



Norfolk Partnership Laboratory
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**Desk Study and Risk Assessment,
Grove Farm
Little Bealings
Suffolk
104442
July 2023**

Client:
Dellwood Homes Ltd
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Appendix A Site location plan and site plan

Appendix B Geology report

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Appendix E Potential contaminative sources plan

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ii) Distribution

Dellwood Homes Ltd	1 copy
Norfolk Partnership Laboratory	1 copy

1.0 Introduction

1.1 General

This desk study was carried out at Grove Farm, Little Bealings, Suffolk (OSGR 622924 / 247533). Grove Farm is located approximately 7.2 kilometres to the northeast of Ipswich. J Blundell of Dellwood Homes Ltd instructed Norfolk Partnership Laboratory (NPL) to carry out the work on an email dated 02/06/2023 after acceptance of NPL's quotation. NPL provides a service within Norse Eastern Ltd.

This investigation fulfils the requirements for a desk study and walkover survey as specified in NHBC Standards, Chapter 4.1 Land Quality - managing ground conditions, January 2019 edition. In addition, a risk assessment has been carried out to the requirements of The Environmental Protection Act Part IIA.

This report is inclusive of a full Envirocheck report, Envirocheck historical maps and historical land use. In addition, consideration is given to the health and safety of construction workers and subsequent residents that may be affected due to any soil contamination.

It is proposed to change the use of Barns A and C from agricultural to residential.

Although every effort has been made to give a true assessment of the condition of the site within the constraints of the desk study, it is possible that different ground conditions or contamination may exist in parts of the site that is neither recorded nor visible. The risk of such occurrences should be further reduced by the main investigation if required.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

1.2 Report objectives

The objectives of these works are to assess contamination sources, pathways, and receptors, and to determine whether any contamination may be present either within the site boundaries or just outside the site. The report also assesses the extent to which human health, buildings and services and controlled waters may be affected. If contamination is thought likely to be present, recommendations will be made to ascertain the level of contamination and if these levels are within allowable limits.

1.3 Site location

The site is located to the west of The Street in the village of Little Bealings, which is approximately 7.2 kilometres northeast of Ipswich. (OSGR 622924/247533).

A site location plan is in Appendix A.

1.4 Site layout

The study area is irregular in shape and approximately 2.06 hectares in area. The barns are located either side of a track which runs roughly centrally through the site from east to west which is 10 metres above Ordnance Survey Datum. Overall, the height difference from north to south is approximately 5 metres with the southern portion of the site higher than the northern portion.

Barn A is at the end of a row of buildings situated to the southwest of the site on the southern side of the track. Barn C is the most easterly building situated on the northern side of the track.

1.5 Planning application

The site is subject to the planning conditions of East Suffolk Council. The planning reference for Barn A is DC/22/3733/P3Q. The Planning reference for Barn C is DC/23/0107/P3Q.

2.0 Desk Study

2.1 Description of site and surroundings

A walkover survey was undertaken on 13 June 2023 by Mr I Brown of Norfolk Partnership Laboratory.

The site is accessed from The Street onto a concrete drive between Fynn Cottage to the south and Grove Farm House to the north. The concrete section is approximately 45 metres in length from which point an unmade track leads to a series of buildings which are adjacent to the north and south side. Historically the site was a pig farm.

Nine structures are present on the site, six to the south of the track and three to the north.

For planning purposes four of the former pig sheds have been referenced A, B, C and D and are shown on the site plan in appendix A.

On the south side of the track from east to west is a :

- Derelict dilapidated brick building with the roof tiles removed overgrown with vegetation.
- Dutch style barn with corrugated tin roof and corrugated tin walls which has a former small brick and concrete silo base, most likely used for feed storage. This barn contains, pullies and wooden pallets and has an intact concrete floor.
- Timber and blockwork-built pig shed with intact concrete floor (Paul Frost Timber Buildings)
- Timber portal framed hay barn with pitched cement board roof.
- Blockwork and timber clad pig shed with intact concrete floor slab cement board roof (referenced D). Timber framed structure with walls comprising of infilled blockwork with cement board guttering and downpipes.
- Timber clad pig shed with intact concrete floor and cement board roof (referenced A). This barn was constructed in 1986. Water and electricity services are present within the barn.

Three structures are to the north of the track these are from east to west a

- Timber and blockwork-built pig shed with cement board roof (referenced C). This barn is a timber framed structure with walls comprising of infilled blockwork. The exterior walls consist of blockwork with a cement board roof. A storage silo is present at the eastern end sited on a concrete slab where a heap of rubble and some items of scrap metal were also noted.

- Timber and blockwork-built pig shed with cement board roof (referenced B). A timber framed structure with walls comprising of infilled blockwork. The exterior walls consist of blockwork with cement board guttering, downpipes, and roofing. A high level steel chute secured to a concrete slab was present at the eastern end of the building presumably for food delivery.
- Small cement board clad building of unknown use (potentially power generation)

Concrete hardstanding is located between the pig sheds B and C to the north and between A and D to the south. A below ground possible slurry tank is present to the west of Barn A.

The land to the north beyond the three buildings is grassed with mature trees to the boundary and the River Fynn beyond on the west side. The river flows in an easterly direction. The eastern half of the northern boundary is formed by the boundary of Grove Farm House.

The land to the south beyond the six buildings is a mix of grass, dense undergrowth and mature trees and rises by approximately 2 metres. Mares Tails were seen within this area and were present throughout the southern section of the site until adjacent with the Dutch barn. A residential dwelling is adjacent to the southern boundary on the eastern side with the study area extending further south on the western side where the southern site boundary is the railway line.

A site location plan is included in Appendix A.



Photograph 1: View looking west at the entrance of the site between Fynn cottage and Grove Farm.



Photograph 2 : Dilapidated brick building on the south side of the track on the east side.



Photograph 3 : Inside the building.



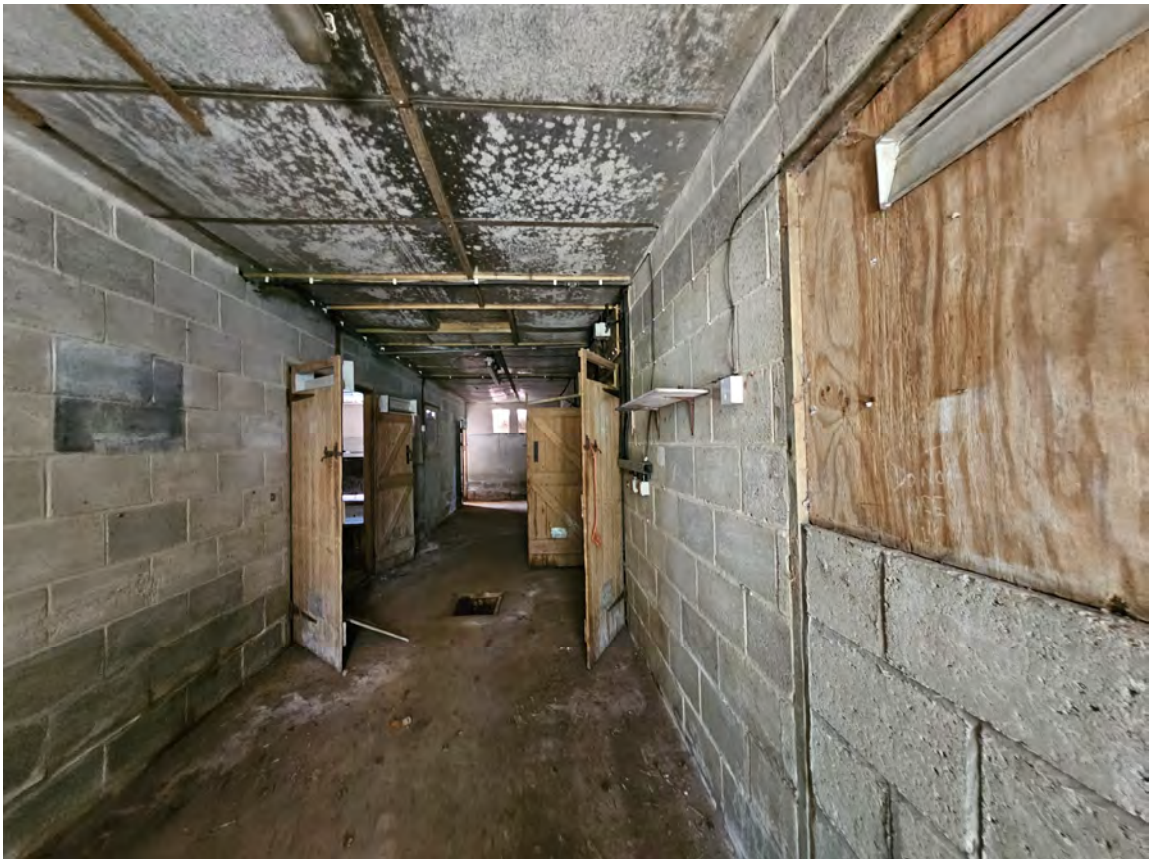
Photograph 4 : Dutch style corrugated tin clad barn south of the track.



Photograph 5: View looking inside the Dutch barn.



Photograph 6: Timber clad pig shed south of track (Paul Frost).



Photograph 7: Corridor inside the building.



Photograph 8: View inside the rooms of the building.



Photograph 9: Timber framed hay barn south of track.



Photograph 10: Eastern end of Barn D south of track.



Photograph 11: View inside Barn D looking east.



Photograph 12: View of the elevated land to the south of Barn D.



Photograph 13: East elevation of Barn A south of track.



Photograph 14: View inside Barn A looking east.



Photograph 15: View looking east at Barn A. Possible below ground slurry tank.



Photograph 16: Barn C located on the north side of the track.



Photograph 17: Inside Barn C



Photograph 18 : Barn B located on the north side of the track.



Photograph 19: Small building west side of Barn C on the northern side of the track.



Photograph 20: Land to the north of Barns B and C.



Photograph 21: Northern site boundary adjacent to the River Fynn



Photograph 22: Elevated land to the south of the barns.(eastern side of the site)



Photograph 23 : Elevated land to the south of the barns on the western side of the site.

2.2 Desk study research undertaken

In accordance with the recommendations of Chapter 4.1 of NHBC Standards desk study information has also been gathered from numerous sources. These are summarised below:

- Institute of Geological Sciences, Hydrogeological Map of Southern East Anglia, Sheet 1 Regional Hydrological Characteristics and Explanatory Notes.
- Institute of Geological Sciences, Hydrogeological Map of Southern East Anglia, Sheet 2 Chalk, Crag, and Lower Cretaceous Sands: Geological Structure.
- Institute of Geological Sciences - British Regional Geology East Anglia and Adjoining Areas (Fourth Edition) 1961.
- British Geological Survey, East Anglia Sheet 52N00, Solid Geology; Scale 1:250,000.
- British Geological Survey, East Anglia Sheet 52N00, Quaternary; Scale 1:250,000.
- BGS Geology Sheet number 207
- Ordnance Survey Digital Map.
- Ordnance Survey Maps 1881, 1884, 1904, 1905, 1927, 1928, 1938, 1957, 1968, 1971, 1980, 1983, 1993 and 1994.
- BRE BR211 Radon: Guidance on protective measures for new dwellings.
- BRE SD1 Concrete in aggressive ground.
- BS 10175:2011 – Investigation of potentially contaminated sites.
- Department of the Environment Industry Profiles.
- CIRIA C665 Assessing risks posed by hazardous ground gases to buildings, 2007.
- BS 8485:2015 - Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.

2.3 Past and current activities at the site

On the 1881 OS map the site is located within two land parcels which are numbered 99 and 100. Three buildings are shown within the study area all present in the north east corner. The track which passes through the site presently is shown with the land to the south entirely tree covered. The River Fynn is at the northern boundary with a ditch along the western boundary. A path to a footbridge is also annotated on the western side of the site. Grove Farm is annotated to the east with Grove Villa to the south. An area of possibly excavated ground is present just off site to the east. The Great Eastern Railway East Suffolk Line is shown to the south

The 1884 OS map no significant changes are shown within the site. four sand pits are present approximately 485 metres to the west, 490 metres to the northeast, 1 kilometre to the northeast and 1 kilometre to the south.

The 1904 OS map one structure has been demolished in the north eastern section of the site. The track running horizontally through the site is no longer shown.

The 1905 OS map shows no significant changes within the site. The sand pit located approximately 1090 metres to the south has increased in size.

The 1927 OS map shows the existing structure to the east of the site has been extended.

The 1928 OS map shows no significant changes to the site. Residential housing has been constructed approximately 560 metres to the southwest.

The 1938 OS map shows no significant changes within the site or surrounding area.

The 1957 OS map shows no significant changes to the site. Residential housing has been constructed approximately 650 metres to the southwest and 745 metres to the northwest. An additional sand pit is present approximately 1055 metres to the south.

On the 1968 OS map two structures are on the site with the horizontal track also present. One building is to the north of the track (possibly Barn C) and one to the south (possibly Barn D). Arrows shown on the ditch along the western boundary suggest a northerly flow to the river. A spring is present on the southern portion of the site which issues and flows in a north westerly direction to the ditch on the western boundary. The southern half of the site remains tree covered. Bealings Station is now annotated as 'disused'.

The 1971 OS map shows no significant changes within the site. Residential housing has been constructed approximately 355 metres to the southwest, 495 metres to the southeast and 650 metres to the southwest. The sand pit located 1 kilometre south has increased in size and is annotated 'Sinks pit', this is now located approximately 870 metres to the south of the site.

The 1980 OS map shows no significant changes within the site area. Sinks pit is now annotated as a quarry and is located approximately 620 metres to the south of the site.

The 1983 OS map shows no significant changes within the site area. Residential housing has been constructed approximately 750 metres to the northwest.

The 1993 OS map shows no significant changes within the site area. The construction of the A12 can be seen approximately 1190 metres to the east and southeast.

The 1994 OS map shows no significant changes within the site or surrounding area. The additional six agricultural buildings and pig sheds which are on the site have not been mapped.

Historical aerial images



1945 aerial image



2000 aerial image



2006 aerial image



2017 aerial image



2020 aerial image



2022 aerial image

There was no previous development on the majority of the site until the construction of the current barns in the late 1970's and early 1980's.

The pig rearing and farming ceased in the early 1990's and the barns were cleaned thoroughly. The barns have not been used since that point.

2.4 Intended future use of the site

It is proposed to change the use of Barns A and C from agricultural to residential.

2.5 Planning applications or permissions at the site

The site is subject to the planning conditions of East Suffolk Council. The planning reference for Barn A is DC/22/3733/P3Q. The Planning reference for Barn C is DC/23/0107/P3Q.

2.6 Geology

The geology of the region may be summarised as follows:

Recent : Head
 : Alluvium

Eocene : Thames Group

Thames Group comprises mainly silty clays and clays, some sandy or gravelly, with some silts, sands, gravels and calcareous mudstones. The Thames Group was deposited in environments ranging from marine shoreface ranging out to outer marine shelf. The Thames group occurs in the London Basin, East Anglia and the eastern Hampshire Basin and can be up to approximately 150 metres in thickness.

Alluvium is the material laid down in its channel and on the flood plain by modern day rivers. This material is generally silt, sand, or clay. The presence of gravels represents times of flood. Where still conditions prevail then the growth of plant material may occur in or near the river channel, this facilitates the development of peat as this material dies and is buried.

Head comprises poorly sorted and poorly stratified deposits formed by the mass movement of superficial materials on sloping ground. The mass movement processes include hillwash and soil creep as well as solifluction, an important mode of sediment transport in periglacial conditions. Head occurs as a veneer up to a metre or so thick lining the floors and/or lower flanks of the tributary valleys. Head ranges from yellow brown to dark brown to grey-black and comprises mainly sand with varying proportions of clay, silt, gravel of pebble grade (mostly flint) and sporadic larger rock clasts.

A geology report can be found in Appendix C.

2.7 Hydrogeology and Hydrology

According to the Regional Hydrogeology Map of Southern East Anglia, the Thames Group is unproductive strata with regard to Aquifer Designations.

The BGS flood data map indicates that in the north western portion of the site, there is potential for groundwater flooding to occur at the surface.

The north-western corner of the site is located within an Environment Agency flood zone 2 and 3.

The site is located within an Environment Agency Total Catchment (Zone 3) for groundwater source protection.

The Aquifer designations are unproductive strata for the bedrock Thames Group and Secondary B for the Head deposits.

An historical borehole log is available to view on the BGS website id 564145 ref TM24NW42. The borehole was located approximately 70 metres to the east of Grove Farm, Little Bealings and drilled to a depth of 40 feet (25.6 metres) in 1952 by John J. Gosling & Co Ltd.

3.0 Identification of potential contaminants of concern and source areas

Historical land use indicates that the site has had no potentially contaminative past industrial use. Pigs were reared on the farm with the Dutch barn and hay barn also suggesting arable land use. It is clear that buildings have been redundant for a significant period of time. After visual examination and reviewing information from the desk study and walkover survey the following have been identified as potential pollution sources.

- i) Cement board roof on barns A to D
- ii) Potential slurry tank west of Barn A
- iii) Sinks pit landfill site approximately 685 metres to the southwest
- iv) Historical land use as a pig farm

These have a variety of potential pollution linkages.

3.1 Consultations with the local authority

No consultations have taken place with the Local Authority. The site is subject to the planning conditions of East Suffolk Council. The planning reference for Barn A is DC/22/3733/P3Q. The Planning reference for Barn C is DC/23/0107/P3Q.

3.2 Consultations with the Environment Agency

No consultations have taken place with the Environment Agency.

3.3 Consultations with other appropriate bodies

No other bodies have been consulted during the compilation of this report.

3.4 Review and summary of previous reports

Groundsure Report, Grove Farm, Little Bealings, Woodbridge, Suffolk, report reference GS-4723746 dated February 2018 was referred to during the compilation of this report.

Structural Inspection Report, Barn A, Grove Farm, Little Bealings, Woodbridge, Suffolk, report reference IA22/105 dated September 2022 by J P Chick and Partners was referred to during the compilation of this report.

Structural Inspection Report, Barn C, Grove Farm, Little Bealings, Woodbridge, Suffolk, report reference IA22/105 dated September 2022 by JP Chick and Partners was referred to during the compilation of this report.

4.0 Risk Assessment

4.1 Conceptual Model

The known or perceived sources of contamination and pollution linkages are assessed in this section. The conceptual model is realised here in tabulated form.

4.2 Sources of contamination

Historical land use indicates that the site has had no potentially contaminative past industrial use. Pigs were reared on the farm with the Dutch barn and hay barn also suggesting arable land use. It is clear that buildings have been redundant for a significant period of time. After visual examination and reviewing information from the desk study and walkover survey the following have been identified as potential pollution sources.

- i) Cement board roof on barns A to D
- ii) Potential slurry tank west of Barn A
- iii) Sinks pit landfill site approximately 685 metres to the southwest
- iv) Historical land use as a pig farm

4.3 Pollution Linkages

Each of the potential contaminants may have a number of pollution linkages. Each of these linkage types has a number of potential pathways.

- i) Surface soil linkages
 - a) Direct contact ingestion or absorption
 - b) Indirect contact ingestion or absorption
 - c) Leaching to groundwater

- ii) Subsurface soil linkages
 - a) Direct contact ingestion or absorption
 - b) Indirect contact ingestion or absorption
 - c) Leaching to groundwater

- iii) Surface water linkages
 - a) Direct contact ingestion or absorption
 - b) Indirect contact ingestion or absorption
 - c) Percolation to groundwater

- iv) Groundwater linkages
 - a) Direct contact ingestion or absorption
 - b) Indirect contact ingestion or absorption

- v) Airborne linkages
 - a) Vapour intrusion into confined / indoor spaces
 - b) Inhalation or absorption of particulates
 - c) Inhalation or absorption of volatile compounds

4.4 Receptors

A number of potential receptors exist. These can be broadly grouped as

- i) Construction Worker
- ii) Future Resident
- iii) Trespasser
- iv) Local population
- v) Flora and fauna
- vi) Buildings
- vii) Surface Water
- viii) Groundwater

For each source, the linkage type, pathway and potential receptors can be identified. A level of risk if no action is taken can then be assigned to each of these linkages. The level of risk has been divided into six categories as follows

Very Low Risk – Considered very unlikely or impossible

Low Risk – Considered conceivable but unlikely

Medium Risk – Considered possible but unusual

High Risk – Considered probable ie about 50% chance

Very High Risk – Considered that it is to be expected to happen

Certainty – Considered that it will happen

Note: These risks are related to the probability of an event happening. They do not relate to the severity of the effects on human health or flora and fauna nor the financial consequences if the event should happen.

4.4.1 Cement board roof on barns A to D

Linkage type	Pathway	Receptor	Risk	
Surface soil linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Resident	Low	
		Trespasser	Low	
		Flora and fauna	Low	
		Direct contact	Surface water	Low
	Indirect contact ingestion or absorption	Resident	Low	
Subsurface soil linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Resident	Low	
		Flora and fauna	Low	
		Direct contact	Buildings and services	Low
		Indirect contact ingestion or absorption	Resident	Low
		Leaching to groundwater	Local population	Low
		Flora and fauna	Low	
		Construction Worker	Low	
		Groundwater	Low	
Surface water linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Resident	Low	
		Trespasser	Low	
		Flora and fauna	Low	
		Direct contact	Buildings and services	Low
			Surface water	Low
		Percolation to groundwater	Local population	Low
		Flora and fauna	Low	
		Groundwater	Low	
Groundwater linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Local population	Low	
		Flora and fauna	Low	
		Direct contact	Buildings and services	Low
			Groundwater	Low
		Indirect contact ingestion or absorption	Local population	Low
		Flora and fauna	Low	
Airborne linkage	Inhalation of particulates	Construction Worker	Very high	
		Resident	Low	
		Trespasser	Very high	
		Flora and fauna	Low	
		Local population	Low	
	Inhalation of volatile compounds	Inhalation of volatile compounds	Construction Worker	Low
			Resident	Low
			Trespasser	Low
			Flora and fauna	Low
			Local population	Low
Vapour intrusion into indoor spaces	Vapour intrusion into indoor spaces	Resident	Low	
		Local population	Low	

4.4.2 Potential slurry tank west of Barn A

Linkage type	Pathway	Receptor	Risk	
Surface soil linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Resident	Low	
		Trespasser	Low	
	Direct contact	Flora and fauna	Low	
		Surface water	Low	
		Indirect contact ingestion or absorption	Resident	Low
Subsurface soil linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Resident	Low	
		Flora and fauna	Low	
	Direct contact	Buildings and services	Low	
	Indirect contact ingestion or absorption	Resident	Low	
	Leaching to groundwater	Local population	Medium	
		Flora and fauna	Low	
		Construction Worker	Medium	
		Groundwater	Medium	
	Surface water linkage	Direct contact ingestion or absorption	Construction Worker	Low
Resident			Low	
Trespasser			Low	
Direct contact		Flora and fauna	Low	
		Buildings and services	Low	
		Surface water	Low	
Percolation to groundwater		Local population	Low	
		Flora and fauna	Low	
		Groundwater	Low	
Groundwater linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Local population	Low	
		Flora and fauna	Low	
	Direct contact	Buildings and services	Low	
		Groundwater	Low	
	Indirect contact ingestion or absorption	Local population	Low	
		Flora and fauna	Low	
Airborne linkage	Inhalation of particulates	Construction Worker	Low	
		Resident	Low	
		Trespasser	Low	
		Flora and fauna	Low	
		Local population	Low	
	Inhalation of volatile compounds	Construction Worker	Low	
		Resident	Low	
		Trespasser	Low	
		Flora and fauna	Low	
		Local population	Low	
Vapour intrusion into indoor spaces	Resident	Low		
	Local population	Low		

4.4.3 Sinks pit landfill site approximately 685 metres to the southwest

Linkage type	Pathway	Receptor	Risk	
Surface soil linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Resident	Low	
		Trespasser	Low	
		Flora and fauna	Low	
		Direct contact	Surface water	Low
	Indirect contact ingestion or absorption	Resident	Low	
Subsurface soil linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Resident	Low	
		Flora and fauna	Low	
		Direct contact	Buildings and services	Low
		Indirect contact ingestion or absorption	Resident	Low
		Leaching to groundwater	Local population	Low
		Flora and fauna	Low	
		Construction Worker	Low	
		Groundwater	Low	
Surface water linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Resident	Low	
		Trespasser	Low	
		Flora and fauna	Low	
		Direct contact	Buildings and services	Low
			Surface water	Low
		Percolation to groundwater	Local population	Low
		Flora and fauna	Low	
		Groundwater	Low	
Groundwater linkage	Direct contact ingestion or absorption	Construction Worker	Low	
		Local population	Low	
		Flora and fauna	Low	
		Direct contact	Buildings and services	Low
			Groundwater	Low
		Indirect contact ingestion or absorption	Local population	Low
		Flora and fauna	Low	
Airborne linkage	Inhalation of particulates	Construction Worker	Low	
		Resident	Low	
		Trespasser	Low	
		Flora and fauna	Low	
		Local population	Low	
	Inhalation of volatile compounds	Inhalation of volatile compounds	Construction Worker	Low
			Resident	Low
			Trespasser	Low
			Flora and fauna	Low
			Local population	Low
Vapour intrusion into indoor spaces	Vapour intrusion into indoor spaces	Resident	Low	
		Local population	Low	

4.4.4 Historical use as a pig farm

Linkage type	Pathway	Receptor	Risk
Surface soil linkage	Direct contact ingestion or absorption	Construction Worker	Low
		Resident	Low
		Trespasser	Low
	Direct contact	Flora and fauna	Low
		Surface water	Low
		Indirect contact ingestion or absorption	Resident
Subsurface soil linkage	Direct contact ingestion or absorption	Construction Worker	Low
		Resident	Low
		Flora and fauna	Low
	Direct contact	Buildings and services	Low
	Indirect contact ingestion or absorption	Resident	Low
		Leaching to groundwater	Local population
		Flora and fauna	Low
		Construction Worker	Low
		Groundwater	Low
		Surface water linkage	Direct contact ingestion or absorption
Resident	Low		
Trespasser	Low		
Direct contact	Flora and fauna		Low
	Buildings and services		Low
Percolation to groundwater	Surface water		Low
	Local population		Low
	Flora and fauna		Low
	Groundwater	Low	
	Groundwater linkage	Direct contact ingestion or absorption	Construction Worker
Local population			Low
Flora and fauna			Low
Direct contact		Buildings and services	Low
		Groundwater	Low
Indirect contact ingestion or absorption		Local population	Low
		Flora and fauna	Low
	Airborne linkage	Inhalation of particulates	Construction Worker
Resident			Low
Trespasser			Low
Flora and fauna			Low
Local population			Low
Inhalation of volatile compounds		Construction Worker	Low
		Resident	Low
		Trespasser	Low
		Flora and fauna	Low
		Local population	Low
Vapour intrusion into indoor spaces	Resident	Local population	Low
		Local population	Low

4.5 Description of possible pollutant linkages for controlled waters

According to the Regional Hydrogeology Map of Southern East Anglia, the Thames Group is unproductive strata with regard to Aquifer Designations.

4.6 Discussion of uncertainties and gaps in information

It may be possible that there are areas of contamination that have not been found during the walkover survey or the studying of historical maps.

5.0 Discussion of risks posed by the site

5.1 Cement board roof on barns A to D.

Cement board sheeting is present as the roofing material and guttering on barns A to D. This material is likely to contain asbestos, therefore a potential Very High Risk (considered that it is to be expected to happen) has been assigned to two of the potential receptors via an airborne linkage. Broken and damaged sheets represent a risk due to the release of fibres. In this instance no broken sheets were seen on the site.

It is recommended that all potential asbestos containing material (ACM) should be removed by a suitably licensed contractor and disposed of to a suitably licensed facility. Consignment notes for any removed asbestos and documentation stating that all Asbestos has been disposed of from the site should be submitted to East Suffolk Council.

After the removal of all ACM from the site, following the conditions above, the remaining potential risk is very low.

5.2 Possible slurry tank west of Barn A

A possible slurry tank is present to the west of Barn A. Anecdotal evidence suggested that all the buildings and slurry tank was cleaned at the closure of the farm. The contents of the tank is unknown as no access could be gained. The tank may be empty or may have filled with surface water since the closure.

This has been classed as medium risk - Considered possible but unusual.

5.3 Sinks pit landfill site approximately 685 metres to the southwest

The Envirocheck Report has highlighted a historical landfill site, a former quarry Sinks pit which is located approximately 685 metres to the south of the site. Due to the distance from the site the risk is considered Very Low – Very unlikely or Impossible.

5.4 Historical use as a pig farm

This site has only historically been used as a purpose built pig farm for a short period of time. In this instance, the risk has been classed as Low Risk - Considered conceivable but unlikely.

6.0 Recommendations

Based upon the information contained herein it is recommended that a site investigation is considered necessary on this site for contamination purposes. This should include investigation of the potential slurry tanks as well as three hand dug trial pits in each garden area to ensure that the soil material on site is suitable for reuse as Topsoil.

A competent person should oversee the removal of the underground slurry tank. Following the removal of the tank and any visually or olfactorily impacted surrounding material, validation sampling should be undertaken from the sides and base of the excavation in accordance with BS:10175:2011+A2:2017 to ensure that all contaminated material has been removed. The quantity of testing may be reduced pending the findings upon excavation. This should confirm that no risk would then be present that would impact on the site.

A number of buildings on the site do have ACM products on the roofs and part of the walls. All potential asbestos containing material (ACM) on the structure should be removed by a suitably licensed contractor and disposed of to a suitably licensed facility when site clearance is undertaken. Consignment notes for any removed ACM and documentation stating that all ACM has been disposed of from the site should be submitted to East Suffolk Council.

Following the removal of the ACM it is recommended that a competent person from NPL should visit the site to ensure that all ACM has been removed and that no visible or olfactory signs of contamination are present. If any potential contamination is identified, then soil samples will be retrieved and tested appropriately. A record will be kept of all findings and will be submitted in a validation report.

It is recommended that for compliance for the change of use for agricultural buildings to residential end use scenario on completion three trial pits should be carried out in each garden area and three samples taken and tested for contaminants of concern including metals, PAH's, and Asbestos presence/absence. Results will be assessed against SGV's, Atkins ATRISK threshold values for residential with home grown produce land use with 1% soil organic matter and LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment.

Alternatively, if Topsoil is to be imported into the site it should be under a conveyance note system and certified contaminant free and replenished at a minimum depth of 300mm.

Norfolk Partnership Laboratory
Site Investigation Section

This report was prepared under the direction of

Head of Laboratory Services



I D Brown

Author of report

Assistant Engineer



J Price

Date:07/07/2023

Appendix A



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Tom McCabe
 Executive Director of
 Community and Environmental Services
 Norfolk County Council
 County Hall, Martineau Lane
 Norwich NR1 2SG

DRAWING TITLE
 104442 Grove Farm, Little Bealings
 Desk Study
 Site Location Plan

REV.	DESCRIPTION	DRAWN BY	CHECKED	DATE

	INITIALS	DATE	DRAWING No.
SURVEYED BY	OS	06/23	104442-001
DESIGNED BY	JP	06/23	PROJECT TITLE
DRAWN BY	JP	06/23	Grove Farm, Little Bealings
CHECKED BY	IDB	06/23	Desk Study
			SCALE
			1: 5000 @A3
			FILE No.
			104442



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Tom McCabe
 Executive Director of
 Community and Environmental Services
 Norfolk County Council
 County Hall, Martineau Lane
 Norwich NR1 2SG

DRAWING TITLE
 104442 Grove Farm, Little Bealings
 Desk Study
 Site Location Plan

REV.	DESCRIPTION	DRAWN BY	CHECKED	DATE

SURVEYED BY	INITIALS	DATE	DRAWING No.
OS	OS	06/23	104442-002
DESIGNED BY	JP	06/23	PROJECT TITLE
DRAWN BY	JP	06/23	Grove Farm, Little Bealings
CHECKED BY	IDB	06/23	Desk Study
SCALE		FILE No.	
1: 1000 @A3		104442	

Appendix B

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	WMGR	Infilled Ground	Artificial Deposit	Not Supplied - Holocene
	WGR	Worked Ground (Undivided)	Void	Not Supplied - Holocene
	LSGR	Landscaped Ground (Undivided)	Artificially Modified Ground	Not Supplied - Holocene

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay and Silt	Not Supplied - Holocene
	LOFT	Lowestoft Formation	Sand and Gravel	Not Supplied - Anglian
	LOFT	Lowestoft Formation	Diamicton	Not Supplied - Anglian
	GLLMP	Glaciolacustrine Deposits, Mid Pleistocene	Clay and Silt	Not Supplied - Cromerian
	KGCA	Kesgrave Catchment Subgroup	Sand and Gravel	Not Supplied - Pleistocene
	HEAD	Head	Diamicton	Not Supplied - Quaternary
	RTDU	River Terrace Deposits (Undifferentiated)	Sand and Gravel	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	RCG	Red Crag Formation	Sand	Not Supplied - Pliocene
	CFB	Chillesford Church Sand Member	Sand	Not Supplied - Antian / Bramertonian
	THAM	Thames Group	Clay, Silt and Sand	Not Supplied - Eocene
	TALM	Thanet Formation And Lambeth Group (Undifferentiated)	Clay And Sand	Not Supplied - Paleocene

Geology 1:50,000 Maps

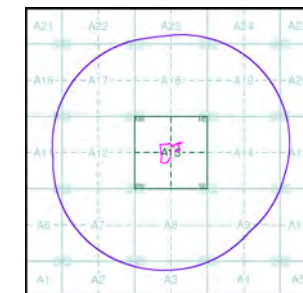
This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.

The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	1
Map Sheet No:	207
Map Name:	Ipswich
Map Date:	2006
Bedrock Geology:	Available
Superficial Geology:	Available
Artificial Geology:	Available
Faults:	Not Supplied
Landslip:	Available
Rock Segments:	Not Supplied

Geology 1:50,000 Maps - Slice A

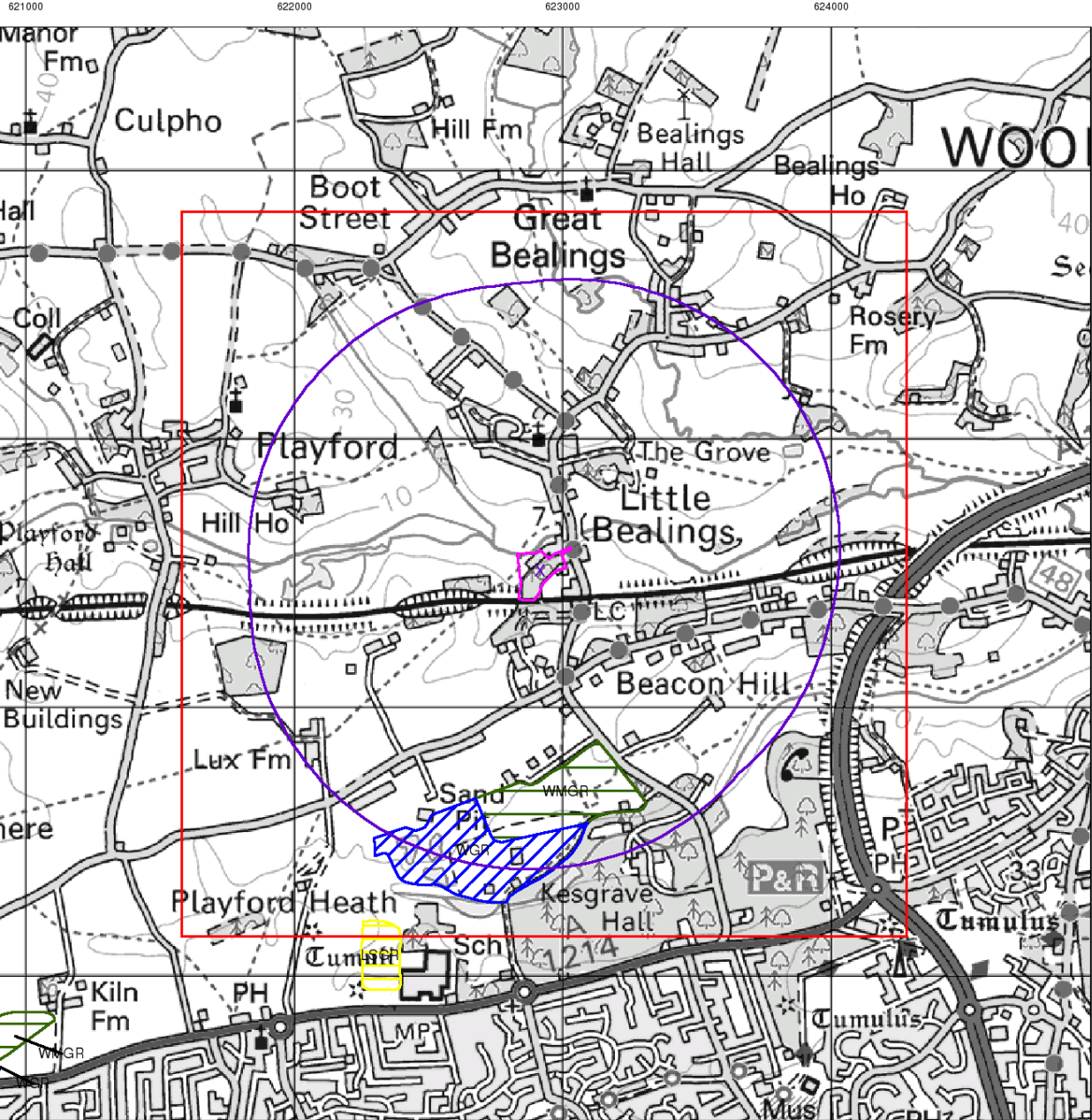


Order Details:

Order Number:	312695962_1_1
Customer Reference:	104442
National Grid Reference:	622920, 247510
Slice:	A
Site Area (Ha):	2.06
Search Buffer (m):	1000

Site Details:

Site at, Little Bealings, Suffolk



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Artificial Ground and Landslip

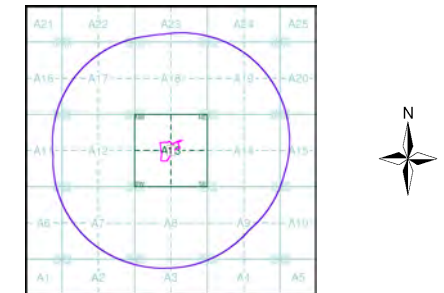
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



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 Search Buffer (m): 1000

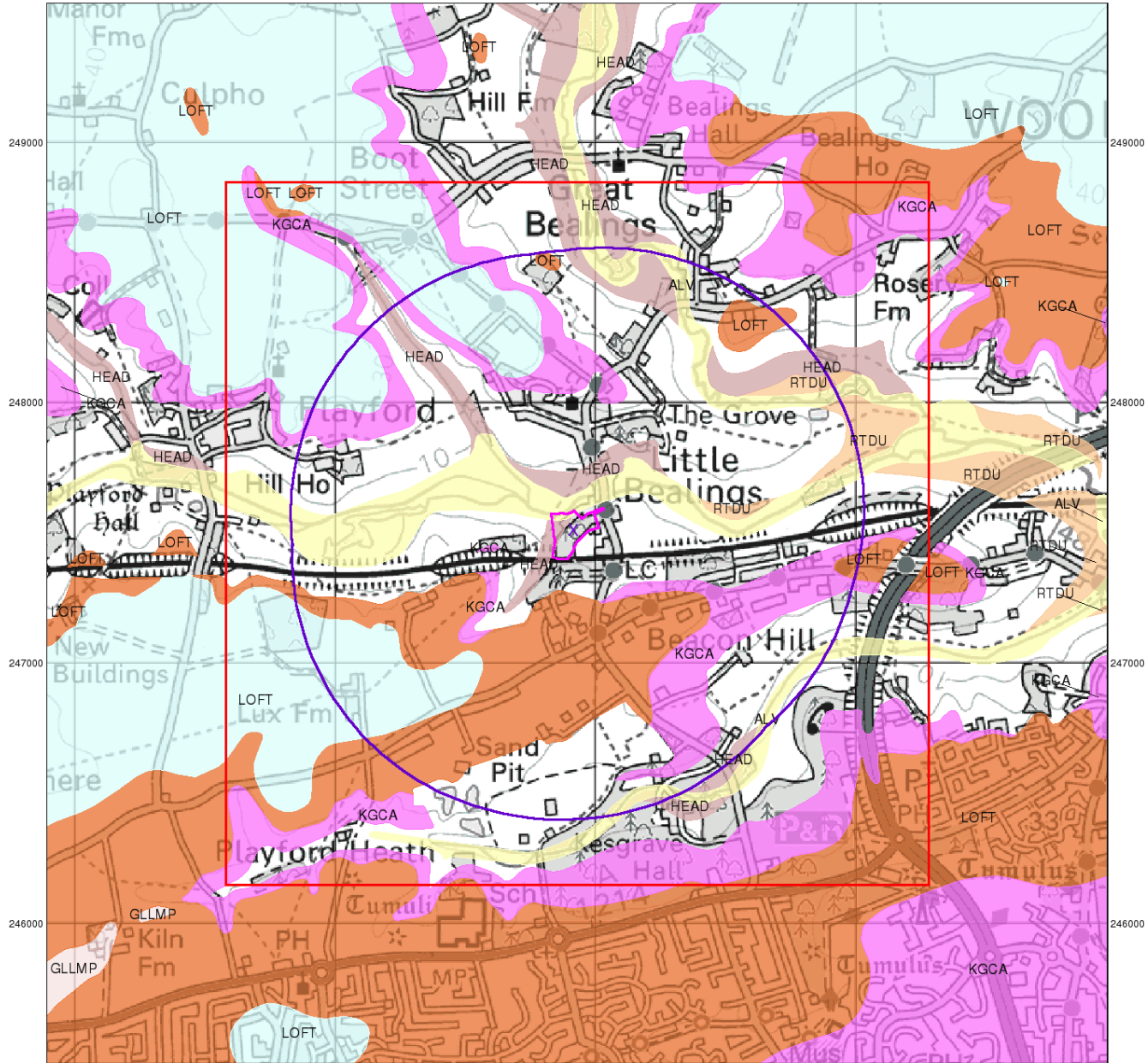
Site Details:

Site at, Little Bealings, Suffolk

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Tel: 0844 844 9952
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 Web: www.envirocheck.co.uk

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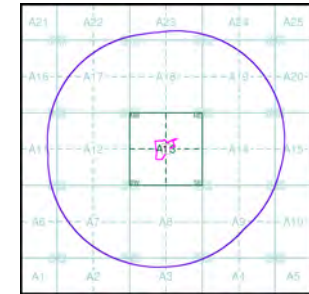
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



Order Details:

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 National Grid Reference: 622920, 247510
 Slice: A
 Site Area (Ha): 2.06
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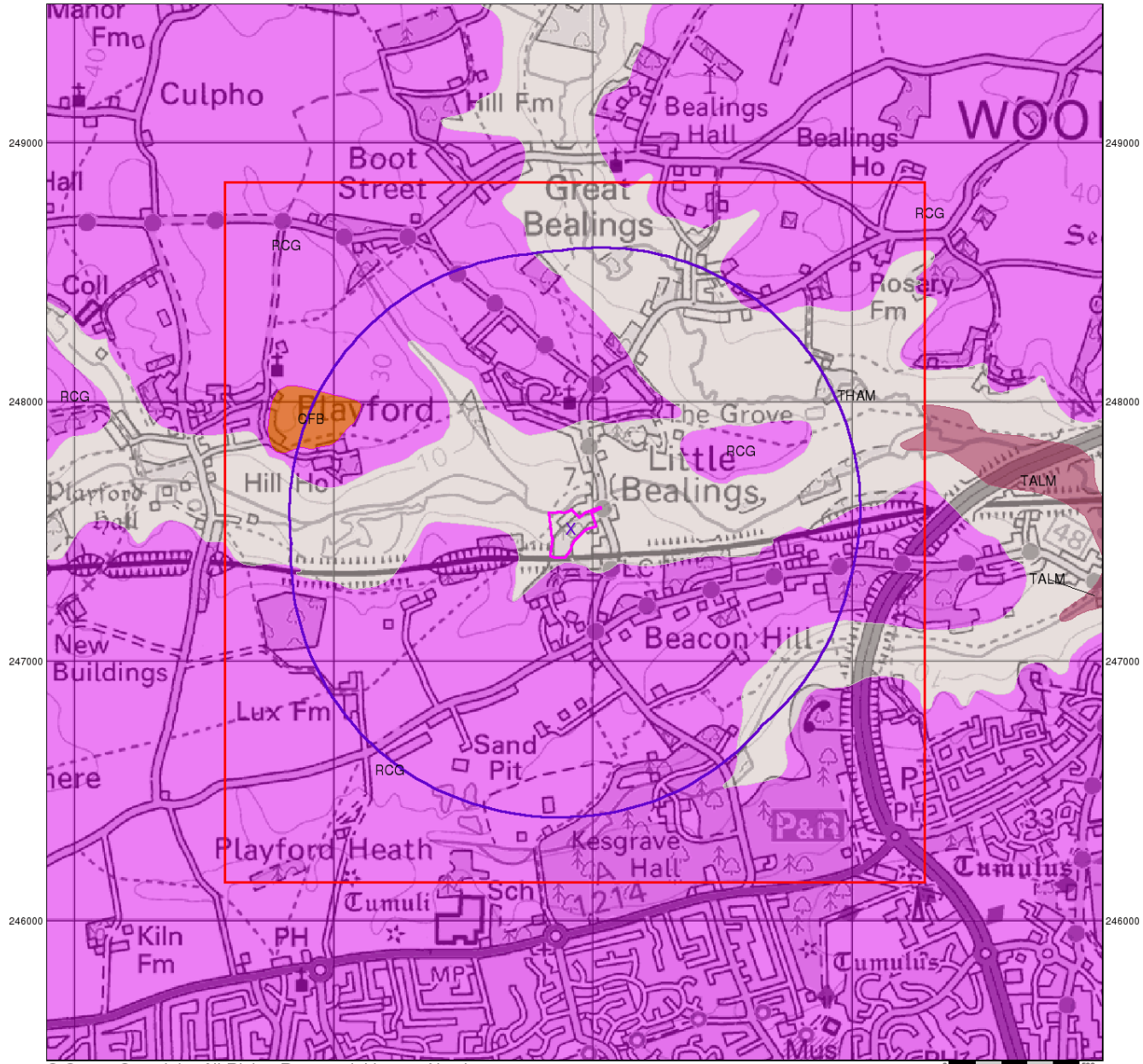
Site Details:

Site at, Little Bealings, Suffolk

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Bedrock and Faults

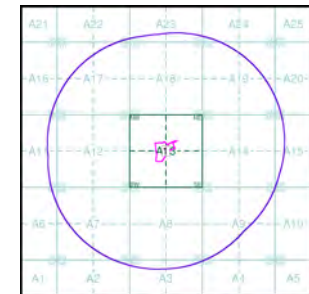
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



Order Details:

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 Customer Reference: 104442
 National Grid Reference: 622920, 247510
 Slice: A
 Site Area (Ha): 2.06
 Search Buffer (m): 1000

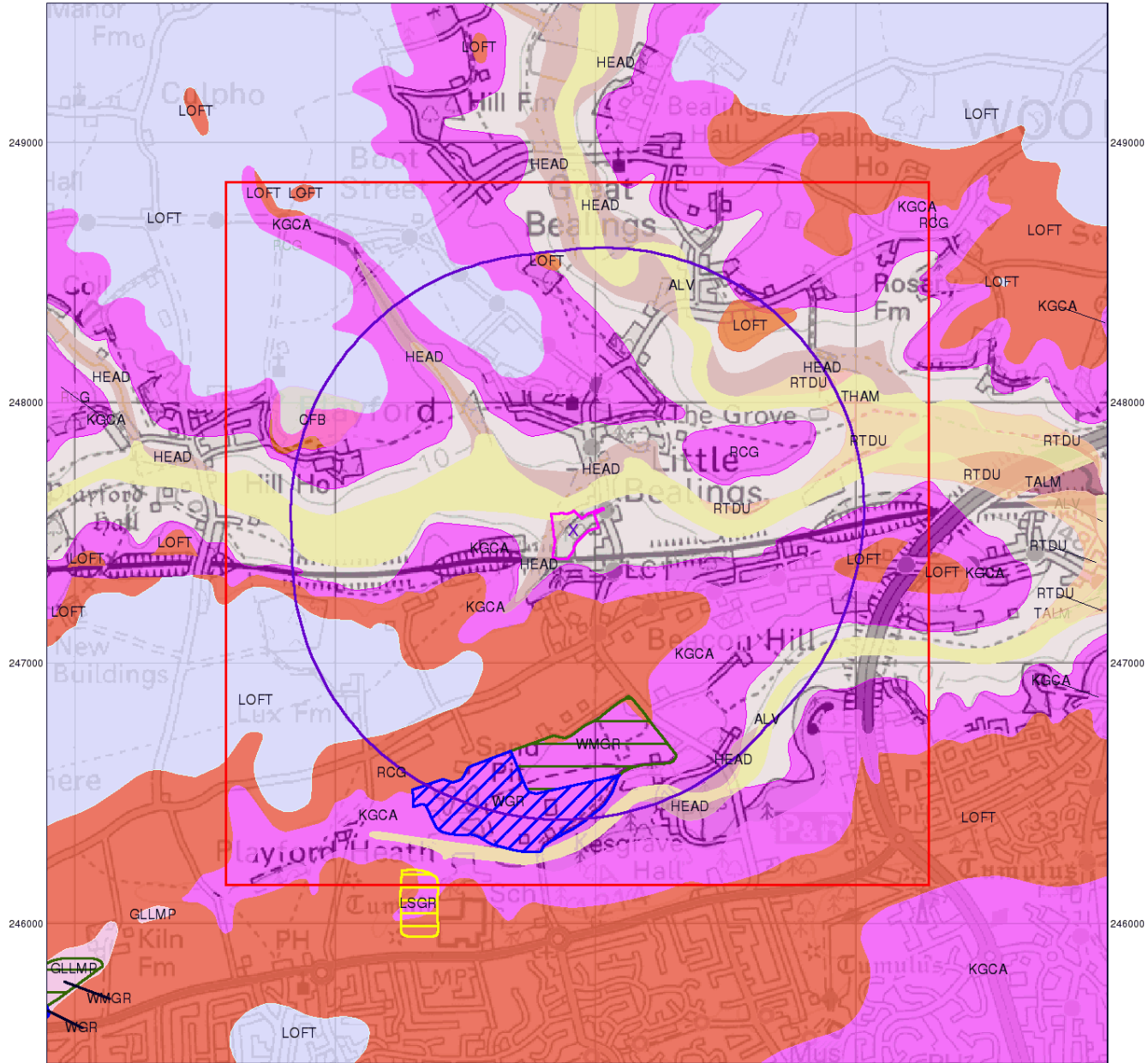
Site Details:

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0 500m

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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

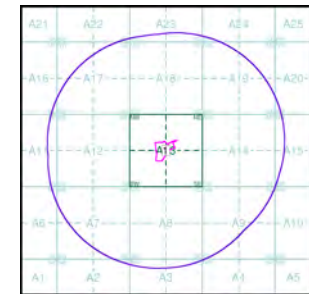
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

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 Kingsley Dunham Centre
 Keyworth
 Nottingham
 NG12 5GG
 Telephone: 0115 936 3143
 Fax: 0115 936 3276
 email: enquiries@bgs.ac.uk
 website: www.bgs.ac.uk

Combined Geology Map - Slice A



Order Details:

Order Number: 312695962_1_1
 Customer Reference: 104442
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