



RIDGE

DESK TOP STUDY

**LAND ADJACENT TO OAK TREE COTTAGE,
BOORLEY GREEN**

MCCARTHY STONE
June 2024



DESK TOP STUDY

LAND ADJACENT TO OAK TREE COTTAGE, BOORLEY GREEN

MCCARTHY STONE

June 2024

Prepared for

McCarthy Stone
Southern House
1 Embankment Way
Ringwood
Hampshire
BH24 1EU

Prepared by

Ridge and Partners LLP
1 Royal Court
Kings Worthy
Winchester
Hampshire
SO23 7TW

Tel: 01962 834400

Contact

Ellis Press
Graduate Geo-Environmental Engineer
ellispress@ridge.co.uk
07794123123

DESK TOP STUDY
LAND ADJACENT TO OAK TREE COTTAGE,
BOORLEY GREEN



VERSION CONTROL

VERSION	DATE	DESCRIPTION	REPORT REFERENCE	CREATED	REVIEWED
01	06/06/24	DTS – First Issue	5024854-RDG-XX-00-DOC-C-00DTS01	EP	MS

DESK TOP STUDY LAND ADJACENT TO OAK TREE COTTAGE, BOORLEY GREEN

RIDGE

EXECUTIVE SUMMARY

INSTRUCTIONS	Prepare a Desk Top Study Report for land at Land Adjacent to Oak Tree Cottage, Boorley Green, Hampshire, SO32 2UA.
PROPOSAL	Proposals are yet to be finalised but currently comprise the demolition of existing structures and the construction of a three storey 52-unit retirement living building with associated landscaping, roadways, pavements and parking.
SITE CONDITIONS	The location comprised a hardstanding entrance area featuring private garages, outbuildings, and sheds situated in the eastern section. The remaining portion of the site was adorned with grass and shrubbery. Trees lined the northern, southern, and western perimeters, while the eastern boundary was delineated by hedges and small fencing.
ADJACENT SITE CONDITIONS	Residential north, east, west, and south. Agricultural to south-west.
SITE HISTORY	Residential orchard and garden of property.
GEOLOGY	Made ground/ Topsoil over Wittering Formation.
HYDROLOGY	None in the immediate vicinity.
HYDROGEOLOGY	Bedrock Geology- Secondary (A) Aquifer. No Source Protection Zones in the vicinity.
CONSULTATIONS	Groundsure – Enviro+Geo Insight, Historical Maps. Local Authority.
POTENTIAL CONTAMINANTS	Historical on-site use. Possible shallow soil and ground gas contaminants.
FOUNDATION SOLUTION	A piled foundation may be required, based on the outcomes of a Ground Investigation.
DRAINAGE	Based on the expected geology traditional soakaways unlikely to be possible but we recommend soakage testing is carried out to confirm this.
GEOTECHNICAL CONSIDERATIONS	It is considered a possibility that a piled foundation solution will be required for the proposed development. Given the suspected presence of Made Ground and cohesive strata at shallow depth it is likely that a suspended floor slab will be required. The site contains a number of trees and bushes. Furthermore, mature trees are situated adjacent to the site boundary to the north and south-west. If soils are shrinkable, foundations may need to be deepened adjacent to existing or proposed trees. Care should be taken when selecting the ground floor level of the proposed building to ensure that excessive earthworks are not required nor retaining situations created.

CONTENTS

1. INTRODUCTION	1
1.1. Brief	1
1.2. Proposals	1
1.3. Legal Context and Methodology	1
1.4. End Use Classification	1
1.5. Report Scope and Limitation	2
2. SITE CONDITIONS	3
2.1. Site Location	3
2.2. Current Site Use	3
2.3. Access	3
2.4. Structures	3
2.5. Boundaries	3
2.6. Topography	3
2.7. Surroundings	3
2.8. Trees & Vegetation	3
2.9. Utilities	4
2.10. Miscellaneous	4
2.11. Potential Sources of Contamination – Walkover Survey	4
3. SITE HISTORY AND HISTORICAL CONTAMINATIVE SOURCES	5
3.1. Review of Historical Maps	5
3.2. Review of Satellite Images	6
3.3. Potential Sources of Contamination – Historical Map Review	6
4. PHYSICAL SETTING	8
4.1. Geology and Hydrogeology	8
4.2. Hydrology	9
4.3. Controlled Waters	10
4.4. Designated Environmentally Sensitive Sites	10
4.5. Nitrate Vulnerable Zones	10
5. ENVIRONMENTAL RECORDS REVIEW	11
5.1. Groundsure Record Search	11
5.2. Local Authority Consultation	11
5.3. Potential Sources of Contamination – Records Review	12
6. PRELIMINARY CONCEPTUAL SITE MODEL	13
6.1. Potential Sources	13

**DESK TOP STUDY
LAND ADJACENT TO OAK TREE COTTAGE,
BOORLEY GREEN**

RIDGE

6.2.	Pathways	13
6.3.	Receptors	14
7.	RISK ASSESSMENT	15
7.1.	Risk Assessment Procedure	15
8.	CONCLUSIONS AND RECOMMENDATIONS	19
8.1.	Contamination	19
8.2.	Geotechnical	19
8.3.	Unexploded Ordnance	20
8.4.	Further Work	20
FIGURE 1 – SITE LOCATION PLAN		I
FIGURE 2 –DEVELOPMENT PLANS		II
APPENDIX 1 – REPORT CONDITIONS		I
	Report Conditions	ii
APPENDIX 2 – LEGAL CONTEXT AND METHODOLOGY		III
	Legal Context	iv
	Methodology	iv
APPENDIX 3 – PHOTOGRAPHIC LOG		VI
APPENDIX 4 – HISTORICAL MAPS		VII
APPENDIX 5 – GROUNDSURE REPORT		VIII
APPENDIX 6 – ZETICA UXO		IX

1. INTRODUCTION

1.1. Brief

Ridge and Partners LLP (Ridge) have been commissioned by McCarthy Stone (the Client) to undertake a Desk Top Study for Land Adjacent to Oak Tree Cottage, Boorley Green, Hampshire, SO32 2UA (hereafter referred to as 'the site'). A site location plan is included as Figure 1.

Ridge were briefed to use information provided by the client to obtain an environmental database search relating to the site and carry out a walkover survey to assess and report on the findings with respect to potential ground contamination and potential associated future liabilities in accordance with guidance outlined in Land Contamination Risk Management (LCRM 2023), published by the Environment Agency.

This report is prepared in line with the agreed brief and is subject to report conditions shown in Appendix 1.

1.2. Proposals

Proposals are yet to be finalised but currently comprise the demolition of existing structures and the construction of a three storey 52-unit retirement living building with associated landscaping, roadways, pavements and parking.

Latest proposals indicate the building will be located in the centre of the site with parking to the east, north and south. The communal garden is situated to the west of the building. It is anticipated that there may be some private gardens, although gardening activities would be carried out by professionals on an infrequent basis.

Proposed development plans are included as Figure 2.

1.3. Legal Context and Methodology

Part IIA of the Environmental Protection Act provides a risk-based approach to the identification and remediation of land where contamination poses an unacceptable risk to human health or the environment, but the regime does not take into account future uses. New developments are therefore controlled by the planning regime, with reference to the National Planning Policy Framework (NPPF, 2023), rather than directly by Part IIA of the Environmental Protection Act.

This report has been prepared in accordance with published Environment Agency guidance – Land Contamination Risk Management (LCRM, 2020), which supersedes CLR 11. CLR 11 adopted and refined the well-recognised methodology and terminology that has been used in contaminated land risk assessment for a number of years.

LCRM advocates a tiered approach to risk assessment, as necessary. This document constitutes a **Preliminary Risk Assessment** under that guidance.

Further details regarding Legal Context and Methodology are included as Appendix 2.

1.4. End Use Classification

Whilst it is acknowledged that the proposed site use is sheltered residential, for the Preliminary Risk Assessment the most sensitive end use classification will be applied – 'residential with possible consumption of home grown produce' as an initial cautious approach.

A change in the site use from the one currently proposed may result in the need for re-assessment of risk criteria, as such the conclusions and recommendations resulting from the risk assessment could change significantly.

1.5. Report Scope and Limitation

This report is based upon a review of historical and current information, a site walkover survey, geological and hydrogeological mapping and information from an environmental database search. The assessment is based on the proposed end use outlined in Section 1.2. The outcomes of this assessment could change if the end uses change.

The information contained in this report is intended for the use of **McCarthy Stone**. Ridge can take no responsibility for the use of this information by any other party or for uses other than that described in this report.

2. SITE CONDITIONS

An engineer from Ridge visited on 11 March 2024 to conduct a walkover survey of the site and the surrounding areas for the purpose of identifying any potential contamination or evidence of previous contaminative processes. The descriptions below relate to site conditions at the time of the inspection only.

A photographic log is included as Appendix 3.

2.1. Site Location

The site is centred on easting 450475 and northing 114819, within the village of Boorley Green. The centre of the site is situated at approximately 26m AOD (Above Ordnance Datum).

The site is a rough rectangular shape with the longest axis north to south of approximately 150m and approximately 80m east to west. The site has an area of 0.19ha.

2.2. Current Site Use

At the time of the walkover, the site was in use as private land. It was in use as a storage area for various equipment and miscellaneous waste as well as use as open field.

2.3. Access

The access to the site is via a gate on Winchester Road. The access is approximately 3m wide.

2.4. Structures

The eastern boundary of the site contains a residential garage currently used for storage of various equipment and miscellaneous items. There is a shed and shipping container adjacent to the access track on site.

In the centre along the southern boundary there is a medium sized wooden shed or lodge type building.

2.5. Boundaries

The site is bounded on all sides by a wire mesh fence.

2.6. Topography

The site gently slopes downhill from the highest point in the south-east corner (28.5m AOD) to the north and west. The south-west corner is estimated to be 27.7mAOD, while the north-west and north-east corner is estimated to 25.0m AOD and 26.7m AOD respectively. The centre of site is approximately 26.1m AOD.

The site is relatively uneven due to tree roots and undulations.

2.7. Surroundings

The site is surrounded by residential properties on the north, west and south with the B3354 Winchester Road on the eastern boundary. There is agricultural land to the south-west.

2.8. Trees & Vegetation

There was a section of mature deciduous trees observed in the northern, western and southern section of site. These include but are not limited to Willow, Conifer, Beech and Ash. There are also hedgerows and scrub across the site. There are various small trees across the site associated with a former orchard.

2.9. Utilities

There are overhead cables along the eastern boundary and also running south-west to north-east across site at a height of approximately 5-6m.

2.10. Miscellaneous

There were various piles of anthropogenic materials across the eastern section of site including, tools, mesh wire, macadam, tiles, insulation, corrugated iron roofing.

There were various burn piles on site some of which had a smell of recent burning, slight ashy and organic odour.

There was more anthropogenic material in a pile next to the wooden sheds in the east of the northern section of site by the entrance associated with the renovation works on the neighbouring property.

The ground in the north-east corner of the site was somewhat marshy and water logged compared to the rest of the site.

In the southern section of the site there was a depression running north-east to south-west.

2.11. Potential Sources of Contamination – Walkover Survey

Anthropogenic waste in piles around entrance to site and waste in burn pits across the site.

3. SITE HISTORY AND HISTORICAL CONTAMINATIVE SOURCES

3.1. Review of Historical Maps

Ordnance Survey Maps provided within a Groundsure Report package have been obtained to provide details of the history of the site and surrounding areas. A chronological description of the maps is shown in the table below. The descriptions focus on potentially contaminative land uses within 50-100m and potentially infilled features within 250m of the development site boundary. Note, potential contaminative sources and features outside these distances from the site have been discussed only where they are considered to be relevant. Copies of the maps are included as Appendix 4.

MAPPING (SCALE)	OBSERVATIONS	
	ON-SITE	OFF-SITE
1868-1869 (1:2,500) (1:10,560)	The earliest reviewed map shows the site as part of an agricultural property with rows of trees, likely an orchard in the centre of the site. On the eastern side of site there is a building and a well present. The northern portion of site is an empty field.	The site is situated to the immediate west of a road. The surrounding area is dominated by agricultural properties. 11m east there is a woodland named Bushydean Copse. A farm called Braxells Farm is located 120m north of site. Railway line 347m south-west of site.
1895-1897 (1:2,500) (1:10,560)	No significant developments. Some of the on-site structures may have been reduced in size although this may be to do with the map detail.	There are three new wells marked between 28-87m south of site.
1908-1910 (1:2,500) (1:10,560)	No significant developments on site. The orchard now extends to the northern boundary of site, except for the north-eastern section which is fenced off.	No developments of significance to site within the vicinity.
1940 (1:2,500)	The orchard now covers the entire site excluding the buildings in the south-east.	No developments of significance to site within the vicinity.
1957 (1:10,560)	Slight changes to orchard on site although this may be due to the low resolution of the map.	No significant developments in vicinity of site.
1962-1967 (1:2,500)	The orchard has been cut back to only the north-east and south-west of site. The building on site is now labelled Oak Cottage.	Further residential development to the south of site. Bushydean Copse is no longer labelled.

MAPPING (SCALE)	OBSERVATIONS	
	ON-SITE	OFF-SITE
1980 (1:2,500)	No significant changes on site.	No significant developments.
1985-1989 (1:10,000)	No significant changes.	Pumping station 100m south from site.
1993 (1:2,500)	The orchard is no longer present on site. The site is now congruent with the present day layout.	10m east of site a hotel has been built on the site of Bushydean Copse. 102m east of site there is an Electricity sub-station.
2001-2010 (1:1,250) (1:10,000)	No significant changes.	No significant developments.
2024 (1:10,000)	No changes on site.	New housing development 200m east and 250m north of site.

Table 3.1: Historical Map Review

3.2. Review of Satellite Images

A review of publicly available satellite images has been carried out to provide recent information in relation to the site.

- The earliest image available for review (1999) shows the site to contain some residential buildings in the south-east of site along with outbuildings and driveways. The vicinity of the site is agricultural to north, south, and west. To the east of site is a large hotel development. To south-east is residential housing.
- No significant changes noted in the 2005-2020 images.
- The most recent images are from 2022 to 2024 and show significant building development underway to the north and west of site.

3.3. Potential Sources of Contamination – Historical Map Review

Contaminant sources considered to present a potential risk to the site are detailed in the table below.

POTENTIAL SOURCES OF CONTAMINATION CONSIDERED A RISK TO THE SITE		
FEATURE	DISTANCE,	APPROX. DATES
Development and subsequent demolition of on-site structures.	On site	1868-present

Table 3.3: Potential Sources following Historical Map Review

Potential contamination sources not considered to represent a significant risk to the site are detailed in the table below. The features will not be considered further.

POTENTIAL SOURCES NOT CONSIDERED FURTHER

FEATURE	JUSTIFICATION
Railway 347m south-west	The feature is located a significant distance from site. Very unlikely to have any impact on the site and associated receptors.
Pumping station 100m south of site.	The feature is located a significant distance from site. Very unlikely to have any impact on the site and associated receptors.
Electrical substations more than 50m from site.	These features are unlikely to have any impact on the site due to distance and low contaminative potential.

Table 3.3: Potential Sources not considered further

4. PHYSICAL SETTING

4.1. Geology and Hydrogeology

The following observations are taken from the British Geological Survey (BGS) GeoIndex (2023) and the Geo Insight Groundsure Report (Appendix 5).

The site is directly underlain by bedrock geology of Wittering Formation, there are no records of superficial deposits.

The table below identify the expected composition of the published strata and associated aquifer classification.

BEDROCK GEOLOGY	
Unit Name	Wittering Formation- Sand, silt and clay
Geology Description	Greyish brown laminated clay; wavy- to lenticular-bedded sand interbedded with clay in equal proportions; and fine- to medium-grained sparsely glauconitic sand. Typical thickness is 40-53m.
Aquifer	Secondary (A)
Aquifer Description	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.

Table 4.1: Bedrock Geology

4.1.1. Artificial Ground, Landslips and Faults

There are no records within 250m of the site.

4.1.2. Radon

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. No Radon Protective Measures are considered necessary for new properties or extensions to existing ones.

4.1.3. Ground Workings and Mining

No records within 250m of the site.

4.1.4. BGS Borehole Records

There is a recorded BGS borehole SU51SW123 located 314m south-east of the site which can provide valuable insights into geology expected to mirror that of the site. The borehole was drilled using a cable percussion rig to a depth of 11.50mbgl, the borehole had a diameter of 150mm and was drilled from the existing ground level. Ground water was encountered at a depth of 3.00mbgl.

The borehole log is summarised as below:

- Below a veneer of topsoil and Made Ground: Firm to stiff light green fissured slightly silty CLAY, very closely laminated with laminations of silty fine sand. Block surfaces stained brown. (Bracklesham Beds) to a depth of 2.50mbgl.

- Firm to stiff, light brown fissured and closely laminated slightly silty CLAY. Block surfaces-stained orange. (Bracklesham beds) to a depth of 3.50mbgl.
- Firm to stiff, light brown fissured and very closely laminated slightly silty CLAY with laminations and partings of silty fine sand to a depth of 5.50mbgl.
- Firm to stiff mid grey fissured and very closely laminated slightly silty CLAY with laminations of green glauconitic silty fine sand to the end of hole at 11.50mbgl.

Standard Penetration Testing was conducting within the Bracklesham beds and returned N values between 13 and 35.

4.1.5. Natural Ground Subsidence

The BGS has provided the following information as summarised in table below.

PROCESS	RISK LEVEL	DETAILS
Shrink Swell Clay	Moderate	Ground conditions predominantly high plasticity.
Landslides	Very Low	Slope instability problems are unlikely to be present. No special actions required.
Running Sands	Very Low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.
Collapsible Deposits	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.
Compressible Deposits	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits.
Ground Dissolution of Soluble Rocks	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution.

Table 4.2: Ground Subsidence Records

4.1.6. BGS Estimated Background Soil Chemistry

Estimated background concentrations on site are as follows: arsenic 15mg/kg; cadmium 1.8mg/kg; chromium 90-120mg/kg; nickel 15-30mg/kg, lead 100mg/kg.

4.2. Hydrology

4.2.1. Surface Water Features

There is one surface water feature within 250m of the site.

- 175m east inland river/ drain

4.2.2. Flooding

There are no Environment Agency floodplain zones present within 50m of the site boundary.

4.3. Controlled Waters

4.3.1. Abstraction Licenses

There is one record of a historical surface water abstraction 283m east of site. The abstraction licence is related to spray irrigation for Botley Hotel and Country Club.

There are no records of historical or current potable abstractions within 2000m of the site.

4.3.2. Source Protection Zones

There are no SPZs within 500m of the site boundary.

4.4. Designated Environmentally Sensitive Sites

There are no designated features within 500m of the site.

4.5. Nitrate Vulnerable Zones

The site is classified as a Nitrate Vulnerable Zone (NVZ), known as Hamble Estuary Eutrophic NVZ (TraC). Nitrate vulnerable zones are areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC).

5. ENVIRONMENTAL RECORDS REVIEW

The following information has been obtained from public archive via the data supplier Groundsure or by direct application. The full Enviro Insight Groundsure Report is included as Appendix 5. The subsequent review focusses on records within 50m of the outlined development site for above ground features or within 250m for potentially infilled features, or those which are considered relevant to the proposed development. Ridge have not included data from Groundsure's own review of historical maps.

5.1. Groundsure Record Search

The following observations are taken from the British Geological Survey (BGS) GeoIndex (2024) and the Enviro Insight Report (Appendix 5).

5.1.1. Historical Industrial Land Uses

There are no records relating to above ground land uses within 50m of the site. There are no pertinent records over 100m from the site.

5.1.2. Historical Petrol Stations and Garages

There are no records of petrol stations within 500m of the site.

5.1.3. Historical Tank Database

There are no records within 100m of the site boundary.

5.1.4. Historical Energy Features

There are no pertinent records of historical energy features within the vicinity of the site, with the nearest recorded electricity substations located greater than 115m from the site boundary.

5.1.5. Waste and Landfill

No historical or current records within 250m of the site.

5.1.6. Infilled Land

There are no records relating to infilled features within 250m of the site.

5.1.7. Environmental Permits, Incidents, Registers and Consents

No pertinent records within proximity to the site. The nearest waste exemption pertains to the use of waste in construction and is located 130m east from the site boundary.

5.1.8. Current Industrial Land Uses

There are no pertinent records in proximity to the site. The nearest recorded current industrial land use pertains to a pumping station located 105m south-east of the site boundary.

5.2. Local Authority Consultation

5.2.1. Planning History

Eastleigh Borough Council have no record of planning applications associated with the property.

5.2.2. Contaminated Land Officer – Eastleigh Borough Council

The council were contacted for pertinent information relating to the site and immediate surroundings on 5th March 2024. A response had not been approved at the time of writing this report – if prudent information is supplied it will be submitted within a report addendum.

5.3. Potential Sources of Contamination – Records Review

No potential sources have been identified within the records review.

Potential contamination sources not considered to represent a significant risk to the site are detailed below. These features will not be considered further within the risk assessment.

POTENTIAL SOURCES NOT CONSIDERED FURTHER	
FEATURE	JUSTIFICATION
Electricity substations more than 50m from site.	Low contamination potential and distance from site.
Current industrial land uses located more than 100m from site.	Low contamination potential and distance from site.

Table 5.1: Potential Sources not considered further.

6. PRELIMINARY CONCEPTUAL SITE MODEL

The preliminary conceptual site model represents an assessment of the current status of the site and the likelihood of a pollutant linkage for each identified potential combination of contaminant, pathway and receptor.

It should be noted that there may be risk from short term exposure from contaminated soil to site workers. The Preliminary Contamination Conceptual Model deals with long term exposure to key receptors. Acute risks can be easily mitigated by good environmental management of the site during site works. Standard health and safety precautions (as per HSE guidance¹) should be adopted by all workers involved with site enabling and construction works. Therefore, this receptor is not considered in the contamination conceptual model.

6.1. Potential Sources

It should be noted that additional sources of contamination may become apparent during any future investigation and development of the site.

6.1.1. On-Site

- Development and subsequent demolition of on-site structures from circa 1868-present. The storage of materials and evidence of burn piles on site.
 - Contaminants of concern (CoC) include those commonly identified in Made Ground such as heavy metals, polycyclic aromatic hydrocarbons (PAHs) and asbestos. Asbestos formerly within fabric of structures may have been mixed with soils to create asbestos containing soils (ACS).
 - Although limited, there is considered to be some potential for ground gas. Ground gas potential will be dependent on the make-up of Made Ground beneath the site i.e. degradable and organic content.

6.1.2. Off-Site

- No off-site sources identified to be a risk to site.

6.2. Pathways

The key environmental pathways and exposure routes by which potentially toxic substances can reach the identified potential receptors are considered to be:

6.2.1. Indirect

- Vertical and lateral migration of ground gas leading to accumulation in enclosed spaces.
- Vertical and lateral migration of organic and inorganic compounds through underlying geology.
- Windblown dust and fibres to adjacent receptors.
- Surface run off.

6.2.2. Direct

- Inhalation of ground gases.
- Inhalation of contaminated dust.

¹ HSE (1991). "Protection of Workers and the General Public During Development of Contaminated Land". London HMSO.

- Ingestion contaminated home grown produce, soil and/or soil derived dust.
- Dermal contact.

6.3. Receptors

Receptors that may be affected by the potential contamination are considered to be:

6.3.1. Human

- End users of the site.
- Maintenance workers once the development is complete.

6.3.2. Environmental

- Underlying Secondary (A) aquifer – bedrock geology.

There are no environmentally sensitive sites within 500m of the site. Similarly, there are no surface water features within the immediate vicinity.

7. RISK ASSESSMENT

7.1. Risk Assessment Procedure

By considering the sources, pathways and receptors (pollutant linkages), an assessment of the human health/ environmental risks is made with reference to the significance and degree of the risk. This assessment is based on consideration of whether the contamination source can reach a receptor and hence whether it is of major or minor significance.

The risk assessment has been undertaken with reference to BS 10175:2011+A1:2013 and CIRIA Document C552: Contaminated Land Risk assessment 'A Guide to Good Practice'. The risk assessment has been carried out by assessing the severity of the potential consequence, considering both the potential magnitude of the hazard and the sensitivity of the target, based on the categories given below.

CATEGORY	EXAMPLES
High	Residential with gardens/Groundwater Source Protection Zone
Medium	Residential without gardens/Principal/Secondary Aquifer/sensitive watercourse
Low	Commercial and industrial use/Undifferentiated Aquifer
Very Low	Maintenance workers using appropriate PPE/non classified water body

Table 7.1: Sensitivity of Receptor

CATEGORY	EXAMPLES
Gross Impact	Heavily contaminated gasworks or industrial site, hazardous waste landfill. Major spillages into controlled waters. Explosions causing building collapse.
Moderate Impact	Leaks and spills from fuel infrastructure (e.g. petrol stations) (not into controlled waters), domestic waste landfills, demolished buildings. Leaching of contaminants into a major or minor aquifer.
Slight Impact	Minor leaks and spills from fuel infrastructure, 'inert' waste landfills, pollution of non-classified ground water.

Table 7.2: Magnitude of Impact

MAGNITUDE OF IMPACT	SENSITIVITY OF RECEPTOR			
	High	Medium	Low	Very Low
Gross Impact	Severe	Medium	Mild	Minor
Moderate Impact	Medium	Mild	Minor	Minor
Slight Impact	Mild	Minor	Minor	Minor

Table 7.3: Level of severity of potential hazard

DESK TOP STUDY LAND ADJACENT TO OAK TREE COTTAGE, BOORLEY GREEN

RIDGE

The likelihood of an event (probability) takes into account both the presence of the hazard and target and the integrity of the pathway and has been assessed based on the categories given below.

CATEGORY	EXAMPLES
High likelihood	There is a pollutant linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollutant linkage, and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low likelihood	There is a pollutant linkage and circumstances are possible under which an event could occur. However it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollutant linkage but circumstances are such that it is improbable that an event would occur in the very long term.

Table 7.4: Classification of Probability

The potential severity of the risk and the probability of the risk occurring have been combined in accordance with the following matrix in order to give a level of risk for each potential hazard.

PROBABILITY OF RISK	SENSITIVITY OF RECEPTOR			
	Severe	Medium	Mild	Minor
High likelihood	Very High	High	Moderate	Low/Moderate
Likely	High	Moderate	Low/Moderate	Low
Low likelihood	Moderate	Low/Moderate	Low	Very Low
Unlikely	Low/Moderate	Low	Very Low	Very Low

Table 7.5: Level of risk for potential hazard definition

The assessment is discussed below in terms of plausible pollutant linkages. A complete assessment of the pollutant linkages is presented in Table 7.6.

A description of these risk classifications and likely action required are given in CIRIA 552 as:

Very high risk – High probability that severe harm could arise to a designated receptor from an identified hazard OR there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in substantial liability. Urgent investigation and remediation are likely to be required.

High risk – Harm is likely to arise to a designated receptor from an identified hazard. This risk, if realised, is likely to result in substantial liability. Urgent investigation is required, and remedial works may be necessary in the short term and are likely over the long term.

**DESK TOP STUDY
LAND ADJACENT TO OAK TREE COTTAGE,
BOORLEY GREEN**

RIDGE

Moderate risk – It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation is normally required to clarify risks and to determine potential liability. Some remedial works may be required in the long term.

Low risk – It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.

Very low risk – It is a low possibility that harm could arise to a designated receptor. In the event of such harm being realised it is not likely to be severe.

7.1.1. Preliminary Conceptual Model

The below assessment has been compiled based on the current site status.

SOURCE	PATHWAY	RECEPTOR	SEVERITY	LIKELIHOOD	RISK LEVEL
Historical construction and demolition of structures. Storage of waste materials and burn piles on site.	Direct contact, ingestion, and inhalation of impacted soils/ groundwater.	Residential end users	Mild	Likely	Low/ Moderate
		Maintenance workers	Minor	Low Likelihood	Very Low
	Windblown dust.				
	Vertical migration of contaminants through the underlying geology and/ or via overland flow.	Secondary (A) Aquifer – bedrock	Minor	Likely	Low
	Migration of ground gas through underlying geology	Residential end users	Mild	Low Likelihood	Low
		Maintenance workers	Minor	Unlikely	Very Low

Table 7.6: Preliminary Conceptual Model

8. CONCLUSIONS AND RECOMMENDATIONS

8.1. Contamination

Following site the reconnaissance and a review of available records, it is considered that there is sufficient information on the potential contaminative status of the site to allow conditional approval of a planning application, based on the proposed end use detailed in the PRA. The following contamination sources are considered to be potentially present:

- Historical construction and demolition of on-site structures and the use of site for material storage and evidence of burn piles.

8.1.1. Risk Ratings

At present, risk levels are considered to be **Low/moderate** as a worst case. Greatest risks are associated with Made Ground on site.

A **Moderate** risk is defined as 'It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.'

8.2. Geotechnical

A review of key geotechnical aspects is provided below.

8.2.1. Expected Ground Conditions

The desk-based information reviewed within this report indicates that a veneer of Made Ground and/or topsoil is likely to be present, which are underlain by the Wittering Formation.

8.2.2. Foundations

With reference to the published geology, historical borehole logs and the proposed development, it is considered that dependent on the findings of a Ground Investigation, either a piled foundation solution or a mixed (piled/ traditional) solution may be required.

8.2.3. Drainage

Based on the expected geology traditional soakaways are unlikely to be viable. Soakage testing in line with BRE365 should be carried out to confirm this.

8.2.4. Floor Slabs

Given the suspected presence of Made Ground and cohesive strata at shallow depth it is likely that a suspended floor slab will be required.

8.2.5. Other Considerations

Foundations and build material of previous buildings and structures could be present. This is likely to affect ground engineering and foundation design and construction. These features should be investigated as part of a geotechnical ground investigation.

Infilled ground may be present on site from private use of burying material on site this should be investigated as part of the geotechnical ground investigation.

Residual structures present on site will need to be demolished to enable the proposed development to take place. Foundations associated with them should be grubbed out.

The site contains a number of trees and bushes. Furthermore, mature trees are situated adjacent to the site boundary to the north and south of site. If soils are shrinkable, foundations may need to be deepened adjacent to existing or proposed trees.

8.2.6. Earthworks / Site Levels

The site gently slopes downhill from the highest point in the south-east corner (28.2mAOD) to the south and west. The south-west corner is estimated to be 27.6mAOD, while the north-west and south-west corners are estimated at 25.2mAOD and 26.3mAOD respectively. The centre of the site is at 26.4m AOD.

Care should be taken when selecting the ground floor level of the proposed building to ensure that excessive earthworks are not required nor retaining situations created. It may be possible to use topsoil and sub-soil generated during earthworks, as part of the clean cover layer required within new soft landscaped areas, subject to testing.

8.2.7. Material Re-use

It is recommended that masonry from former structures is crushed and screened and can then be used on site for infilling etc.

8.3. Unexploded Ordnance

The site is not considered to be in an area at risk from UXO based upon the Zetica risk map (Appendix 6) .

8.4. Further Work

Based on the risk rating in 8.1.1, further contamination assessment is considered necessary.

Further contamination assessment should include soil sampling and analysis, targeting identified contamination sources and sensitive receptors.

The composition of Made Ground should be logged during the investigation to allow further assessment of ground gas potential.

Monitoring wells should be installed across the site in order to permit future groundwater, ground gas and soil vapour monitoring.

Soil analysis suites should target identified contaminants of concern.

A Watching Brief should be carried out by the Site Supervisor during construction and ground works in case any areas of contamination are identified. Ridge should be contacted in the first instance if any suspected contaminated soils are identified.

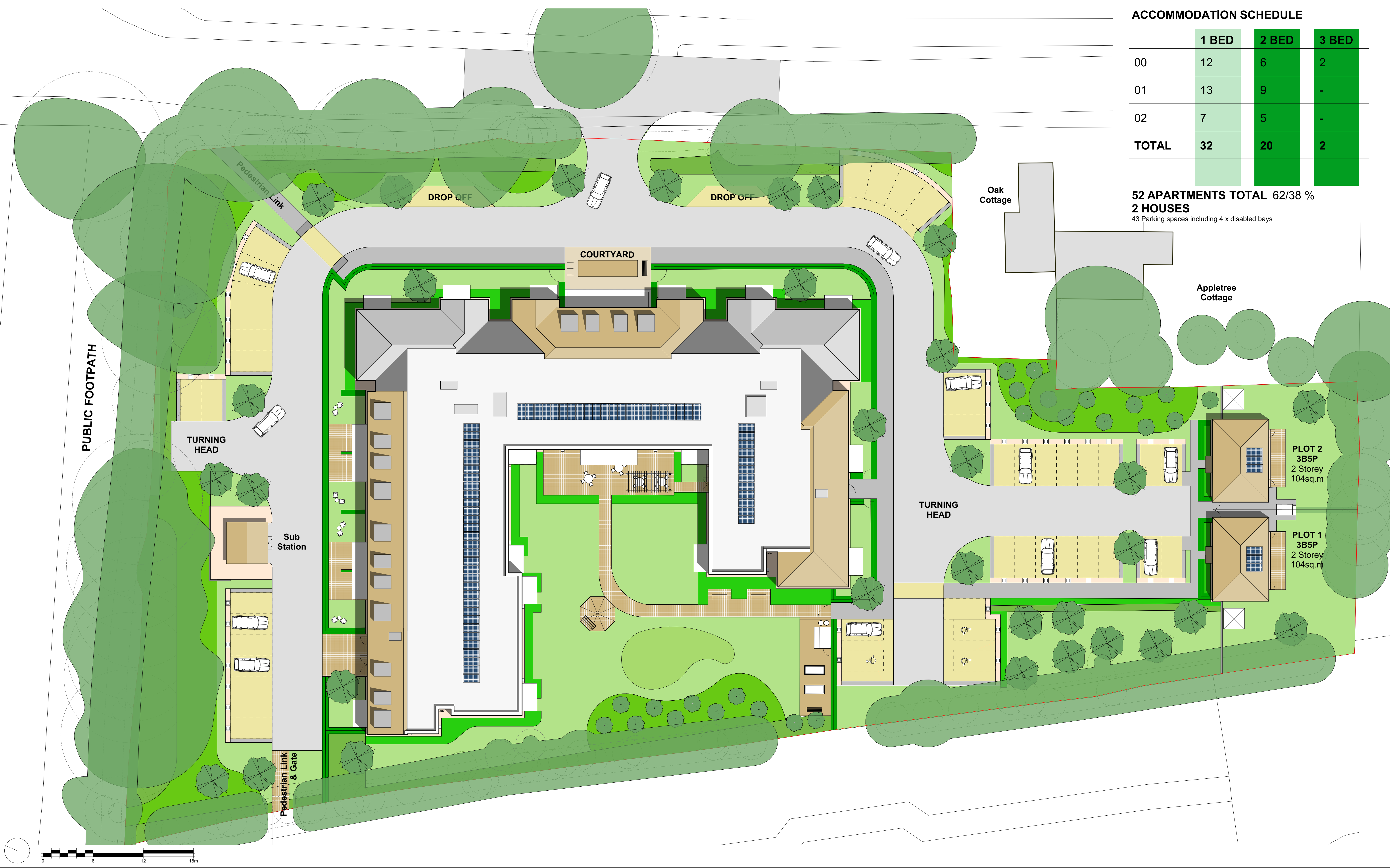
FIGURE 1 – SITE LOCATION PLAN

FIGURE 2 – DEVELOPMENT PLANS

ACCOMMODATION SCHEDULE

	1 BED	2 BED	3 BED
00	12	6	2
01	13	9	-
02	7	5	-
TOTAL	32	20	2

52 APARTMENTS TOTAL 62/38 %
2 HOUSES
43 Parking spaces including 4 x disabled bays



FOR PINKFILE
Refer to Landscape drawing
SO-2977-02-LA-001 by Terrafirma

McCARTHY STONE
Life, we'll live it

PROPOSED SITE
LAYOUT (ROOF)

PROJECT	JOB NO
Boorley Green	24.013
SCALE	DATE
1/200 @ A1	April 2024
DRAWN BY/CHECKED BY	REVISION
CK / SK	A
DWG#	
SO_2977_03_AC_010	

A - Detached houses	17.07.24	SK	CJC
Rev	Description	Date	DB CB

© HGP Architects Ltd.
Furzehall Farm, Wickham Road
Fareham, Hampshire, PO16 7JH

01329 283 225
email@hgp-architects.co.uk
hgp-architects.co.uk

hgp