



**Station Road
Ashwell
Baldock
SG7 5QF**

Desk Study

Beck Homes

September 2025

J25154
Rev 1



Ground investigation | Geotechnical consultancy | Contaminated land assessment



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Executive summary

This executive summary contains an overview of the key findings and conclusions. No reliance should be placed on any part of the executive summary until the whole of the report has been read. Other sections of the report may contain information that puts into context the findings that are summarised in the executive summary.

Brief

This report describes the findings of a desk study carried out by Geotechnical and Environmental Associates Limited (GEA) on the instructions of Beck Homes. The proposed works consist of the construction of 36 houses with gardens, alongside associated car parking and garages, roads, a playground and the installation of a pond. The purpose of this report has been to investigate the history of the site, to assess the potential for contamination, to provide preliminary information on the expected ground conditions and to provide preliminary information on foundation options with regard to the proposed development.

A Desk Study (ref J16280 Rev 1 dated December 2016) and Ground Investigation (ref J22122 Rev 0 dated June 2022) have previously been carried out by GEA in relation to the Senuna park development on a wider area that includes part of the site. The historical maps and environmental data from the previous work have been referred to for the purposes of this report.

Desk Study Findings

The earliest map studied, dated 1877, indicates that the site was undeveloped and split into three fields, with Station Road present to the southwest of the site. By 1975, the two northern fields had been combined, and rows of trees were planted in the centre of the site in the late 1990s / early 2000s; the site has remained largely unchanged since that time.

Ashwell village, to the west of the site, was predominantly developed prior to 1877, although houses along Station Road were constructed between 1925 and 1947. A 'clunch pit' and Roman Cemetery is indicated to be present approximately 650 m to the northeast of the site. 'Clunch' refers to hardened chalk, which was quarried by hand for building stone.

Ground Conditions

The site is expected to be underlain by a variable thickness of topsoil, followed by the Zig Zag Chalk Formation. The previous investigation on the adjacent site has indicated that topsoil extends to depths of between 0.40 m and 1.20 m, underlain by the Zig Zag Chalk Formation to at least 3.5 m.

The chalk is classified by the Environment Agency as a Principal Aquifer with high permeability.

Contamination Risk Assessment

On the basis of the findings of the research carried out, there is considered to be a LOW risk of there being a contamination linkage at the site, and a risk from soil gas and vapour is not envisaged.

Foundation Assessment

In view of the anticipated light loads from the proposed structures, it is anticipated that spread foundations bearing within the chalk would be suitable.



1.0 Introduction

Geotechnical and Environmental Associates Limited (GEA) has been commissioned by Beck Homes to carry out a desk study at Station Road, Ashwell, SG7 5QF.

A Desk Study (ref J16280 Rev 1 dated December 2016) and Ground Investigation (ref J22122 Rev 0 dated June 2022) have previously been carried out by GEA on a wider area which includes the site. The previous work has been referred to for the purposes of this report.

1.1 Proposed Development

It is understood that the development will consist of the construction of 36 houses with gardens, together with associated car parking and garages, roads, a playground and the installation of a pond alongside other softstanding areas of land. The proposed sketch layout opposite shows the central strip of woodland across the centre of the site to remain in place. The existing hedgerows along the northern and eastern boundaries will also be retained, with new hedgerows planted along the southern site boundary.

This report is specific to the proposed development and the advice herein should be reviewed if the development proposals are amended.

1.2 Purpose of work

The principal technical objectives of the work carried out were as follows:

-  check the history of the site and surrounding area, particularly with respect to any previous or present potentially contaminative uses;
-  to research the geology and hydrogeology of the site;
-  to check records of data on groundwater, surface water and other publicly available environmental data;
-  to use the information obtained in the above searches to carry out a qualitative risk assessment with respect to subsurface contamination; and
-  to provide preliminary comments on foundation options.



Sketch layout of subject site (east) of the site. Senuna park development to the west.



1.3 Scope of work

In order to meet the above objectives, a desk study was carried out, comprising, in summary, the following activities:

-  a review of historical Ordnance Survey (OS) maps supplied from the 2016 desk study report;
-  a review of publicly available environmental data sourced from the 2016 Envirocheck database;
-  a review of readily available geology maps;
-  review of the previous GEA reports, and
-  provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

2.0 The Site

2.1 Site Description

The site is located to the north of Station Road, approximately 1 km to the east of Ashwell village centre. It is bounded to the northwest by residential properties and a track leading to open fields. It is also bounded to the northeast and southeast by open fields.

The site is trapezoidal in shape, covering an area of approximately 3.12 hectares and measuring approximately 230 m across the site from northwest to southeast, and lies at an approximate level of 55 m OD. The centre of the site may be additionally located by National Grid Reference TL27919 39692, and the subject site location is shown in the blue outline in the map extract below (Senuna park development outlined in red).



A walkover of the site was carried out by a geoenvironmental engineer from GEA on 23 November 2016; the walkover has not been updated. During the walkover, no evidence of contamination was noted on site and no evidence of pooling or standing water was noted. The following site description has been compiled from publicly available sources and the previous GEA investigations. The site comprises an agricultural field, with construction of the Senuna park development taking place to the north and to the west. Through the centre of the site is a northeast-to-southwest aligned densely wooded area, with trees previously identified including sycamore, plane, poplar, beech, silver birch and pine. The perimeter of the site appears to be largely formed by dense hedgerows and trees.



2.2 Site History

The site history has been researched and historical Ordnance Survey (OS) maps obtained from the Envirocheck database.

The earliest map studied, dated 1877, indicates that the site was undeveloped and split into three fields, with Station Road present to the southwest of the site. The two fields in the northern portion of the site were combined by 1975. The area of dense trees transecting the centre of the site appears to have been planted in the late 1990s to early 2000s and has remained relatively unchanged since that time.

Ashwell village was predominantly developed prior to 1877, although houses along Station Road were constructed between 1925 and 1947. A 'clunch pit' and Roman Cemetery is indicated to be present approximately 650 m to the northeast of the site. 'Clunch' refers to hardened chalk, which was quarried by hand for building stone.

2.3 Other Information

As part of the 2016 desk study of the wider site, a search of public registers and databases has been made via the Envirocheck database and relevant extracts from the search are appended; these searches have not been updated. Full results of the search can be provided if required.

The nearest surface water feature is a channel from the Ruddery Spring, located approximately 447 m north of the site flowing towards the northwest. Another spring is located in the centre of the village, approximately 575 m northwest of the site, forming the source of the River Rhee, flowing towards the northwest.

There are no pollution incidents to controlled waters recorded within 500 m of the site.

There are no discharge consents within 250 m of the site, although there are four discharge consents for soakaways within 1 km of the site, the closest of which is located approximately 425 m to the southeast of the site. The site is located within a Zone 3 (total catchment) source protection zone.

The site is not located within an area at risk of flooding from rivers or sea, although there is limited potential for groundwater flooding to occur on site from the north to towards the south.

The Envirocheck report indicated no records of landfills or historical landfills within 1 km of the site, and additionally there are no recorded areas of potentially infilled land within 1 km of the site. However, the former clunch pit located approximately 650 m to the northeast appears to have been infilled by 1978. Additionally, there are no waste management, transfer, treatment or disposal sites within 1 km of the site.

There are no contemporary trade directory entries listed on site, or within the surrounding 500 m. There are no fuel stations within 250 m of the site. The next closest filling station is located approximately 583 m northwest of the site, and is currently open.

Information on Estimated Soil Chemistry provided by the BGS indicates average background lead concentrations of <100mg/kg at the site. The average lead concentration for the site is consistent with data from the UKSO Soil Observatory which suggests that background concentrations for lead in the vicinity of the site are likely to range between 31.8mg/kg and 46.7mg/kg. The average background lead concentrations of <100mg/kg are within the soil guideline values recommended in a residential or commercial/industrial area.

The site is located within a Nitrate Vulnerable Zone, and there is a Site of Special Scientific Interest located at the Ashwell Springs, approximately 556 m to the west.

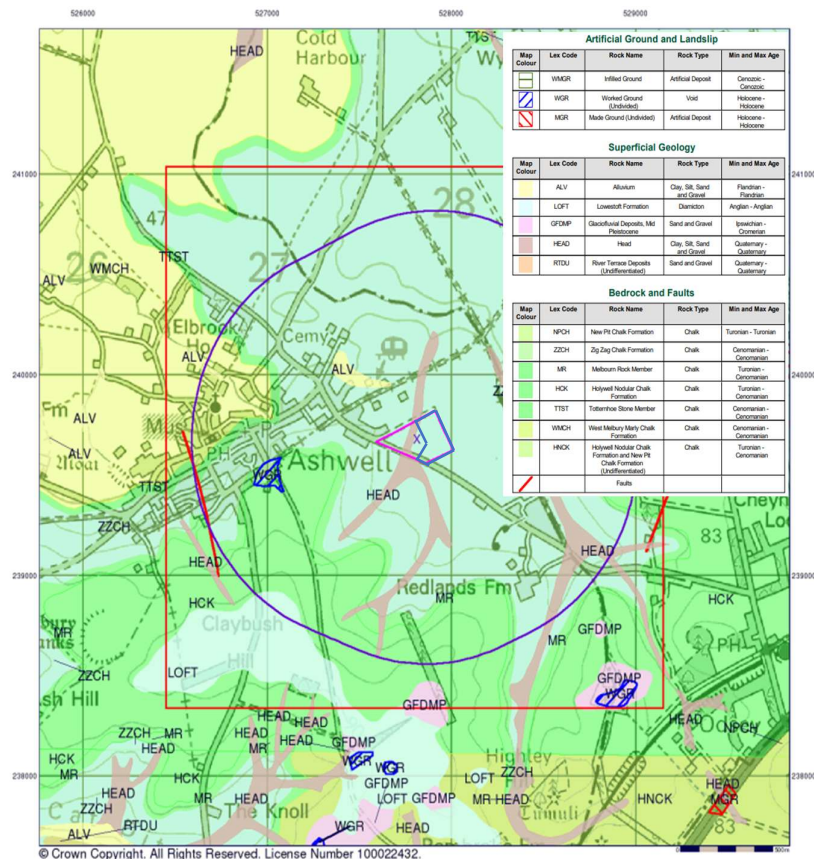
Reference to the records compiled by the Health Protection Agency (formerly the National Radiological Protection Board) indicates that the site falls within an area where less than 1% of homes are affected by radon emissions and therefore radon protective measures will not be necessary.



3.0 Ground Conditions

3.1 Soil Conditions

The British Geological Survey (BGS) map of the area (as reproduced by Envirocheck below) indicates that the site should be underlain by the Zig Zag Chalk Formation, formerly part of the Lower Chalk Formation. A strip of superficial Head Deposits approximately 40 m wide



is present to the west of the site, extending north to south. The map extract opposite shows the subject site outlined in blue, and the Senuna park development outlined in red.

A search of the BGS borehole database has identified a single borehole approximately 300 m northwest of the site. The borehole encountered topsoil to 0.40 m, followed by hard chalk with rock bands to the final depth of 30.50 m.

GEA has previously carried out a ground investigation at Station Road, Ashwell relating to the Senuna park development of the site, where five boreholes were drilled to depths of between 2.50 m and 3.50 m. These boreholes confirmed the expected ground conditions in that, below a limited thickness of reworked topsoil and made ground, the Zig Zag Chalk Formation was encountered and proved to the maximum depth investigated, of 3.50 m.

The reworked topsoil / made ground generally comprised greyish brown and brown clayey sand with occasional roots and rootlets, and rare fragments of brick, and extended to depths of between 0.40 m and 1.20 m. The underlying chalk was brownish white and greyish white with orange brown staining silty gravelly clay.

3.2 Hydrology and Hydrogeology

The Zig Zag Chalk Formation is classified by the Environment Agency (EA) as a Principal Aquifer of high leaching potential. The EA defines a Principal Aquifer as layers of rock or drift deposits that have high intergranular and/or fracture permeability, such that they usually provide a high level of water storage. In most cases, Principal Aquifers are aquifers previously designated as major aquifers. The Head Deposits are designated as a Secondary Aquifer (undifferentiated). The EA defines a Secondary Aquifer (undifferentiated) as strata where it has not been possible to attribute either A or B to a rock type. In most cases, the layer in question has previously been designated as both minor and non-aquifer in different locations due to its variable characteristics.

The aforementioned GEA boreholes did not encounter groundwater during drilling.

In the absence of any hardstanding, rainwater currently soaks into the ground unimpeded. This will change as part of the development and sustainable urban drainage systems (SUDs), including soakaways, will need to be considered. The Envirocheck report has recorded discharge consents for the use of soakaways within 500 m of the site within the same geological unit. It is therefore likely that the use of soakaways to dispose of surface water would be suitable on site. However, this should be confirmed with soakaway testing.



4.0 Risk Assessment

4.1 Environmental Risks

Part IIA of the Environmental Protection Act 1990, which was inserted into that Act by Section 57 of the Environment Act 1995, provides the main regulatory regime for the identification and remediation of contaminated land. The determination of contaminated sites is based on a “suitable for use” approach which involves managing the risks posed by contaminated land by making risk-based decisions. This risk assessment is carried out on the basis of a source-pathway-receptor approach.

4.1.1 Source

The historical use of the site as agricultural land suggests that it is unlikely to have had a contaminative usage. Contaminants such as herbicides, fungicides and pesticides, may have been used but these are likely to have largely been in a soluble form and therefore unlikely to remain in the shallow soils. In addition, modern herbicides and pesticides are degradable and therefore are unlikely to persist in the shallow soils.

No contaminative historical uses have been identified nearby and no sources of landfill gas.

4.1.2 Receptor

The proposed residential use of the site, which will include recreational areas, will result in extensive exposure to the soil and thus generally represents a relatively high sensitivity end-use. The site is underlain by the Zig Zag Chalk Formation, a Principal Aquifer and as such, groundwater is a very sensitive receptor.

Residents of the adjacent housing development are potential receptors. Buried services are likely to come into contact with any contaminants present within the soils through which they pass and site workers are potential receptors during construction or maintenance works.

4.1.3 Pathway

End users of the new development would be exposed to any potentially contaminated soils in soft landscaped areas, including private gardens.

The cover of soft landscaping in garden areas and the recreational sports areas will allow infiltration and thus vertical migration of potential contaminants into the Principal Aquifer beneath the site. Migration to adjacent sites could also occur via the shallow soils and surface water run-off.

Buried services may be exposed to any contaminants present within the soil through direct contact and site workers will come into contact with the soils during construction works.

4.1.4 Preliminary Risk Appraisal

In accordance with the guidelines provided by CIRIA¹, the following table summarises possible pollution linkages for the site.

Source	Receptor	Pathway	Probability	Consequence	Risk
Inorganic and organic contamination within near surface soils resulting from existing and past activities on site including the sources described in Section 4.1.1.	End users	Ingestion of contaminated soil or dust, through skin contact or inhalation	Low likelihood	Mild	Low
	Vegetation	Uptake via soil through roots	Low likelihood	Mild	Low
	Groundwater	Percolation and leaching of surface run-off	Low likelihood	Mild	Low
	Buried services / foundation concrete	Direct contact	Low likelihood	Mild	Low
	Adjacent sites	Surface water flow or drain runs	Low likelihood	Mild	Low
	Site workers	Ingestion of contaminated soil or dust, skin contact, inhalation	Low likelihood	Mild	Low

¹ Rudland, DJ, Lancefield, RM and Mayell, PN (2001) Contaminated land risk assessment. A guide to good practice, CIRIA C552



Source	Receptor	Pathway	Probability	Consequence	Risk
Inorganic and organic contamination within perched water resulting from existing and past activities on site including the sources described in Section 4.1.1.	End users	Direct contact	Unlikely	Mild	Very low
	Vegetation	Uptake through roots	Low likelihood	Mild	Very low
	Groundwater	Percolation and leaching of surface run-off	Unlikely	Mild	Very low
	Buried services / foundation concrete	Direct contact	Unlikely	Mild	Very low
	Adjacent sites	Surface water flow or drain runs	Low likelihood	Mild	Low
	Site workers	Direct contact	Low likelihood	Mild	Low

This method of risk evaluation involves classification of the magnitude of the potential consequence (severity) and probability (likelihood) of the risk. On the basis of the consequence and probability, the site can be attributed a level of risk, ranging from very low to very high.

On the basis of the above it is considered that there is a LOW risk of there being a significant contaminant linkage at this site that would result in a requirement for major remediation work.

Furthermore, as there is no evidence of recently filled ground within the immediate vicinity of the site and no landfill sites, there is not considered to be a significant potential for hazardous soil gas to be present on or migrating towards the site.

4.2 Development Issues

The structures proposed for this site are anticipated to be of two-storey construction and therefore relatively light. The anticipated loads could be supported upon spread foundations bearing within the chalk. Within the area of Head Deposits, where shrinkable soils are possible, the foundations may need to be deepened in accordance with NHBC guidelines in the proximity of trees

Ground bearing floor slabs could be considered following removal of the topsoil, although in areas underlain by clay and within the zone of influence of trees the floor slabs should be suspended above a void to allow for any potential heave movements.

5.0 Conclusions

On the basis of the findings of the research carried out there is considered to be a LOW RISK of there being significant contamination linkage at this site. A risk from soil gas is not envisaged.

It is likely that the ground conditions identified via the intrusive works carried out in 2016 in the Senuna park development extend to the proposed area for the subject site development, although a ground investigation should be carried out to confirm this.

Samples of the near-surface soil should be recovered for laboratory contamination testing, to provide an assessment of any risk associated with contamination, and to allow the soil to be classified for waste disposal purposes.



Appendix

Envirocheck Extracts
Historical Maps
J16280 Desk Study

Station Road, Ashwell, Baldock, Hertfordshire, SG7 5QF
Desk Study Report
For Beck Homes



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