

Phase 1 Contamination Assessment Report



Land at Nethercott Barn, Broadwoodwidger, PL16 0JR

For S Crabb

July 2022

Report No P220712



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1.0 Object and Scope of This Assessment

Contamination Reports South West was commissioned to undertake a Phase 1 Contaminated Land Assessment of a site at Land at Nethercott Barn, Broadwoodwidger, PL16 0JR. The work was undertaken on behalf of S Crabb for the purpose of supporting a planning application. This report describes the work carried out and presents the data obtained.

This report has been prepared in general accordance with:

- The National Planning Policy Framework (NPPF) 2019.
- R&D Publication 66: 2008. Guidance for the Safe Development of Housing on Land Affected by Contamination
- BS 10175:2011: Investigation of Potentially Contaminated Sites Code of Practice
- BS5930:1999: Code of Practice for Site Investigations.
- Department of the Environment (1995) DoE Industry Profiles.
- CLR11: Model Procedures for the Management of Land Contamination.

A Contaminated Land Assessment is usually required if the proposed use will be particularly vulnerable or sensitive to the presence of contamination, including any residential building, schools, nurseries or allotments.

The object of the Phase 1 Contaminated Land Assessment is to provide information on the likely ground and groundwater conditions at the site, to provide data to enable an initial assessment of the site in relation to the known development proposals.

The information has been obtained from the following:

Desk Study - This comprised a search of available historical and current records and maps to identify potential on-site and off-site sources, pathways and receptors of contamination.

Site Walkover - A site walkover survey was undertaken to confirm the information gathered for the desktop study and to reveal any features which may suggest possible sources of contamination.

Risk Assessment - A preliminary risk assessment has been carried out using the information from the desktop study and site walkover to identify possible pollutant linkages and enable the development of a site conceptual model.



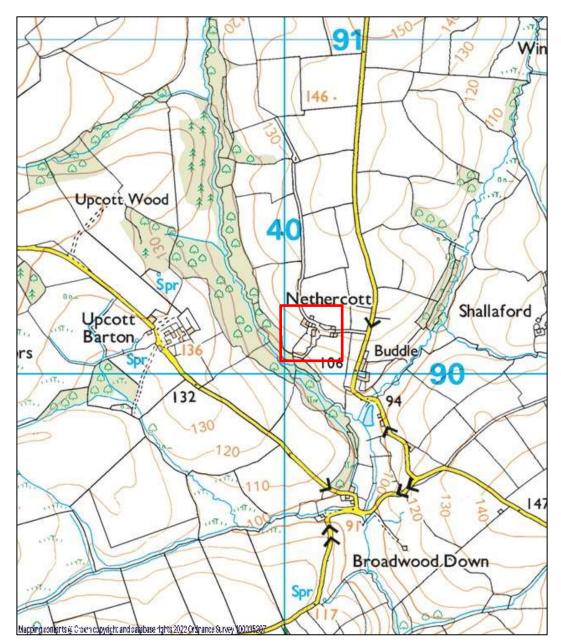
2.0 Site Details

Site address: Land at Nethercott Barn Broadwoodwidger Devon

Post Code: PL16 0JR

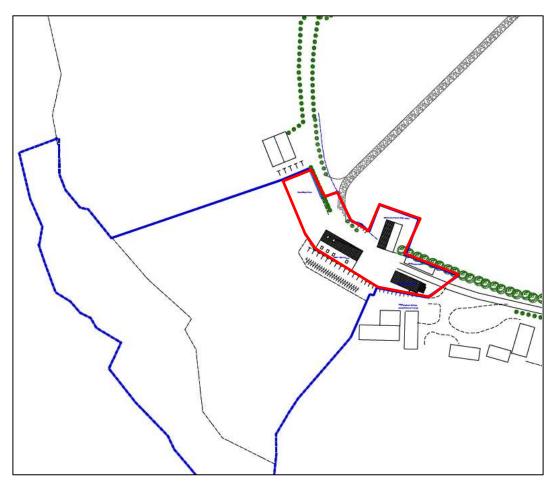
Grid Reference: 240059, 90160

A site location plan is presented below.





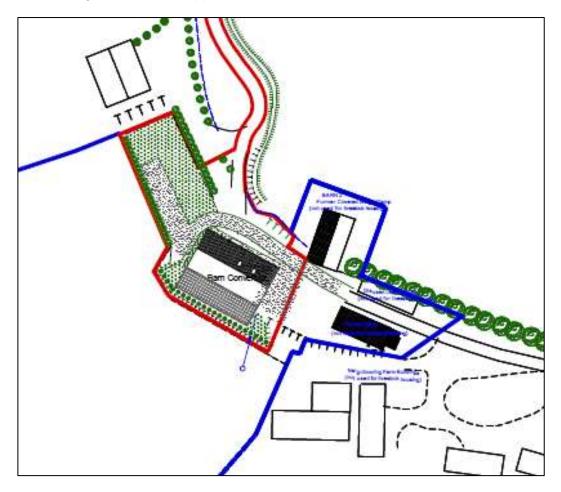
The site boundary is marked in red.







It is understood that it is proposed to convert a number of barns on the site to residential dwellings. A proposed development plan is shown below. A copy of the drawing is included in Appendix 1.





3.0 Site Use

3.1 Current Site Use

A walkover survey of the site and immediate area was undertaken in July 2022 by Contamination Reports South West.

The site comprises a number of former agricultural buildings and yard area pertaining to dairy farming.

A partially constructed steel framed building lies in the south of the site. In the north an open fronted barn is present, while two further buildings lie in the east of the site.

The buildings contained building materials and general domestic items.

No evidence of potentially contaminative substances (fuels, lubricants, solvents etc) was observed.

An inspection of the site and immediate area was undertaken. A summary of features that can be associated with potential contamination sources is presented in the following table:

Feature	Comment
Fuel storage tanks	None identified.
Fuel pumps	None identified.
Workshops / machinery	None identified
Plant and vehicles	None identified
Electricity sub-stations	None identified
Imported soils	None identified

3.2 Adjacent Land Use

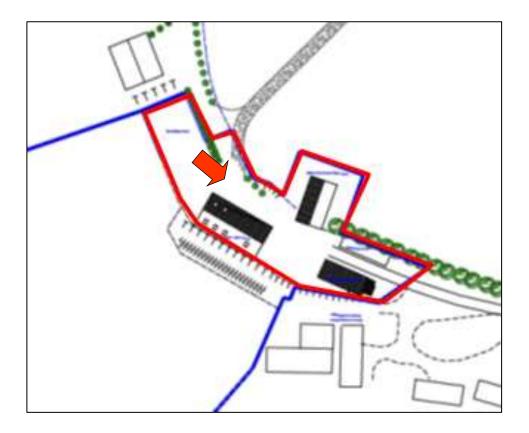
The site is largely surrounded by agricultural land with farm buildings to the south east.

Photographs of the site taken during the walkover survey are presented as follows:



Recent steel framed structure undergoing construction in the south of the site.

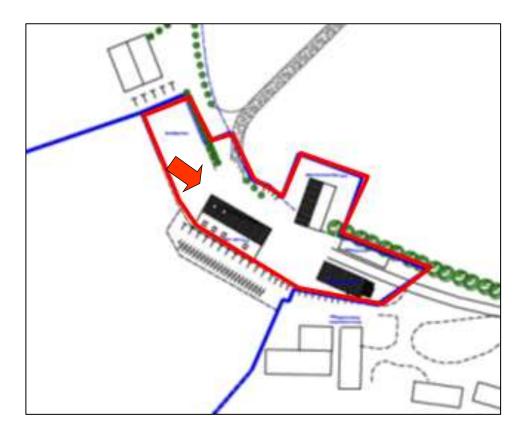






Stockpile of aggregate being used as part of the floor slab construction.

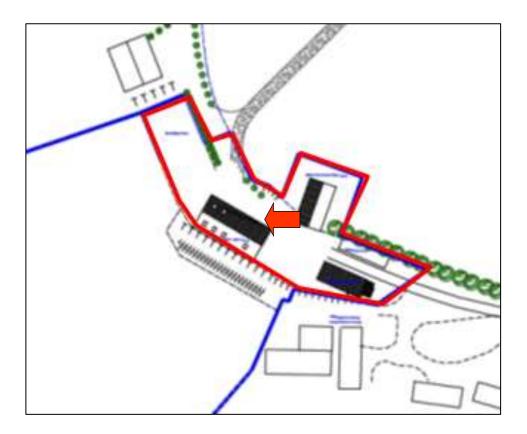






Structure undergoing construction.



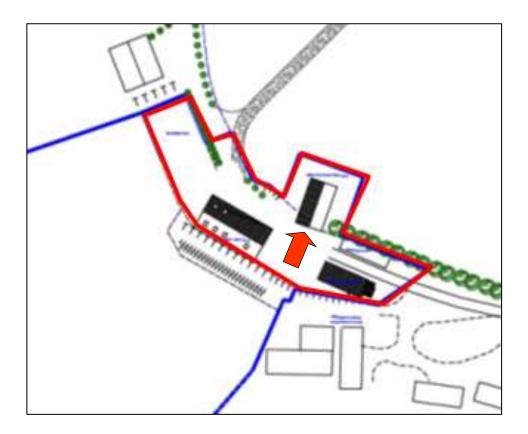






Interior of the northern building.

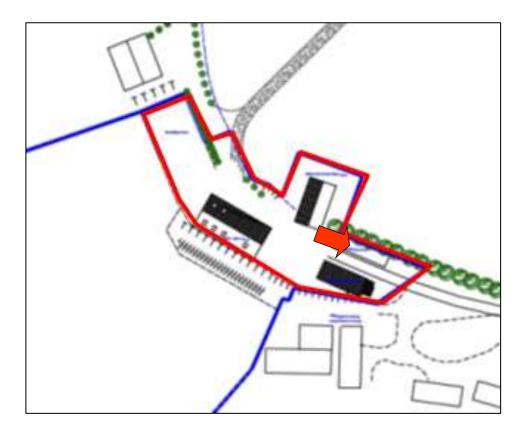






Interior of the north eastern building.

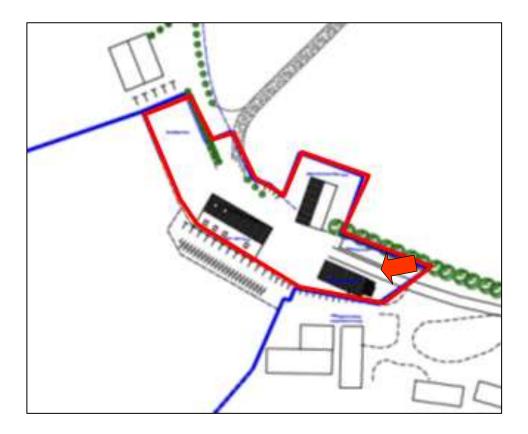






Exterior of the south eastern building.

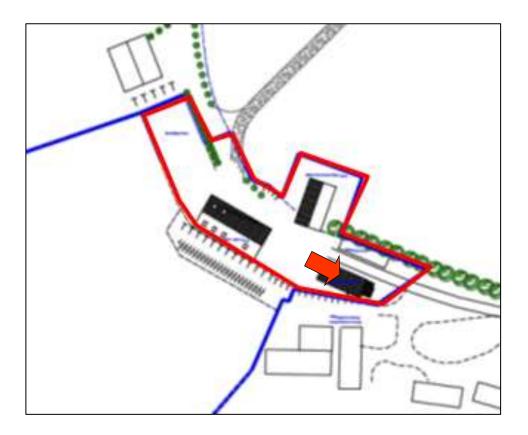






Interior of the south eastern building.



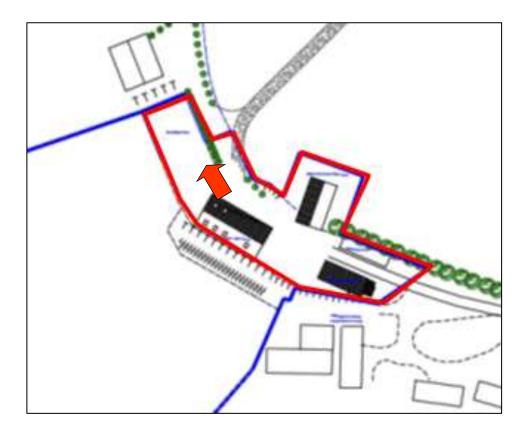






Yard area in the north west.



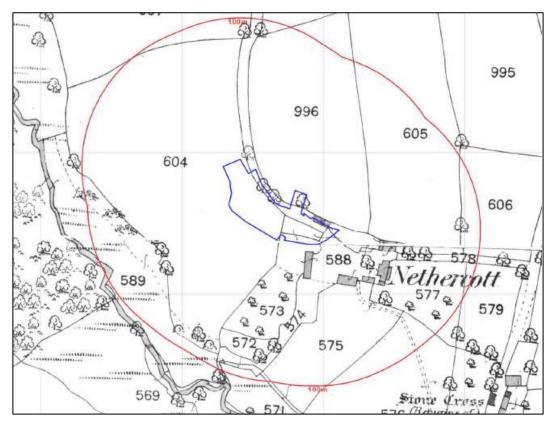




3.3 Historical Land Use

A review of available historical maps has been undertaken to provide information on the historical site and surrounding land use. Extracts of the site and surrounding area and the salient findings of the review are presented below, with the full map extracts included in Appendix 2.

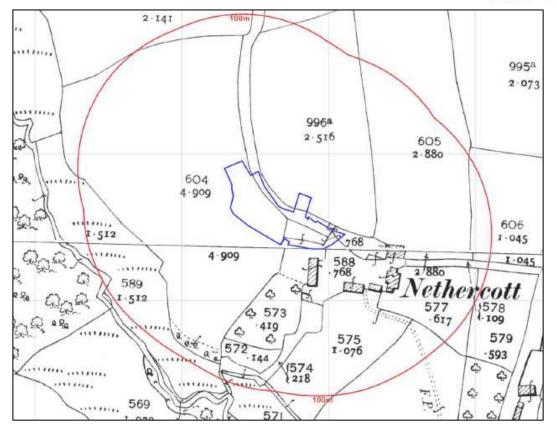
It is understood that the site was formerly used for dairy farming, the buildings beings silage storage, clamps and loose boxes.



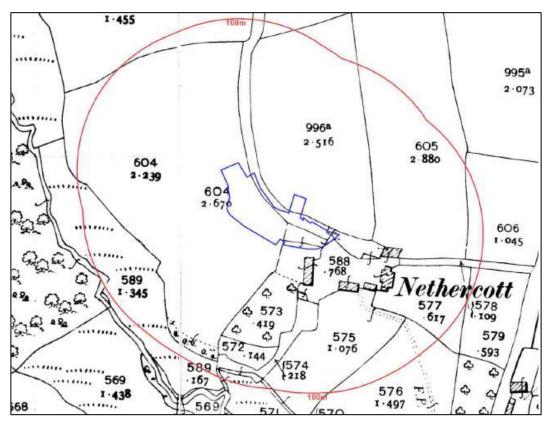
1884 1:2,500 The site comprises a parcel of undeveloped farmland.

The surrounding area is predominantly undeveloped fields, with farm buildings of Nethercott to the south east of the site.



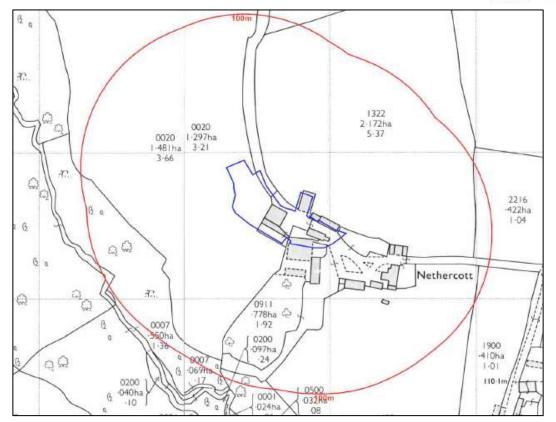


1906 1:2,500 No significant changes within or adjacent to the site are evident.

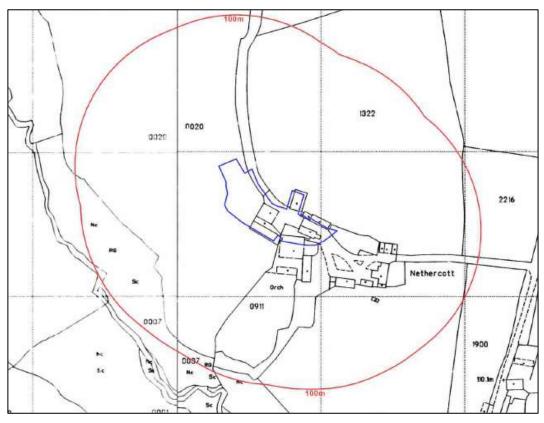


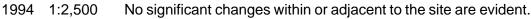
1955 1:2,500 No significant changes within or adjacent to the site are evident.



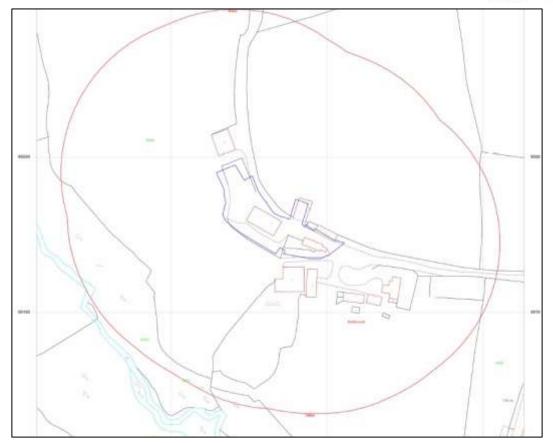


1977 1:2,500 The site now contains the current buildings.









2003 1:1,250 No significant changes within or adjacent to the site are evident.



4.0 Site Conceptual Model

4.1 General

This section uses information from the data obtained to provide a conceptual model and qualitative assessment of the potential risks posed to identified receptors from potential on-site and off-site sources of contamination. The assessment is presented as a 'source-pathway-receptor' model in accordance with Part IIa of the Environmental Protection Act 1990. This assessment is used to determine whether the site may be considered as contaminated land, which is defined by Part IIa of the Environmental Protection Act 1990 as:

'any land which appears to the local authority in whose area it is situated, to be in such a condition, by reason or substances in, on, or under the land, that: significant harm is being caused or there is a significant possibility of such harm being caused; or pollution of controlled water is being or is likely to be caused.'

Where there is a plausible linkage between identified sources, pathways and receptors, then the land may be deemed contaminated where there is significant risk of significant harm to such receptors.

The conceptual model is based on the understanding that the site will be redeveloped for residential dwellings with gardens.

4.2 Potential Contaminant Sources

4.2.1 On site potential sources relating to current use

The site is currently a number of barns used for storage and no sources of contamination were evident.

Therefore the site's current use is not considered to present a significant risk of a source of gross contamination.

4.2.2 On site potential sources relating to historical use

The site appears to have remained undeveloped agricultural land prior to the construction of the existing farm buildings.

On this basis the site's historical use is not considered to present a significant risk of a source of gross contamination.

4.2.3 Off site potential sources relating to current use

The buildings in the vicinity of the site are residential and agricultural related. The remainder is agricultural land. No potential significant contamination sources are associated with the immediate surrounding land uses.

4.2.4 Off site potential sources relating to historical use

The surrounding area has largely remained agricultural. Consequently, no potential sources of significant contamination have been identified within the immediate surrounding land use.

4.2.5 Naturally occurring metals

Bedrock Geology: Crackington Formation - Mudstone and Siltstone

The underlying geology at the site is not generally associated with elevated levels of naturally occurring heavy metals.



Reference to the British Geological Survey soil chemistry atlas on England (Contaminant distribution in soil) shows the following contaminant averages for the area of the site:

Metal			Range	
Arsenic	14.1	to	18.9	mg/kg
Cadmium		<	0.33	mg/kg
Copper	21.6	to	35.0	mg/kg
Nickel	13.2	to	16.7	mg/kg
Lead	33.2	to	47.1	mg/kg

None of the elements exceed the Land Quality Management Generic Assessment Criteria (LQM GAC) for "Residential with Plant Uptake" end use.

Consequently, it is considered that the naturally occurring metals likely to be present at the site do not present a potential source of contamination.

4.2.6 Landfill gas

Reference to Environment Agency records indicate that there are no current or historic landfills within 1km of the site.

Examination of the historical maps does not show any quarries, pits or similar features that may have been backfilled.

No other potential sources of hazardous ground gas are anticipated (e.g. extensive Made Ground or organic soils).

Therefore hazardous ground gas (methane and carbon dioxide) from biodegradation is considered unlikely to be a potential source of contamination at the site.

4.2.7 Radon

A radon report obtained for the purpose of this assessment states that the property is in a Radon Affected Area as defined by the Health Protection Agency. The estimated probability of the property being above the Action Level for radon is between 10% and 30% and full radon protection measures are required. Therefore Radon is considered to present a potential risk. The radon report is presented in Appendix 3 and discussed in Section 6.

4.2.8 Substances detrimental to building fabric

Elevated levels of sulphates or sulphides can cause decay of buried concrete. The bedrock geology of mudstone and siltstone is not associated with elevated concentrations of sulphates or sulphides and therefore the risk is considered low. However, classification of the concrete design class for the site is beyond the scope of this report and chemical analysis of soil samples should be carried out so that the concrete design class can be determined in accordance with BRE Special Digest 1 (2005).

4.3 Summary of identified potential sources

No potential sources of contamination have been identified.



4.4 Receptors

It is understood that the site will be redeveloped private residential dwellings and gardens. The receptors appropriate to this end use have been identified as follows:

4.4.1 Human Health

- Residential end users.
- Construction workers.

4.4.2 Environmental

Secondary "A" aquifer 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.

The site is not within a source protection zone.

The nearest surface water feature is an un-named stream running from north west to south east located approximately 100m to the south west of the site boundary.

4.5 Pathways

Possible pathways between the identified potential sources and receptors are discussed as follows:

4.5.1 Receptor - End user

- Dermal contact with soil.
- Ingestion of soil.
- Indoor and outdoor inhalation of soil dust or hydrocarbon vapours.
- Ingestion of produce or soil particles on produce grown on site.
- Consumption of drinking water contaminated by transmission of hydrocarbons through plastic pipework.

4.5.2 Receptor - Groundworkers

- Dermal contact with soil or groundwater.
- Ingestion of soil or groundwater.
- Outdoor inhalation of soil dust or hydrocarbon vapours.

4.5.3 Receptor - Groundwater

• Infiltration and leaching of contaminants in soil into groundwater.

4.5.4 Receptor - Nearby surface water

• Migration of contaminants via surface run off.

4.5.5 Receptor - Flora and Fauna

• Uptake via root system.



- Displacement of oxygen from root systems by ground gas.
- Harm to ecosystems from contaminated soil or surface water.



5.0 Risk Assessment

The above source – pathway – receptor linkages are risk assessed in the following table:

Source	Receptor	Pathway	Likelihood	Severity	Risk
	Residential end users	Direct ingestion, ingestion of produce grown on site Dermal contact Inhalation of dust or	Unlikely: No sources identified	Medium	Low
	Construction worker	vapours Direct ingestion, dermal contact and inhalation of dust or vapours	Unlikely: No sources identified	Medium	Low
No potential	Water supply pipes	pipes sources	No hydrocarbon	Medium	Low
contamination sources identified. G	Groundwater	Infiltration and leaching of contaminants in soil into groundwater Migration of impacted water via drainage system	Unlikely: No sources identified	Medium	Low
	Surface Water	Migration of impacted groundwater into nearby surface water	Unlikely: No sources identified	Medium	Low
	Flora and fauna	Uptake via root system Displacement of oxygen from root systems Harm to ecosystems from impacted surface water	Unlikely: No sources identified	Medium	Low
Radon	Residential end users	Indoor inhalation	Possible	Medium	Moderate
Ground gases	Residential end users	Asphyxiation or explosion	Unlikely: No sources identified	Severe	Low



6.0 Conclusions

The site appears to have comprised undeveloped land prior to the construction of the existing agricultural buildings throughout its history, with no evidence of potentially contaminative processes or materials within or adjacent to the site.

Therefore the site is considered to be **low risk** with regards to contamination and landfill gas and no remedial measures are considered to be necessary in this regard.

The site was greenfield prior to the construction of the existing buildings and this assessment has indicated no sources of contaminants with the potential to attack plastics within the soils anticipated to be at pipe laying depth and as such standard pipework should be suitable for the site. Confirmation should be sought from the water supply company at the earliest opportunity.

There is a **moderate risk** from indoor inhalation of radon. A radon report obtained for the purpose of this assessment states that the property is in a Radon Affected Area as defined by the Health Protection Agency. The estimated probability of the property being above the Action Level for radon is between 10% and 30% and full radon protection measures are required. Details on full radon protection measures are given in BRE 211 and should be agreed with the local authority, who may have their own particular requirements. The radon report is presented in Appendix 3.

However the building regulations do not require protection for existing buildings. Guidance on radon protection measures for existing buildings are given in BRE 227. The radon report is presented in Appendix 3.

The risk from radon is based on an estimated probability of being above the action level. Measurement of actual radon levels can be undertaken using proprietary testing kits. These can be purchase online from numerous sources, with the kits being sent back to determine actual levels within the buildings.



7.0 Limitations

The information used in this report was obtained from a walk over inspection of the site together with a study of available historical Ordnance Survey maps and data from the Environment Agency and the British Geological Survey. It is possible that other information exists which has not been obtained.

The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, Contamination Reports South West reserve the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that the levels of risk identified in this report are perceived risks based on the information reviewed. No physical investigation or testing has been carried out; actual risks can only be assessed following a physical investigation of the site. Further work, including physical investigation, laboratory testing and ground gas monitoring may be required by the appropriate regulators to confirm actual conditions. Contamination Reports South West does not warrant or guarantee that the site is free of hazardous or potentially hazardous materials or conditions.

It is recommended that procedures are employed to identify unusual ground conditions, discolouration or odours located during any construction works.

No assessment of factors relating to geotechnical matters has been carried out.



8.0 Risk Definitions

In this report, the definition of the terms of **Severity**, **Probability** and **Risk** are defined as follows.

Severity is defined as the adverse effects (or harm) arising from a defined hazard, which impairs the quality of human health or the environment in the short or longer term.

Probability is defined as the chance of a particular event occurring in a given period of time. For example, a "High Likelihood" could be defined as "where an event would appear very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution".

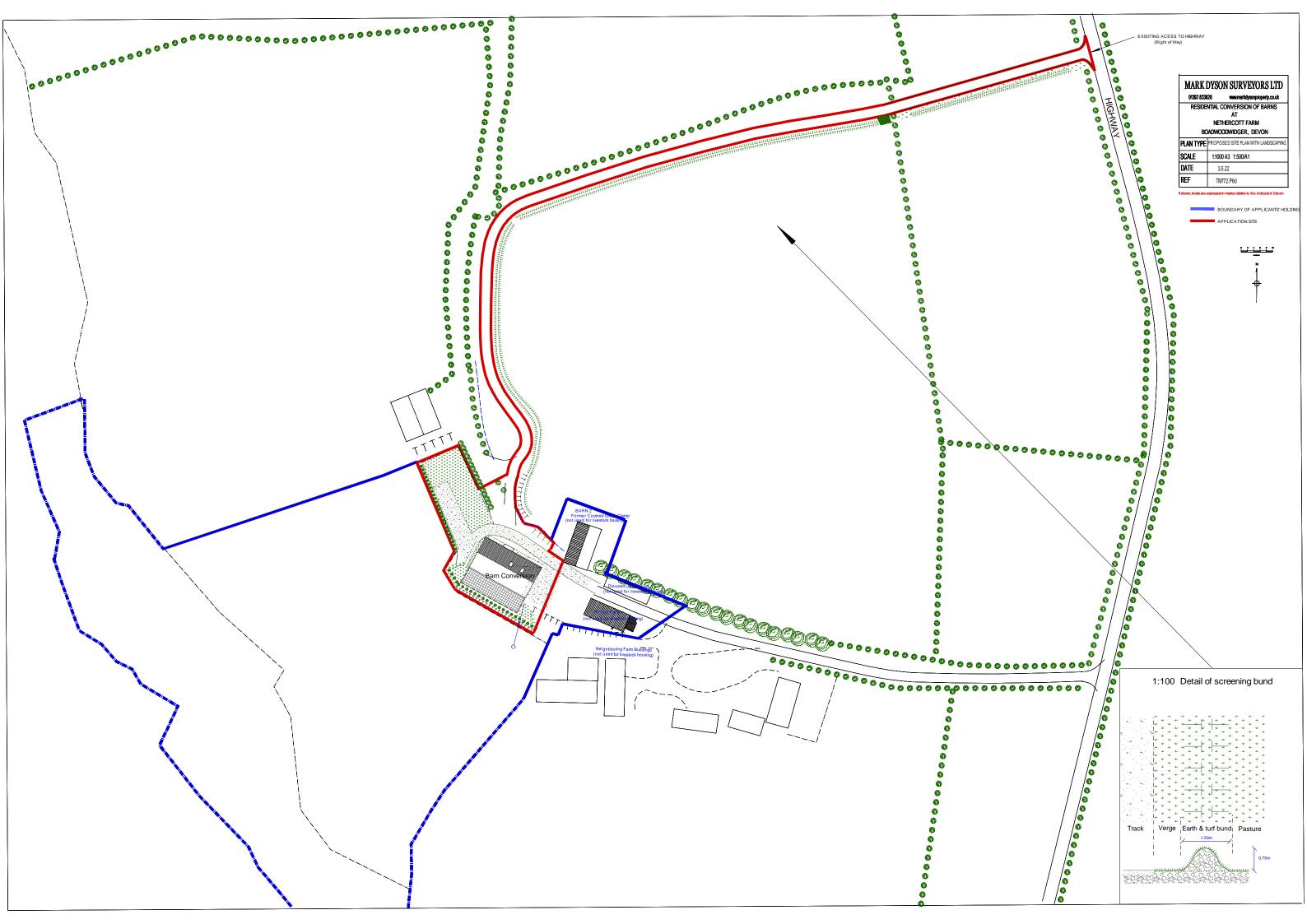
Risk - the following classification of risk has been developed to assist in qualitative assessment of potentially unacceptable risks.

Probability	Consequence			
(likelihood)	Severe Medium Mild		Mild	Minor
High likelihood	Very high risk	High risk	Moderate risk	Low risk
Likely	High risk	Moderate risk	Moderate/low risk	Low risk
Possible	Moderate risk	Moderate/low risk	Low risk	Very low risk
Unlikely	Low risk	Low risk	Very low risk	Very low risk

Term	Description
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without appropriate remediation action.
High risk	Harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remediation action.
Moderate risk	It is possible that without appropriate remediation action, harm could arise to a designated receptor. It is relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely that such harm would be relatively mild.
Low risk	It is possible that harm could arise to a designated receptor from an identified hazard. It is likely that, at worst if any harm was realised, any effects would be mild.
Very low risk	The presence of an identified hazard does not give rise to the potential to cause harm to a designated receptor.

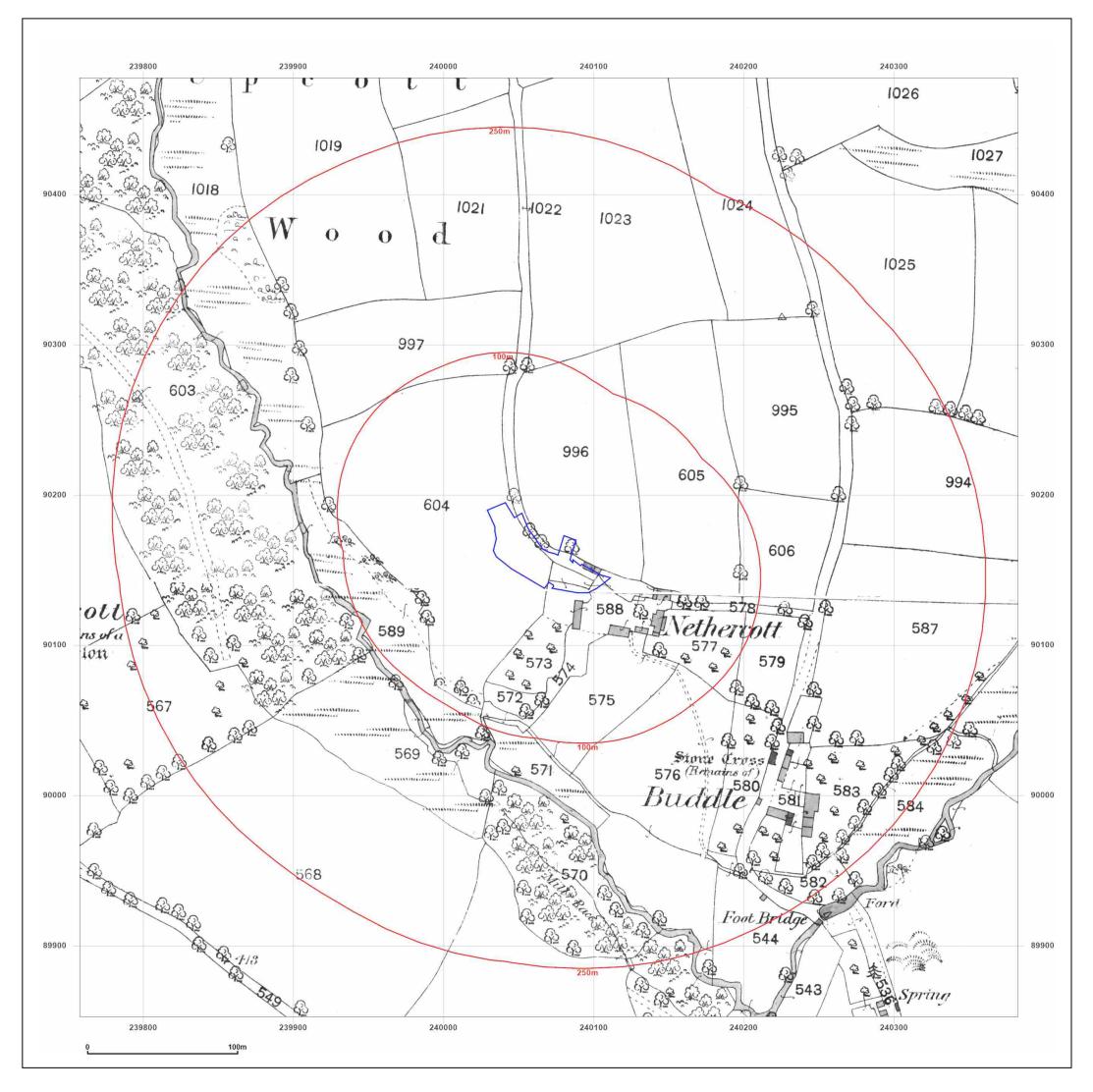
Appendix 1

Drawings



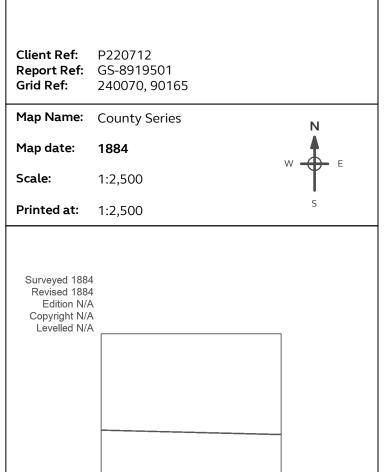
Appendix 2

Historical Map Extracts





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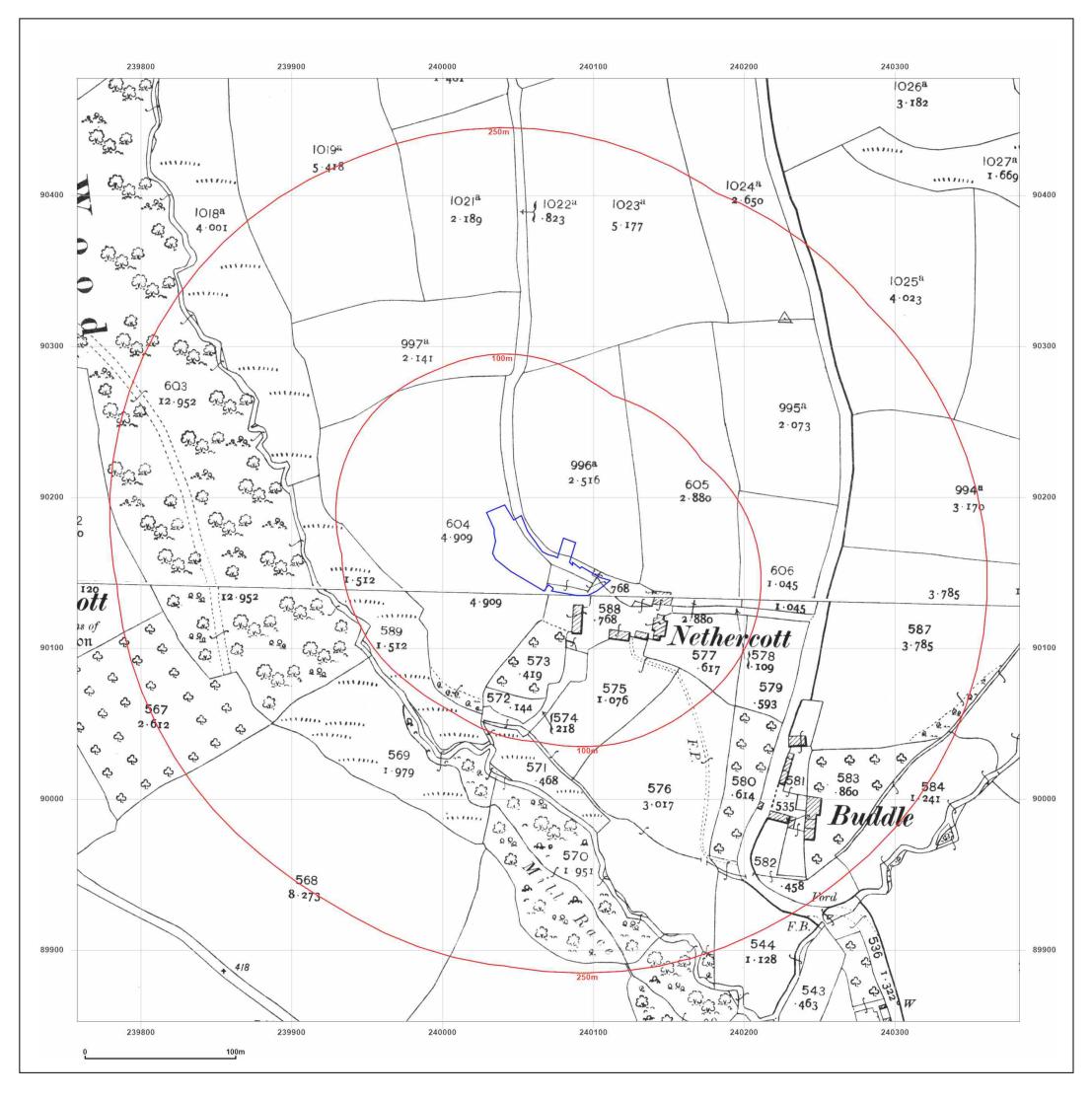
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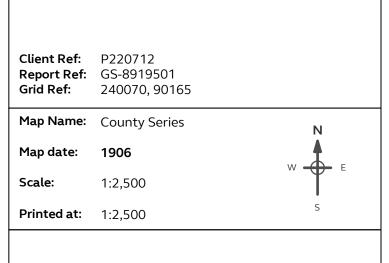
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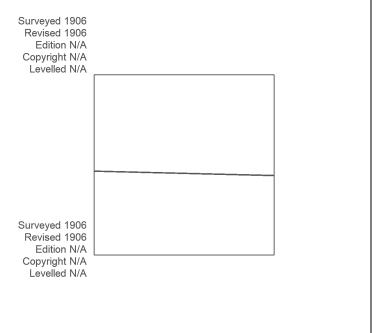
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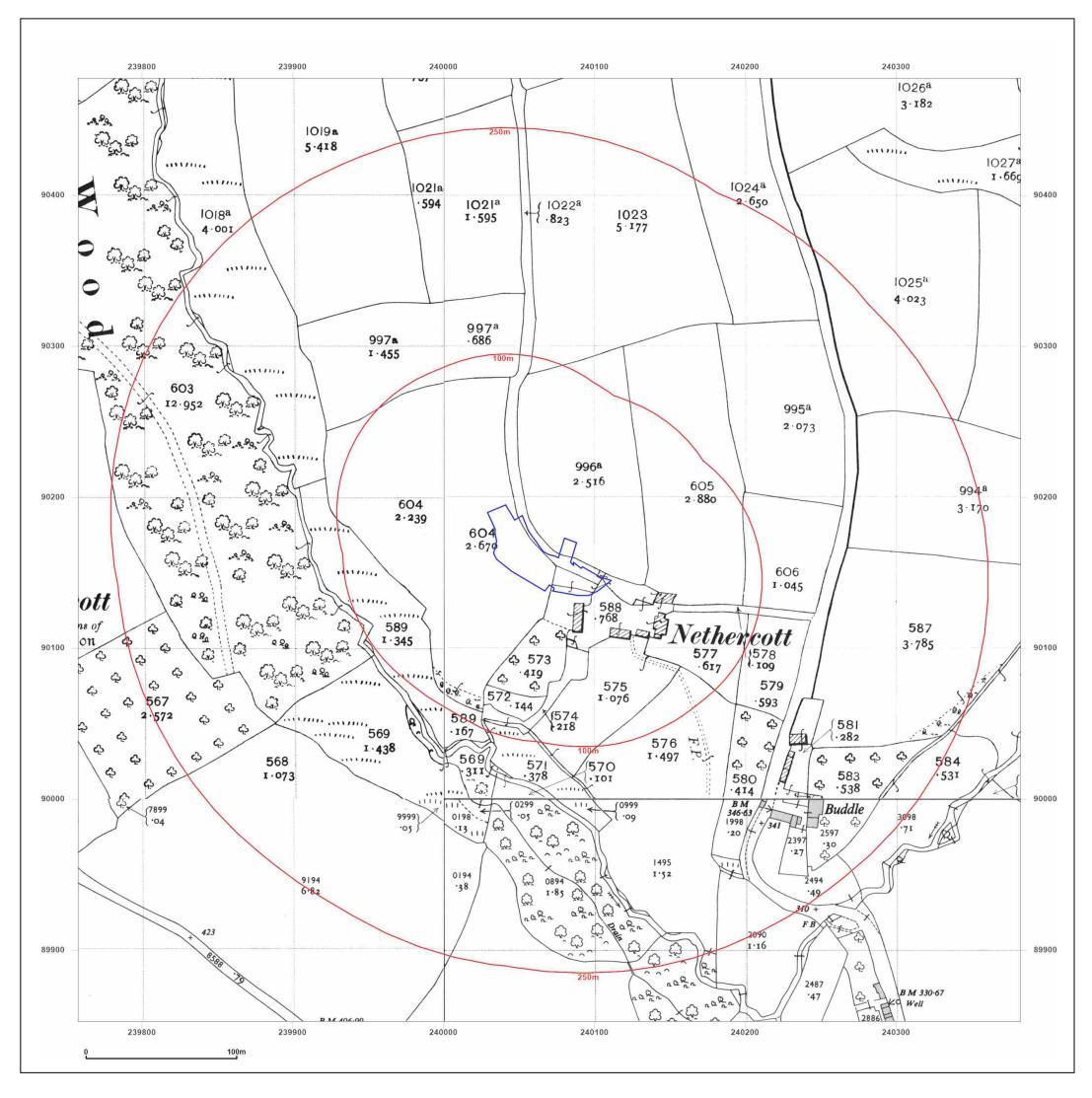




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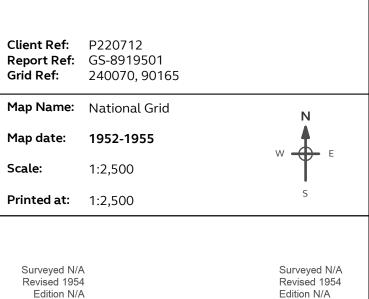
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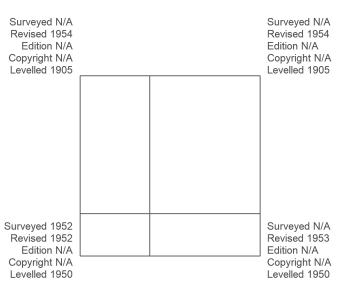
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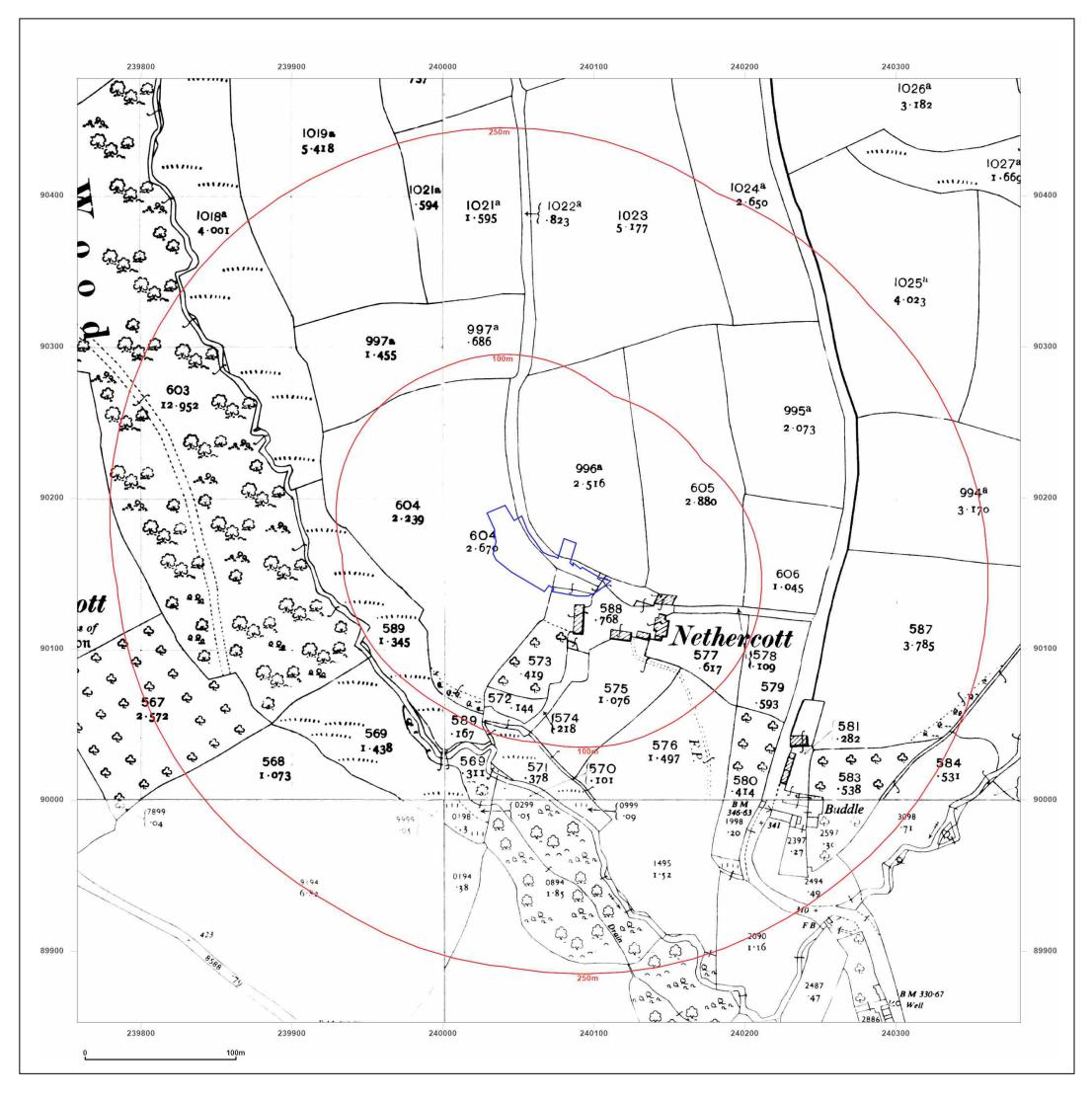






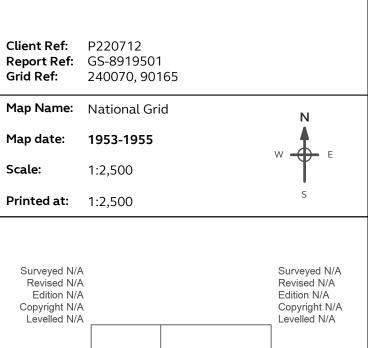
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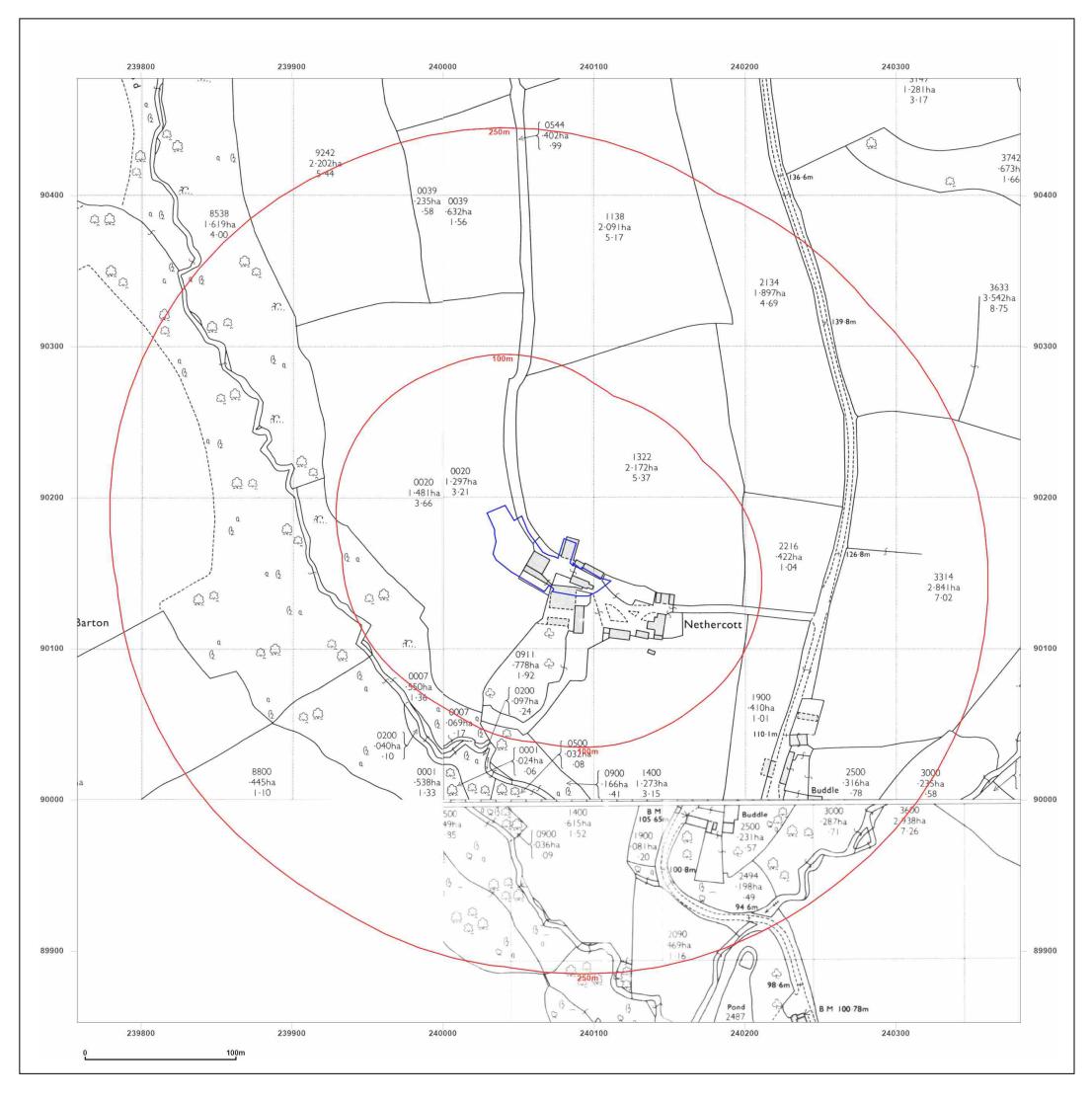


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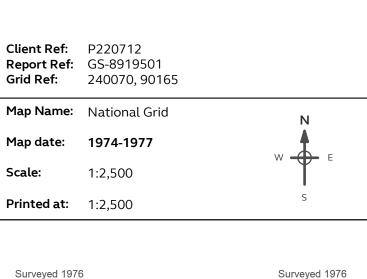
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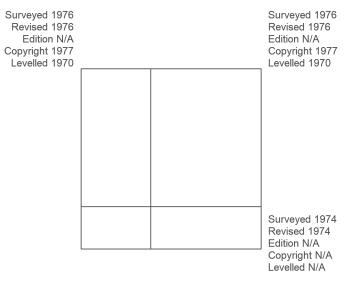
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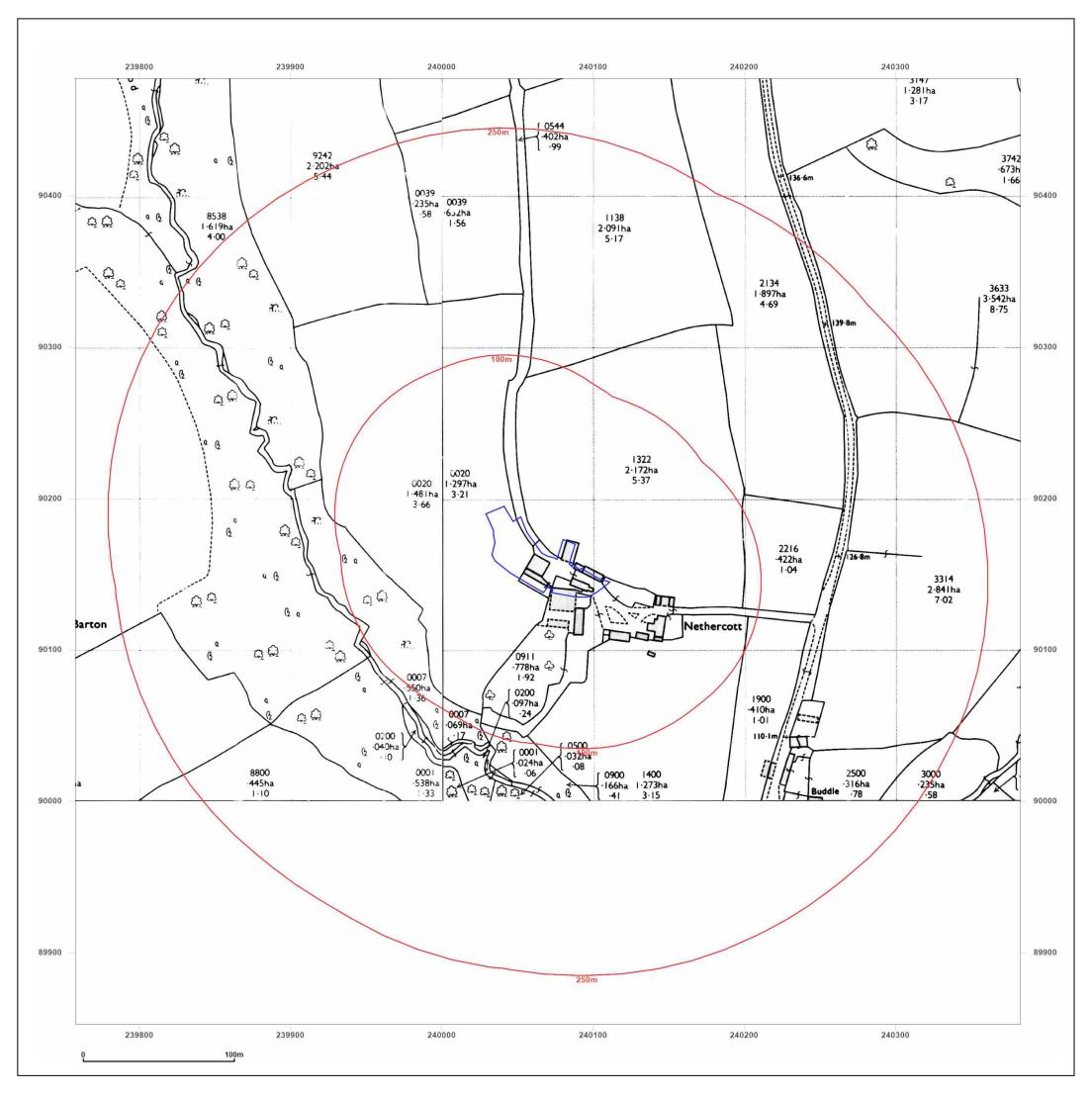




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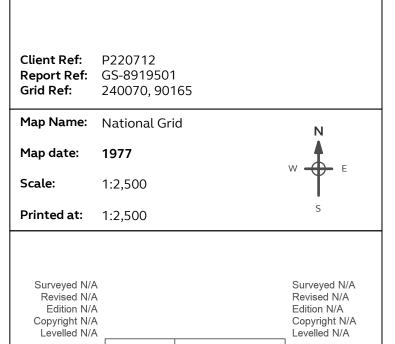
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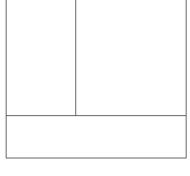
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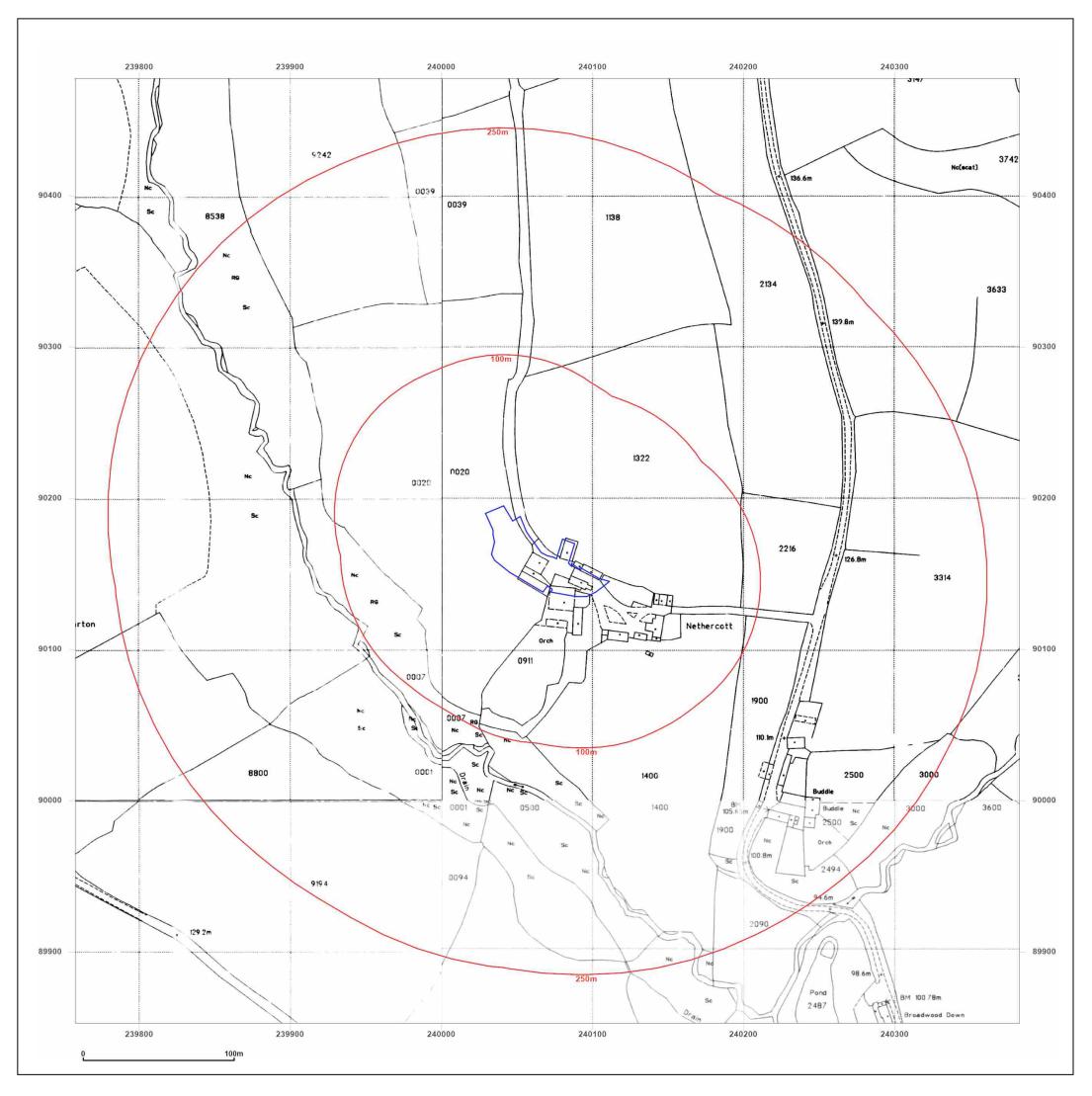




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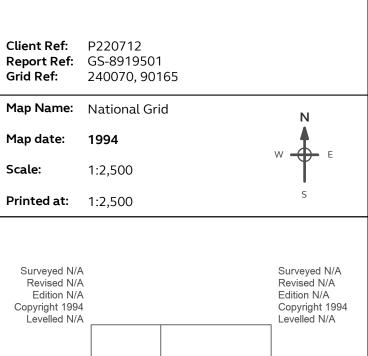
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Map Name:	LandLine	Ν
Map date:	2003	
Scale:	1:1,250	
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2003		



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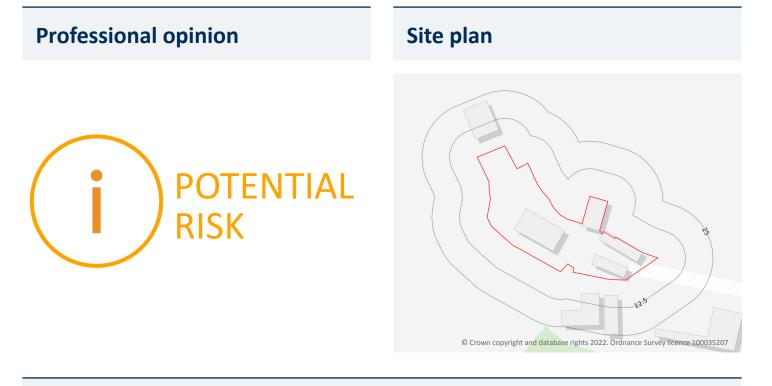
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Appendix 3 Radon Report



NETHERCOTT BARNS, BROADWOODWIDGER, PL16 0JR



Search results

In a radon affected area

The property is in a radon affected area. This could mean that inhabitants are at risk from the harmful effects of radon.

The percentage of homes estimated to be affected by radon in your local area is between 10% and 30%.

Please see page 3



Conveyancing Information Executive

info@groundsure.com 08444 159 000 Ref: GS-8919500 Your ref: P220712 Grid ref: 240060 090159 Date: 20 July 2022

Radon Check

NETHERCOTT BARNS, BROADWOODWIDGER, PL16 0JR Ref: GS-8919500 Your ref: P220712 Grid ref: 240060 090159

Useful contacts

Public Health England / UKRadon

Public information access office, Public Health England, Wellington House, 133-155 Waterloo Road, London, SE1 8UG https://www.ukradon.org/

UK Radon Association http://www.radonassociation.co.uk/

Overview of findings and recommendations

Rn Radon

The property is in an area where elevated radon levels are expected to be found in 10-30% of properties.

Next steps for consideration:

- if the property is a new build, you can check compliance on radon protection with the developer
- if you are buying a currently occupied property, ask the present owner whether radon levels have been measured and, if so, whether the results were above the radon Action Level. If they were, ask what remedial measures were installed, were radon levels re-tested and did the re-testing confirm the measures have been effective
- if testing has not been carried out, it would be a sensible precaution to arrange for the property to be tested with radon detectors. If initial short-term radon screening tests are inconclusive, or the purchaser would prefer to carry out a full three-month test, it may be possible to arrange a 'radon bond'
- high levels of radon can be reduced through carrying out remedial works to the property
- Full radon protection measures will be required to be installed in the event that any new buildings or extensions are added to the property.
- See <u>http://www.radonassociation.co.uk/guide-to-radon/information-for-house-buyers-and-sellers/</u> for further information



Radon Check

NETHERCOTT BARNS, BROADWOODWIDGER, PL16 0JR Ref: GS-8919500 Your ref: P220712 Grid ref: 240060 090159

Correction Image: Co

The property is in a radon affected area, meaning there is an increased risk that properties will contain elevated levels of radon.

In order to determine if there is a problem at your property, a radon measurement in the building must be taken. Access to a testing service and further information on radon is available from Public Health England (PHE) or <u>www.ukradon.org</u>.

Radon is a colourless, odourless radioactive gas present in all areas of the United Kingdom, usually at levels that pose a negligible risk. However, the property is situated in an area where levels of radon can be much higher and pose a health risk. High levels of radon can cause lung cancer, particularly for smokers and exsmokers. The higher the level and the longer the period of exposure, the greater the risk.

Please see **page 2** for further advice.

This data is sourced from the British Geological Survey/Public Health England.



Contact us with any questions at: info@groundsure.com 08444 159 000 Date: 20 July 2022

Radon Check

NETHERCOTT BARNS, BROADWOODWIDGER, PL16 0JR Ref: GS-8919500 Your ref: P220712 Grid ref: 240060 090159

Conveyancing Information Executive and our terms & conditions

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The Standards

- Conveyancing Information Executive Members shall act in a professional and honest manner at all times in line with the Conveyancing Information Executive Standards and carry out the delivery of the Search with integrity and due care and skill.
- Compliance with the Conveyancing Information Executive Standards will be a condition within the Conveyancing Information Executive Member's Terms and Conditions.
- Conveyancing Information Executive Members will promote the benefits of and deliver the Search to the agreed standards and in the best interests of the customer and associated parties.

Complaints Advice

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure.

If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Standards.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs.

COMPLAINTS PROCEDURE: If you want to make a complaint, we will:

- acknowledge it within 5 working days of receipt
- normally deal with it fully and provide a final response, in writing, within 20 working days of receipt
- liaise, at your request, with anyone acting formally on your behalf

Complaints should be sent to:

Operations Director, Groundsure Ltd, Sovereign House, Church Street, Brighton, BN1 1UJ. Tel: 08444 159 000. Email: <u>info@groundsure.com</u> If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: <u>admin@tpos.co.uk</u> We will co-operate fully with the Ombudsman during an investigation and comply with their final decision.

Groundsure's Terms and Conditions can be viewed online at this link: <u>https://www.groundsure.com/terms-and-conditions-jan-2020/</u>

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Data providers

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



Contact us with any questions at: info@groundsure.com 08444 159 000 Date: 20 July 2022

Appendix 4

Terms and Conditions