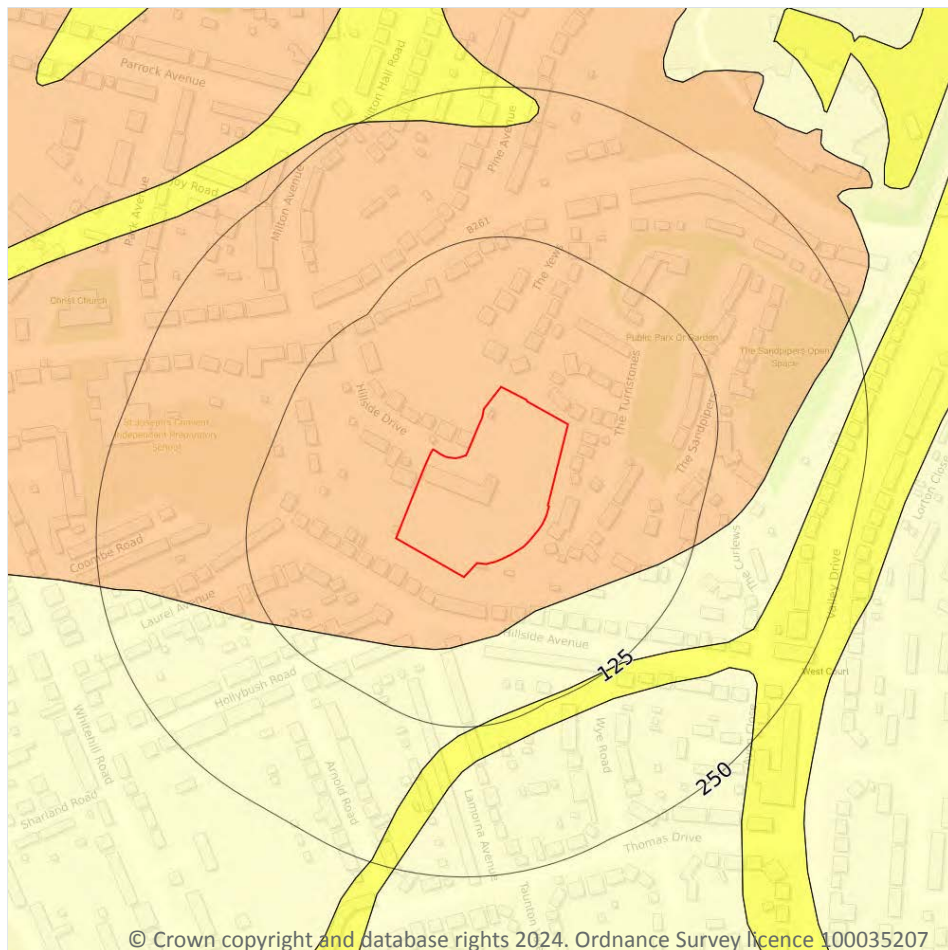
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 81 >](#)

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



17.2 Running sands

Records within 50m

1

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

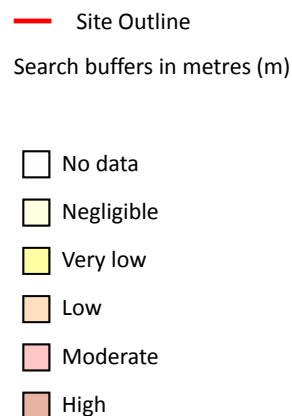
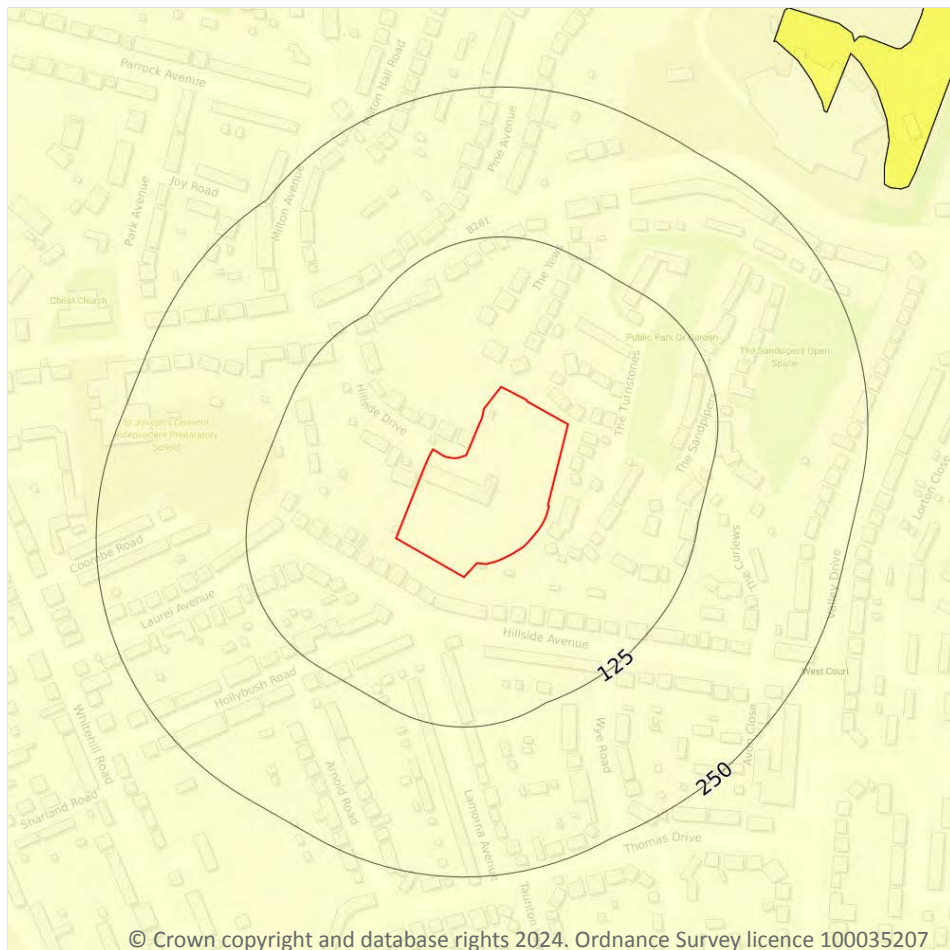
Features are displayed on the Natural ground subsidence - Running sands map on [page 82 >](#)

Location	Hazard rating	Details
On site	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



17.3 Compressible deposits

Records within 50m

1

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

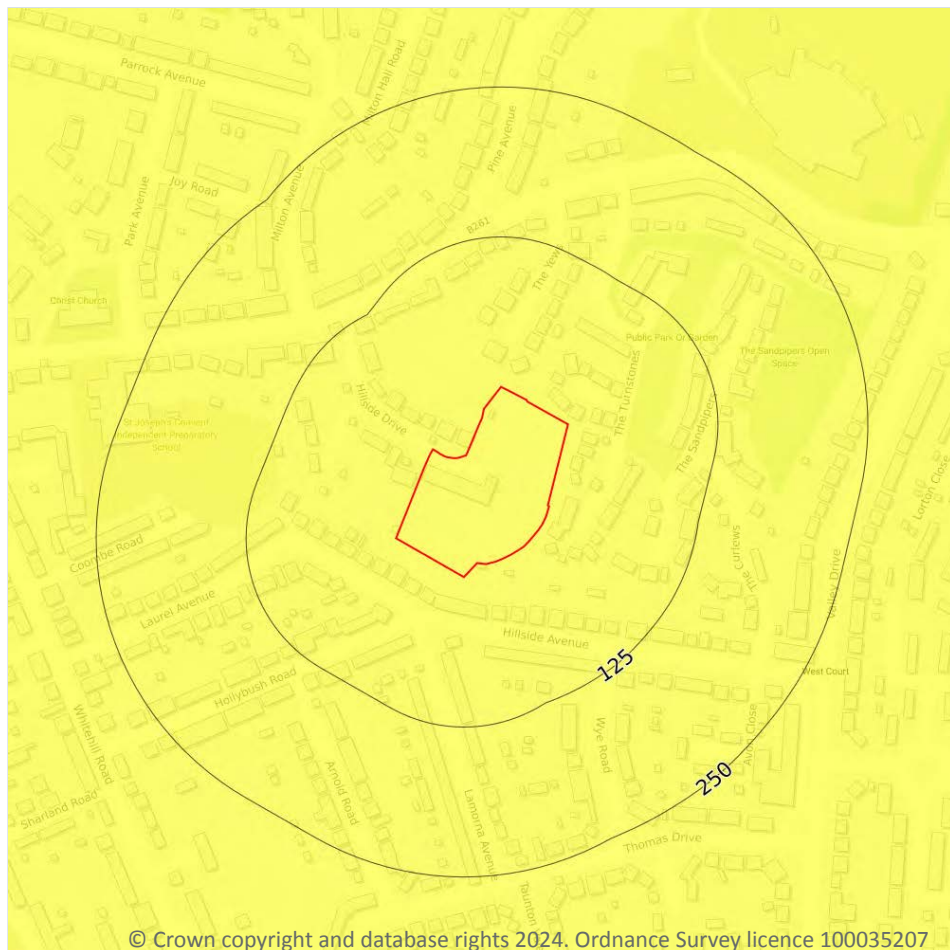
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 83](#) >

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.4 Collapsible deposits

Records within 50m

1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

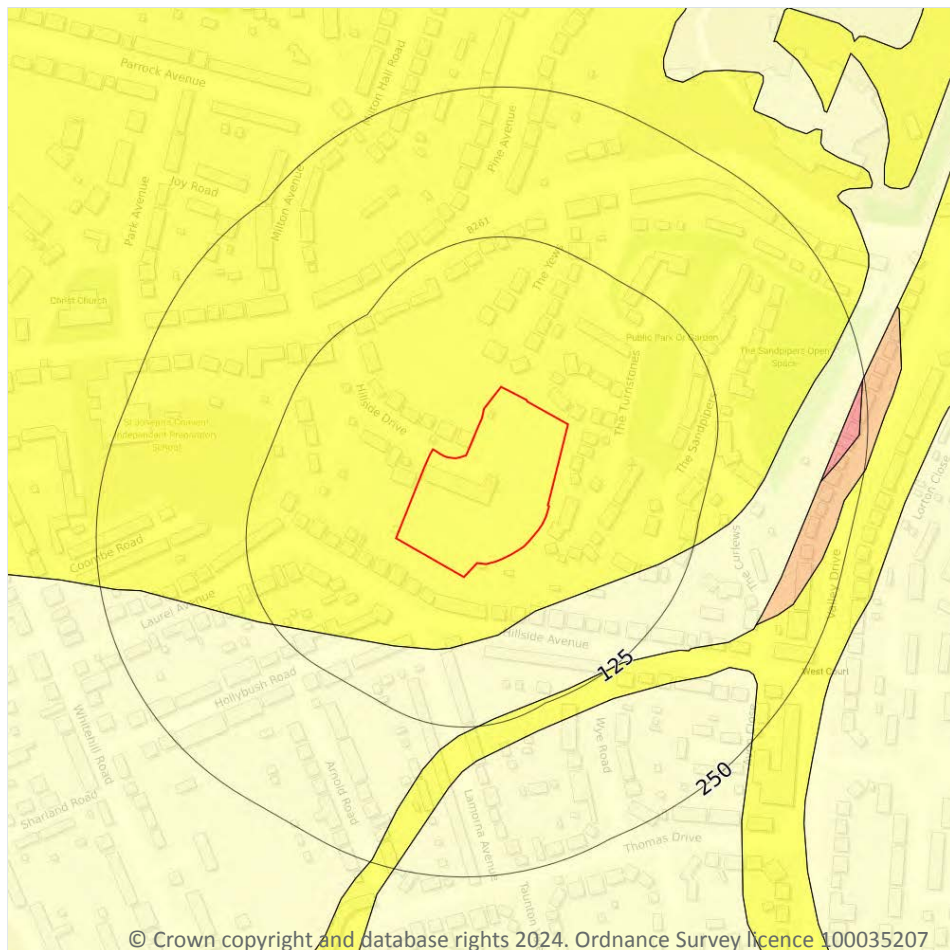
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 84](#) >

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.5 Landslides

Records within 50m

1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

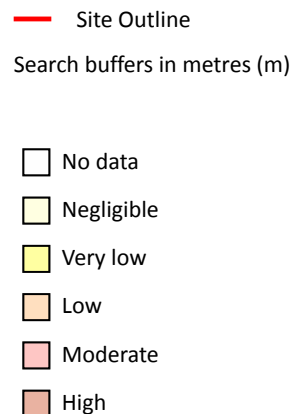
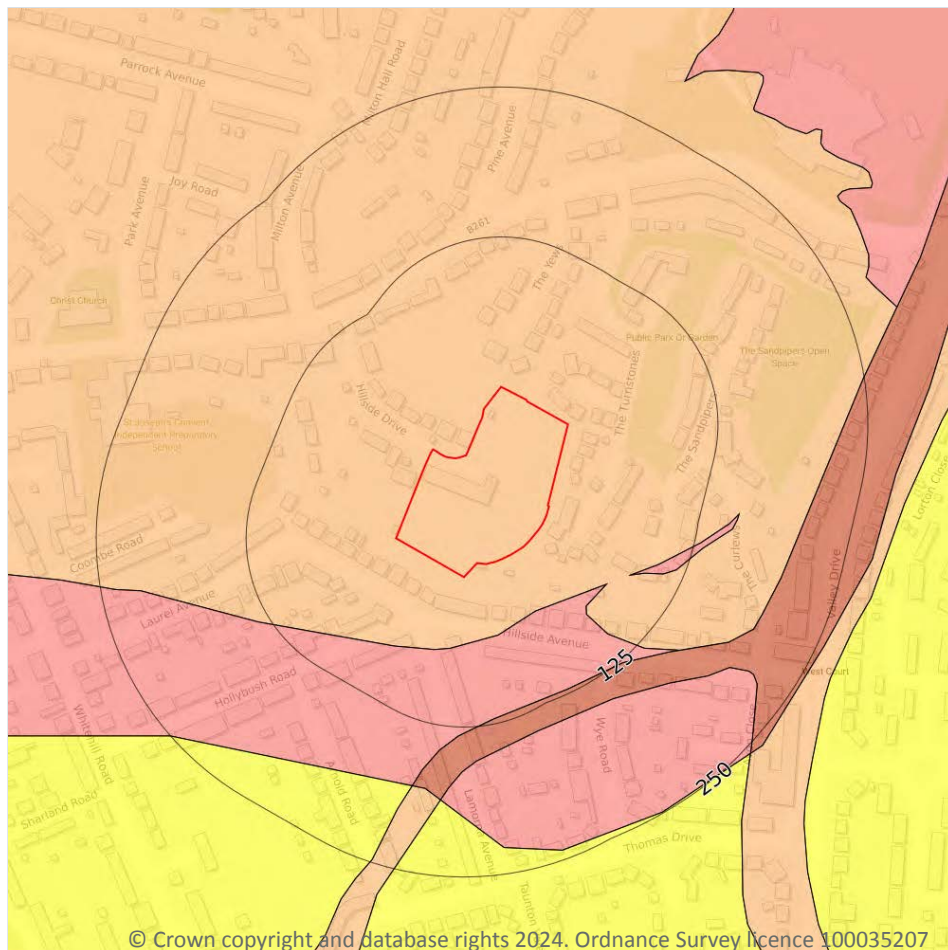
Features are displayed on the Natural ground subsidence - Landslides map on [page 85 >](#)

Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 86](#)

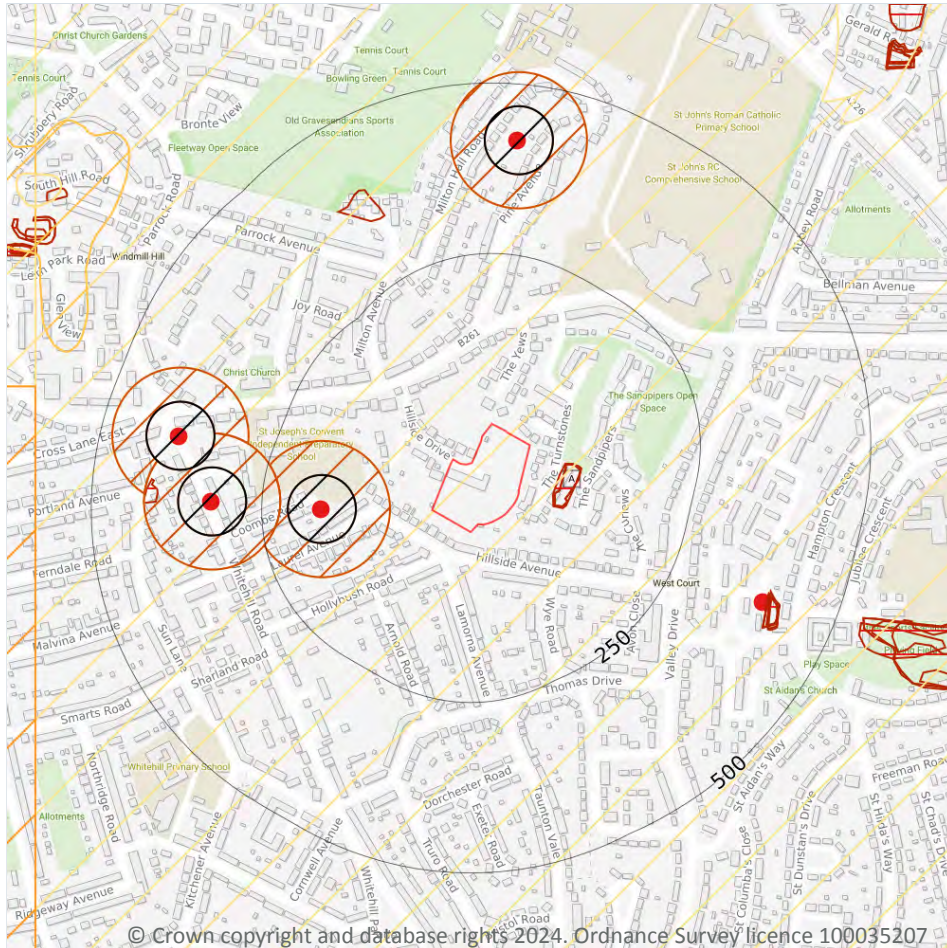
Location	Hazard rating	Details
On site	Low	Soluble rocks are present within the ground. Some dissolution features may be present. Potential for difficult ground conditions are at a level where they may be considered, localised subsidence need not be considered except in exceptional circumstances.



This data is sourced from the British Geological Survey.



18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- ▭ Surface ground workings
- ▭ Underground workings
- ▭ Underground mining extents
- ▭ Historical mineral planning areas
- ▭ TCA non-coal mining
- Non Coal Mining
 - ▭ Sporadic underground mining of restricted extent possible
 - ▭ Localised small scale underground mining possible
 - ▭ Small scale mining possible
 - ▭ Underground mining known or likely within or in close proximity
 - ▭ Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m

5

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining and ground workings map on [page 88](#) >



ID	Location	Details	Description
B	164m W	Name: Coombe Road Chalkwell Address: GRAVESEND, Kent Commodity: Chalk Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
C	325m W	Name: Gravesend Denehole Address: GRAVESEND, Kent Commodity: Chalk Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
D	387m W	Name: Gravesend Denehole Address: GRAVESEND, Kent Commodity: Chalk Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
F	390m SE	Name: Chalk Chalk Pit Address: Chalk, GRAVESEND, Kent Commodity: Chalk Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
E	418m N	Name: Milton Hall Road Denehole Address: GRAVESEND, Kent Commodity: Chalk Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.



18.2 Surface ground workings

Records within 250m

3

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on [page 88](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
A	50m E	Unspecified Heaps	1932	1:10560
A	52m E	Unspecified Heaps	1938	1:10560
A	52m E	Unspecified Heaps	1938	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m

0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m

0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.



18.6 Non-coal mining

Records within 1000m

18

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on [page 88](#) >

ID	Location	Name	Commodity	Class	Likelihood
1	On site	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
B	62m W	Coombe Road	Chalk	D	Underground mining is considered likely to have occurred within or close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
B	112m W	Coombe Road	Chalk	E	Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
C	223m W	Whitehill Road	Chalk	D	Underground mining is considered likely to have occurred within or close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
C	273m W	Whitehill Road	Chalk	E	Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
D	287m W	The Echo Pub	Chalk	D	Underground mining is considered likely to have occurred within or close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
E	318m N	Milton Hall Road	Chalk	D	Underground mining is considered likely to have occurred within or close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
D	335m W	The Echo Pub	Chalk	E	Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.



ID	Location	Name	Commodity	Class	Likelihood
E	368m N	Milton Hall Road	Chalk	E	Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
H	571m W	Not available	Chalk	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
4	582m W	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
5	582m W	Not available	Chalk	C	Underground mine workings may have occurred in the past, or current mines may be operating to modern engineering standards. Potential for difficult ground conditions should be considered.
J	683m NW	Not available	Chalk	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
H	697m NW	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
-	701m W	Singlewell Road	Chalk	D	Underground mining is considered likely to have occurred within or close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
H	716m NW	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
-	751m W	Singlewell Road	Chalk	E	Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
-	805m NW	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.



18.7 JPB mining areas

Records on site

0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m

0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m

4

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

Location	Mineral type
61m W	Stone
152m W	Stone
249m W	Stone
254m W	Stone

This data is sourced from Groundsure.



18.10 Mining record office plans

Records within 500m**0**

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m**0**

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site**0**

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site**0**

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site**0**

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0
-----------------	---

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

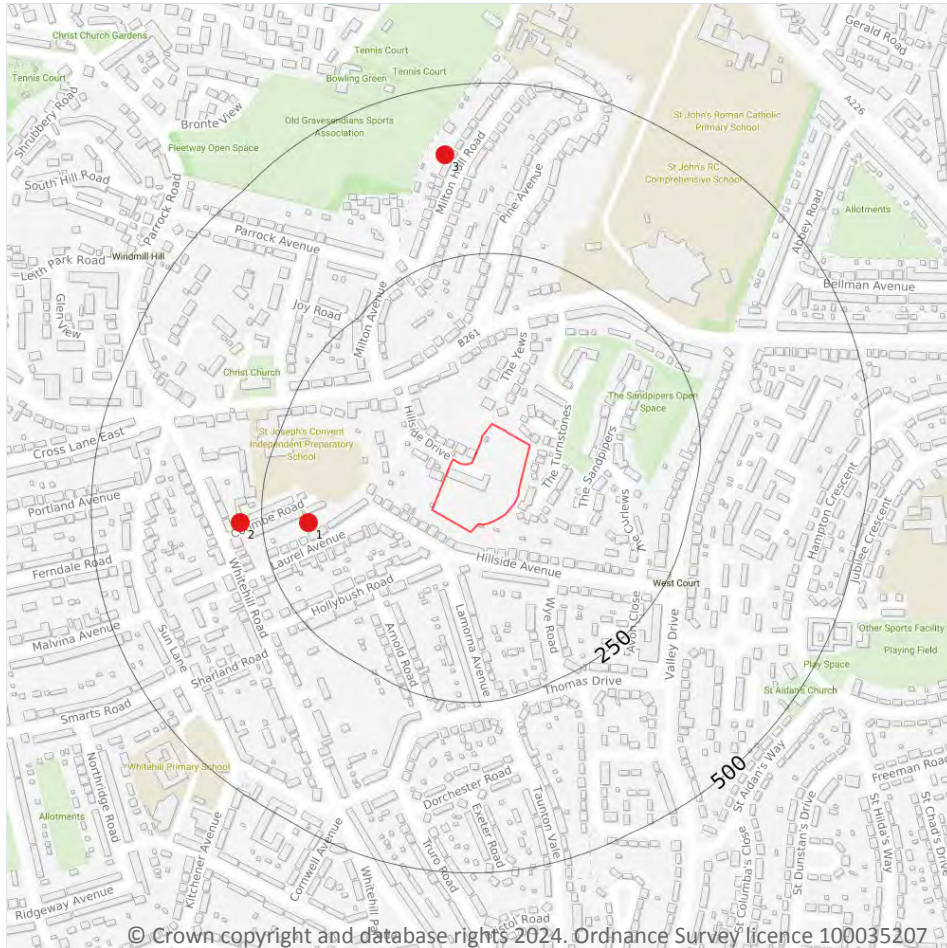
18.16 Clay mining

Records on site	0
-----------------	---

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Ground cavities and sinkholes



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- Mining cavities
- Reported recent incidents
- Historical incidents
- BGS karst database (Point)
- BGS karst database (Line)
- BGS karst database (Area)

19.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m

5

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

Features are displayed on the Ground cavities and sinkholes map on [page 96 >](#)

ID	Location	Mine Address	Mineral	Data source	Publisher
1	183m W	Gravesend, Kent	Chalk	-	Chelsea Speleological Society
2	283m W	Gravesend, Kent	Chalk	-	Chelsea Speleological Society
3	401m N	Gravesend, Kent	Chalk	-	-
-	775m NW	Gravesend, Kent	Chalk	-	Chelsea Speleological Society
-	991m SW	Gravesend, Kent	Chalk	-	Chelsea Speleological Society

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m

0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m

0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.



19.5 National karst database

Records within 500m

0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

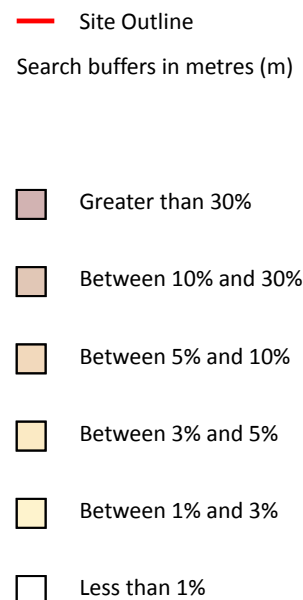
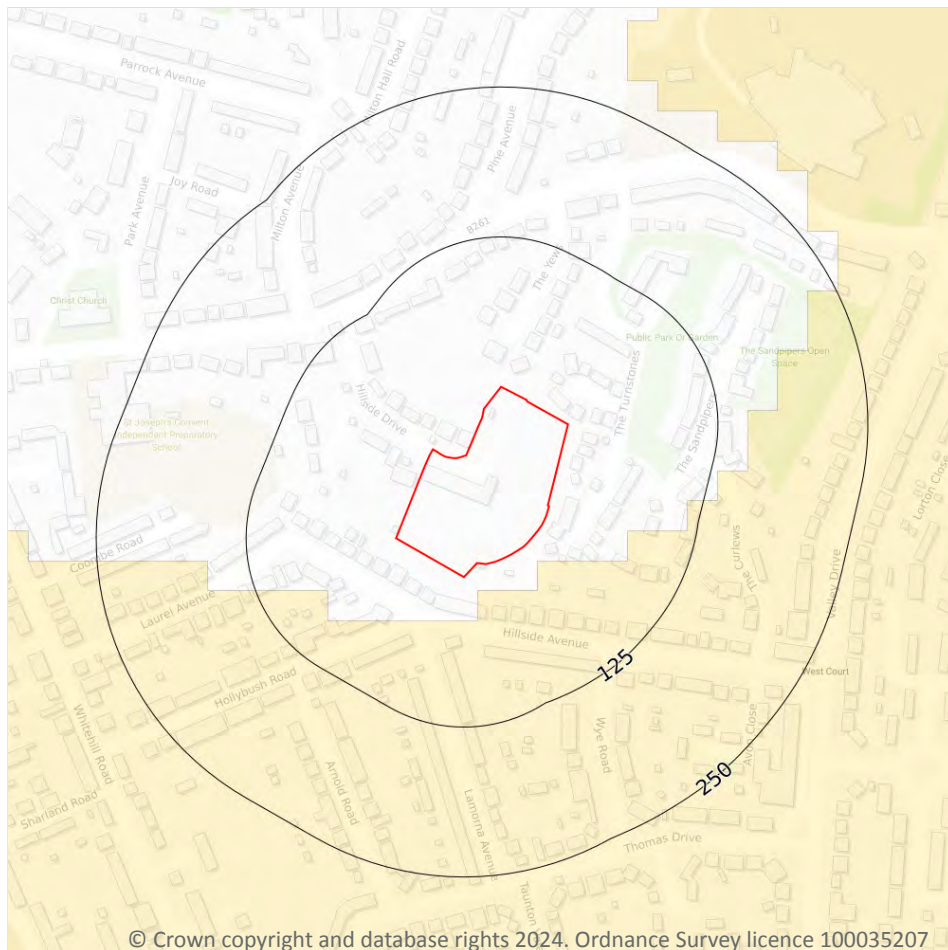
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.



20 Radon



20.1 Radon

Records on site

1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on [page 99](#) >

Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None



This data is sourced from the British Geological Survey and UK Health Security Agency.



21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m

1

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	200 - 300 mg/kg	120 - 240 mg/kg	1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m

0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m

0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m

0

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m

0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.



This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0
---------------------	---

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0
---------------------	---

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0
---------------------	---

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0
---------------------	---

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0
---------------------	---

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.



Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference> ↗.

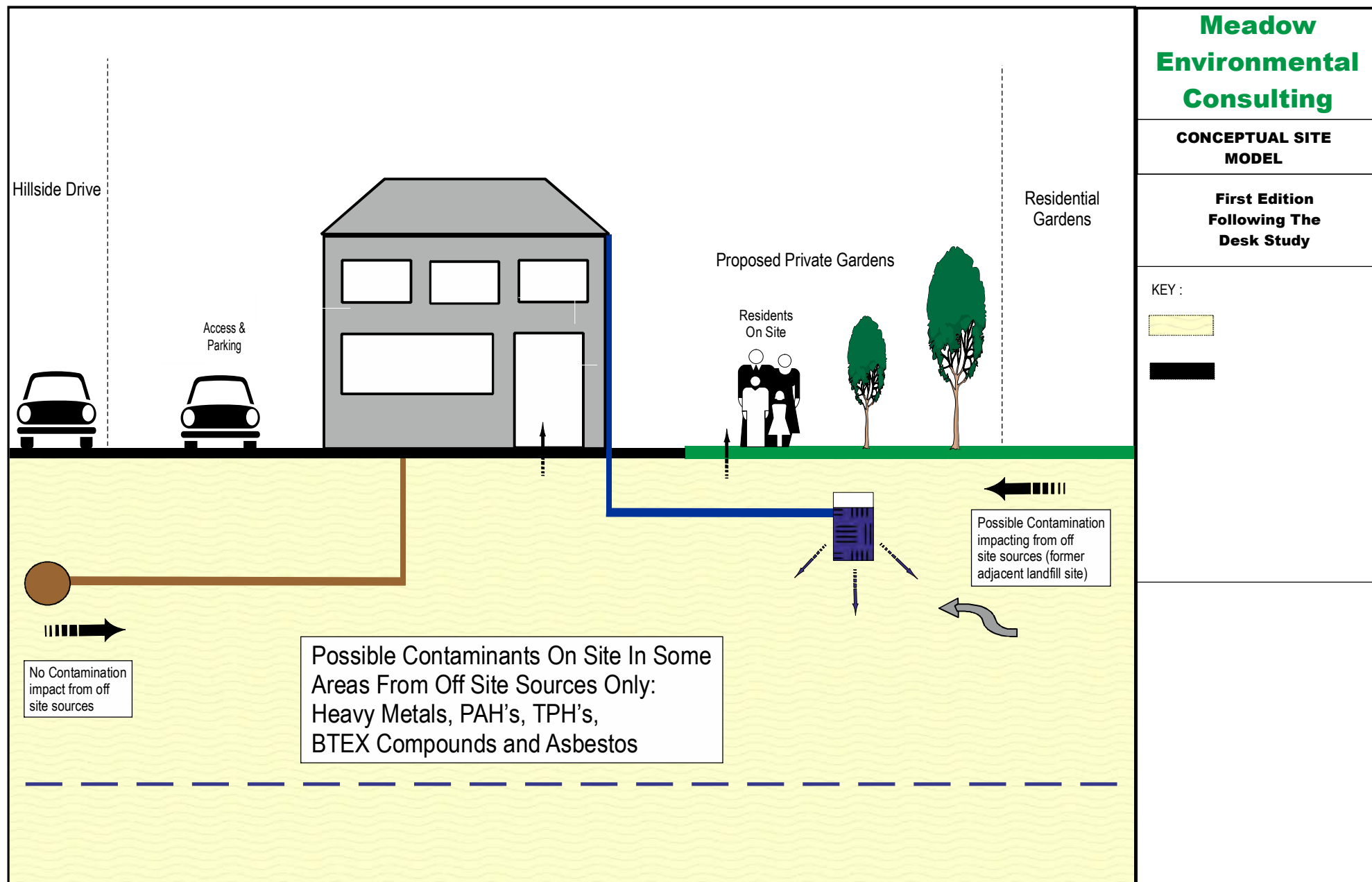
Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗.



APPENDIX 6

CONCEPTUAL MODEL



Meadow Environmental Consulting

CONCEPTUAL SITE MODEL

**First Edition
Following The
Desk Study**

APPENDIX 7

GRAVESHAM BOROUGH COUNCIL INFORMATION

REGULATORY SERVICES COMMENTS – CONTAMINATED LAND

Case Number	20160265
Case Officer	Miss Che Eade
Address	1 The Lapwings Gravesend Kent
Proposal	Erection of a two storey side extension, single storey rear extension and open porch.
Determination Date	19th May 2016
Consultation Expiry Date	6th May 2016
Date of Response	20 April 2016

The Lapwings forms part of the Holyoake Mount landfill development. The original planning documents and remediation strategy suggest that a protective capping layer of 750mm clean soil would be needed in all gardens. It is assumed this was completed however there does not appear to be any definitive answer within the old planning records and no condition was imposed to ensure the work was done. However, it is understood a letter from the developer to the initial property buyers in the area states that they should not dig below 2'6" in the gardens as this is the depth of protective material.

Construction workers will need to be informed about the contaminated material below this capping layer, and on uncovering any obvious contamination work should stop immediately and the LPA informed.

Soil Decontamination.

The applicant shall undertake a watching brief during construction in case any contamination issue is encountered. If during development any contamination is found, the local planning authority should be informed as soon as practical and the work shall not continue until written agreement is provided by the LPA as to the appropriate measures to be taken to resolve the matter and they are satisfied that those measures have been carried out.

Landfill Gas

A gas impermeable membrane shall be incorporated within the structure along with a ventilated sub-floor area. Any services entering/leaving the structure should be located above the gas impermeable membrane or adequate seals will have to be provided if the membrane has to be breached.

Prior to the works commencing, details of the gas impermeable membrane should be submitted and approved by the LPA.

Eric Lawson
Scientific Officer

