



COAL MINING RISK ASSESSMENT

**74 AIR BALLOON ROAD,
BRISTOL,
BS5 8LF**

Prepared for:

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By:

ENVIROSOLUTION LTD



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Date:

25th June 2021



EnviroSolution Ltd Document Verification

Site Address	Air Balloon Road, Bristol, BS5 8LF		
Report Title	Coal Mining Risk Assessment		
Job Number	CL101	Document Ref.	CL101
Date Issued	25 th June 2021	Report Version	1
Prepared by	Tom Craig MSc, BSc (Hons), FGS	Signature	
Checked by	Phil Shelton PhD BSc CEng MIMMM FGS	Signature	

Disclaimer

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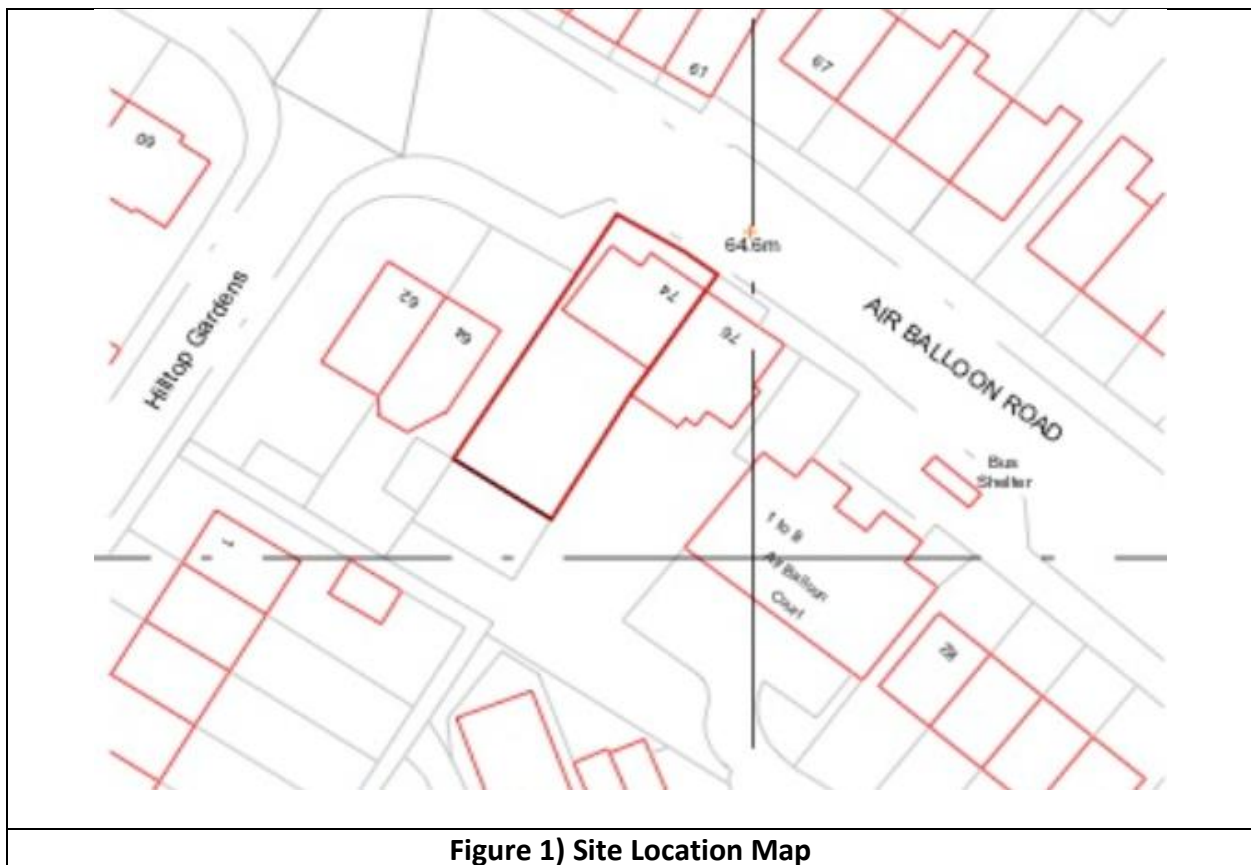
1 Introduction

1.1 Site Location and Description

The site for the proposed residential development is located at 74 Air Balloon Road, Bristol, BS5 8LF. The National Grid Reference for the development site is GR: 363175 173310. The site location is shown in **Appendix A**. The plot covers an area of approximately 250m² and lies on the southern side of Air Balloon Road. The site currently encompasses the existing property of 74 Air Balloon Road which lies in the northern half of the site. The area of the proposed development is currently used as a garden.

The site lies at an average elevation of about 64m aOD. The general local topography of the site slopes gently towards the south. The surrounding land slopes more steeply from north to south towards the River Avon. The site is bounded by residential properties on all sides.

A plan showing the location of the site is shown in **Figure 1**.



1.2 Development Proposal

It is understood that the current proposal includes the construction of a small extension and to convert the two-bedroom house into flats. Details of the existing and proposed site layouts are shown in **Appendix A**.

1.3 Scope of Coal Mining Risk Assessment

EnviroSolution Ltd has been commissioned to prepare a Coal Mining Risk Assessment Report (CMRA) for the proposed development site, in order to provide the Local Planning Authority with information on the coal mining legacy risk(s), an assessment of their potential impact on land stability, and provide recommendations for the need to carry out any further investigations (including intrusive boreholes) to address these risk(s).

The CMRA has been undertaken in accordance with the principles of best practice including the Coal Authority's guidance document "Risk Based Approach to Development Management - Resources for Developers Version 3" (2014) (Ref. 1), CIRIA "SP32 Construction over Abandoned Mine Workings" (2002) (Ref. 2) and CIRIA "C758D Abandoned Mine Workings Manual" (2019) (Ref. 3).

The purpose of the CMRA Report is to:

- present a desk-based review of available information on the coal mining issues that are relevant to the application site;
- use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact issues;
- set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development; and
- demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of National Planning Policy with regard to development on unstable land.

1.4 Sources of Information

This report is based on current information of past mining activities relevant to the site. The following information sources have been used:

- Consultants Mining Report dated 21st April 2021 (Ref: 51002456780001 **Appendix B**);
- BGS Geoindex geological map;
- BGS geological 1:50,000 Sheet 264 Bristol;
- Geology of the Bristol district: Memoir for 1:63,360 geological Sheet 264 Bristol;
- Groundsure Environmental Interactive Mapping;
- Coal Authority Interactive Website;
- Historical Ordnance Survey maps.

2 Environmental Setting

2.1 Historic Coal Mining Activity

The development site and surrounding area has been reviewed with reference to historical Ordnance Survey (OS) maps. The history of the site and immediate surrounding area are summarised in Table 1. Copies of the historical OS maps are included in **Appendix C**.

Table 1 - Historic Mapping Review

Date	Scale	Historic Mining Activity
1881	1:10,560	<ul style="list-style-type: none">- The site is un-developed.- Old quarry 140m south and 150m east of the site.- Quarries located 210m south, 350m southwest and 510m east of the site.
1901	1:10,560	<ul style="list-style-type: none">- All quarries marked as old and are inactive.
1938	1:10,560	<ul style="list-style-type: none">- Some old quarries no longer marked on maps.

2.2 Geological Context

The BGS geological mapping (Geoindex and BGS Sheet 264 Bristol) shows that superficial deposits are absent in the area.

The bedrock geology is shown to belong to the Downend Member of the Pennant Sandstone Formation, which is of Carboniferous age. The Downend Member generally consists of a coarse-grained sandstone with some conglomerate and pebbly sandstones with some fissile mudstone beds. Some workable coal seams are also present.

The geological structure of the Bristol and Somerset Coalfield is complex. High tectonic horizontal forces that have been generated since the Carboniferous have resulted in the Coal Measures becoming contorted with anticlines and synclines. In addition, faulting is common with many faults being of the reverse type (thrusts), where older strata are pushed above younger strata. These types of faults are commonly at shallow angles, with long displacements. This makes correlation of coal seams difficult, even over short distances. It also results in the same coal seam having different names in different areas. Seam names were generally applied by local coal miners and have since been adopted by the BGS.

The maps show the Parrot (PARC) seam to intersect or outcrop in close proximity to the development site.

The complex structure has also resulted in large variations in strata dip and dip direction. The BGS Geological Memoir for the Bristol Sheet 264 notes near vertical bedding in places. Dip directions are generally more consistent, and are either towards the north-north-east or south-south-west, as this is the orientation of the tectonic thrust.

Appendix D shows an extract from BGS geological 1:50,000 Sheet 264 Bristol. It can be seen that the proposed development site lies on the southern limb of the Kingswood Anticline. The axis of the anticline is just over 1.80km north of the site.

The BGS Memoir (*ibid*) states “Owing to the structural peculiarities of the Kingswood Anticline ... and the partial concealment Beneath Triassic rocks, the lowest seams do not outcrop at the surface and they were not worked on a large scale until the second half of the 19th century. The higher coals however, have been worked more or less continuously over a period of at least 700 years.”

For the above reasons, it has not been possible to establish the position of the immediate sub-strata within the Coal Measures stratigraphy to the north of the site.

The site is situated within a Primary Opencast Coal Resource Area (**Appendix E**), defined by the BGS as “an area which constitutes the main target for opencast coal extraction and comprises a relatively closely spaced succession of variable but generally thick coals. These coals typically occur within a certain discrete stratigraphic interval”. Notwithstanding this, it is considered to be very unlikely that there will be any interest in developing open cast coal mining operations at this location in the short or medium-term.

3 Identification and Assessment of Site Specific Coal Mining Risks

The table below summarises the potential risks associated with coal mining legacy for the proposed development site, which have been identified from list sources of information.

Table 2 - Coal Mining Hazards Summary

Coal Mining Issues	Yes	No
Coal outcrops	X	
Underground coal mining (recorded at shallow depths)		X
Underground coal mining (probable at shallow depths)	X	
Recorded mine entries (shafts and adits)		X
Unrecorded mine entries (shafts and adits)	X	
Coal mining geology (fissures)		X
Record of past gas emissions		X
Recorded coal mining surface hazard		X
Surface mining (opencast workings)		X

The Coal Authority Interactive Map Viewer (**Appendix F**) has identified that the site lies within a Development High Risk Area associated with the potential presence of unrecorded workings at shallow depth (less than 30m bgl) beneath the site.

The report obtained from the Coal Authority (Enviro All-in-One Report, reference 51002456578001, dated 21st April 2021) has revealed the property is in a surface area that is affected by recorded underground mining in 2 no. seams of coal at depths of between 460m and 590m bgl.

Section 1, Mining Activity and Geology of the CA report demonstrates the complex structural geology in the area.

Using the generally accepted 'rule-of-thumb' guidance that a competent rock strata thickness equivalent to at least ten times the extraction thickness provides adequate protection against crown-hole development and surface instability (Refs 2 and 3), it can be concluded that the recorded workings will not result in surface subsidence or crown-hole development.

However, the Coal Authority report states that the property is in an area where the Coal Authority believe there is coal at or close to the surface that may have been worked in the past. The Coal Authority has drawn attention to this and has stated that the presence of unrecorded shallow coal should be considered. It is concluded that if one or more of these seams have been worked in the past, they could present a risk of surface subsidence.

The Coal Authority report states that they are not aware of any recorded mine entries within or within 20m of the development site boundary. Notwithstanding this, it is recognised that there may also be mine entries in the vicinity that have not been recorded.

The Coal Authority report states that they are not aware of any opencast sites within the surrounding 500m of the site. Historic mapping also shows no evidence of surface workings.

4 Proposed Mitigation Strategy

In view of the geological uncertainty of the Coal Measures stratigraphy, the designation of development high risk and known historical shallow coal mining legacy dating from times before detailed mining records were prepared, the following risk mitigation measures are proposed.

- It is recommended that a single rotary borehole is advanced to a minimum depth of 30m bgl. Water flush should be used to safeguard against oxidation and potential spontaneous combustion of shallow coal. In order to undertake these works it will be necessary to obtain a drilling permit from The Coal Authority.
- The possibility of unrecorded mine shafts has been highlighted in the Coal Authority report. Historical maps do not show evidence of shafts within the site boundary. The potential risk can be dealt with through vigilance during the earthworks stage of construction.
- If coal is encountered during foundation excavation works, the coal should be over-excavated for a minimum of 1m from the foundations and replaced with blinding concrete. These actions should be adequate to seal the coal from the atmosphere to prevent spontaneous combustion.

5 Conclusions

The Coal Mining Risk Assessment for the site at 74 Air Balloon Road has concluded that the risk associated with coal mining related issues cannot be ruled out by desk based studies. Information obtained from the Coal Authority and the assessment made by EnviroSolution. Have not concluded a negligible risk from short-term potential ground instability caused by the collapse of shallow bedrock above historic unrecorded coal mine workings.

The principal risks to the development arise from:

- the potential presence of unrecorded shallow mine workings associated with coal seams of workable thickness that are expected to be present beneath the site area;
- the potential presence of coal at or close to the surface which could intersect proposed building foundations;
- unrecorded mine entries;

It is therefore recommended that further intrusive ground investigations are undertaken. These might include the drilling of a single rotary probe borehole close to the proposed development to determine the proximate coal seam positions along with obtaining evidence of unrecorded coal mine workings.

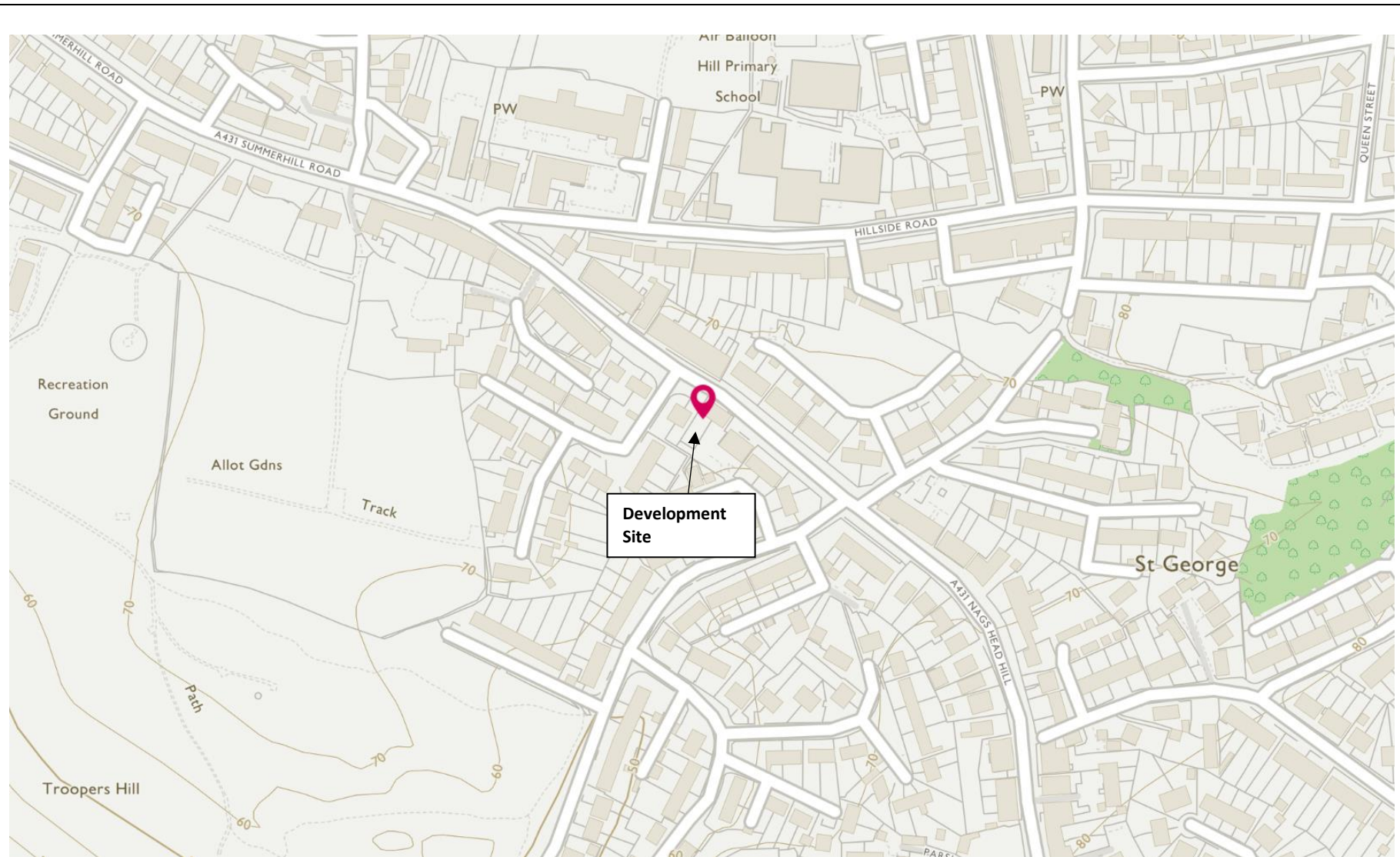
Prior to the commencement of intrusive works, a Coal Authority Permit will be required for intrusive activities, that will disturb or enter any coal seams, coal mine workings or coal mine

entries (shafts and adits). The scope of works for the investigation will need to be submitted and approved by the local authority prior to the commencement of the intrusive works.

6 References

1. Coal Authority, 2014, Risk Based Approach to Development Management Resources for Developers, Version 3.
2. CIRIA, 2002, SP32 Construction over Abandoned Mine Workings.
3. CIRIA, 2019, C758D Abandoned Mine Workings Manual.
4. CIRIA, Publication C665, Assessing risks posed by hazardous ground gases to buildings.

Appendix A – Site Location



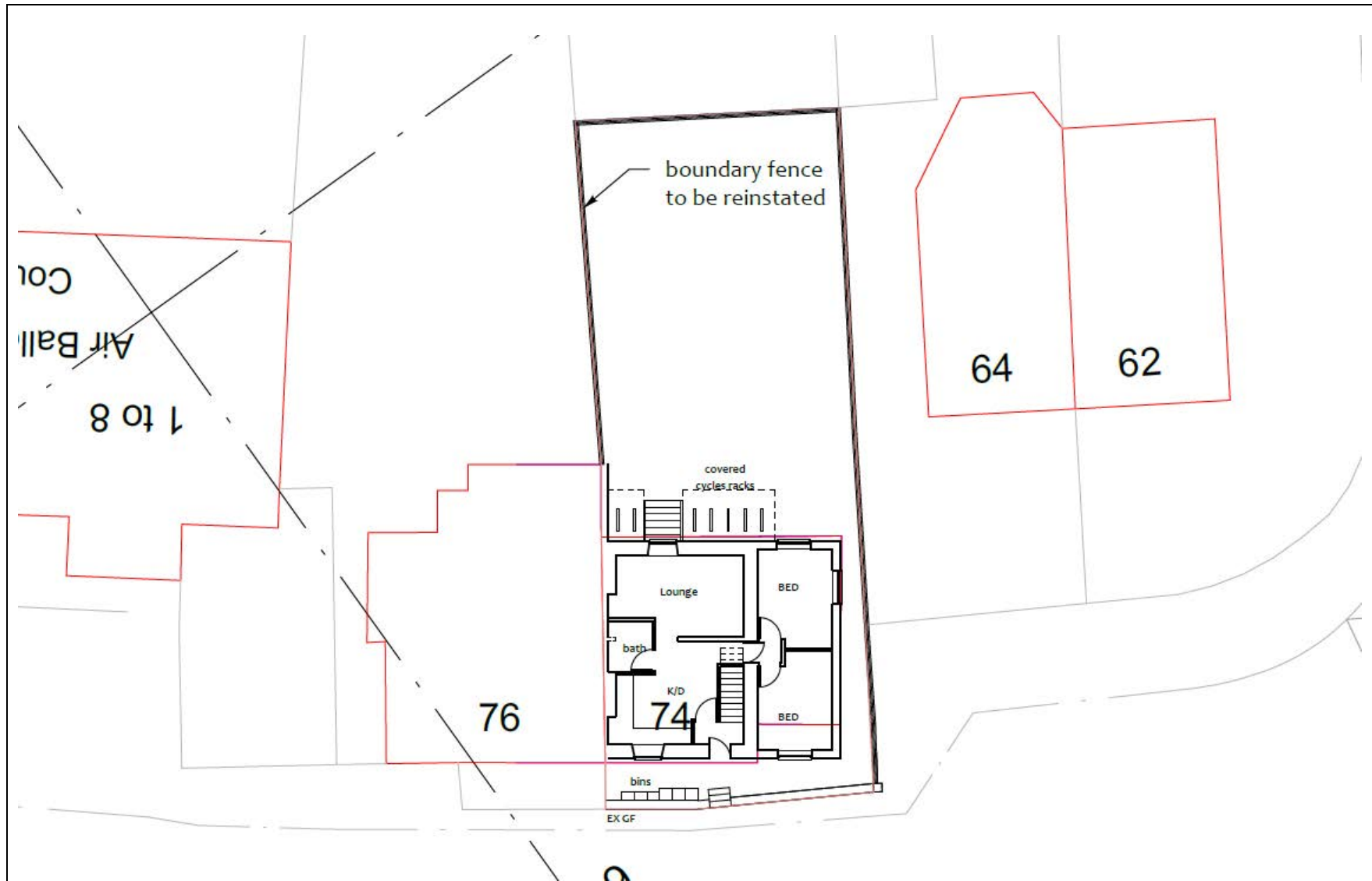
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Site Location Map



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Existing Site Plan



Appendix B – Coal Authority Report



Enviro All-in-One

Residential search report

74 AIR BALLOON ROAD, ST GEORGE, BRISTOL, BRISTOL CITY, BS5 8LF

Professional findings



Coal Mining
Identified

Page 4



Contaminated Land Liability
Passed

Page 3



Flood Risk
Negligible

Addresses the Law Society guidance on Coal mining risks, Contaminated Land and Flood risk.

Site plan



Further guidance



Other Ground Stability
Not identified



Radon
Passed



Planning Constraints
Not identified

Screenings



Energy
Identified

page 10



Transportation
Not identified



Planning Applications
Identified

page 12

Full assessments for these risks are available in other Groundsure searches including the Groundsure Avista 7 in 1 report. Contact Groundsure or your search provider for further details.

Useful contacts

Bristol City Council:
<http://www.bristol.gov.uk/>
customer.services@bristol.gov.uk
0117 922 2000

Environment Agency National Customer
Contact Centre (NCCC):
enquiries@environment-agency.gov.uk
03708 506 506

Overview of findings and recommendations



Coal mining

According to the records held by the Coal Authority at the time the report was produced, the search report has identified evidence, or the potential of, coal mining related risks. For detailed findings please read from **page 4**.

Environmental Findings

To save you time when assessing the report, we only provide maps and data tables of features within the search radius that we have identified to be of note. These relate to environmental risks that may have liability implications, affect insurance premiums, property values and/or a lender's willingness to lend.

You can view the fully comprehensive library of information we have searched on **page 14**.

No environmental risks that Groundsure believe require further action have been identified in relation to the property.

Other considerations

These are potential actions associated with non-environmental search returns such as mobile masts and planning constraints.



Planning

Mobile phone masts

The property lies within 250m of an existing or planned mobile phone mast. Next steps for consideration:

- ensure the presence of a mobile phone mast near the property is considered before the transaction completes

Environmental summary



Environmental searches are designed to ensure that significant hazards and risks associated with this property are identified and considered alongside the investment in or purchase of a property.

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



Contaminated Land

No significant concerns have been identified as a result of the contaminated land searches.

Contaminated Land Liability	Passed
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Past Land Use	Passed
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Waste and Landfill	Passed
---------------------------	---------------

Current and Recent Industrial	Passed
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Flood Risk

No significant concerns have been identified as a result of the flood risk searches. No action required.

Further explanation of flood risk assessment can be seen in the Flood information on **page 17**.

River and Coastal Flooding	Very Low
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Groundwater Flooding	Negligible
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Surface Water Flooding	Negligible
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Past Flooding	Not identified
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Flood Storage Areas	Not identified
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FloodScore™ insurance rating	Very Low	The rating is compiled by Ambiental, a leading flood risk analysis company. Please see page 17
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Ground stability

No significant concerns have been identified as a result of the ground stability searches. No action required.

Natural Ground Stability	Low
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Non-Natural Ground Stability	Not identified
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Radon

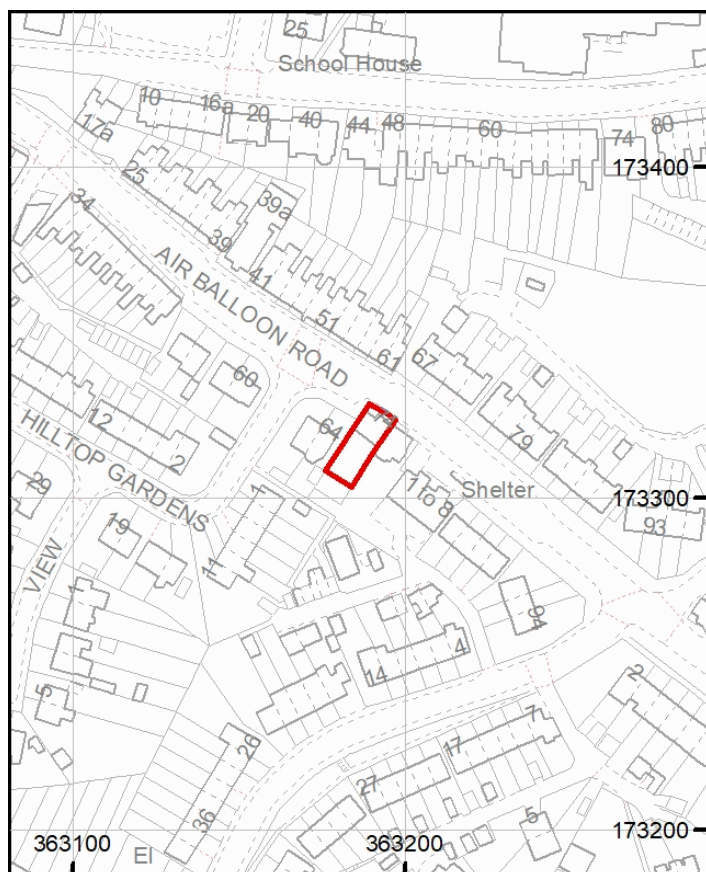
Local levels of radon are considered normal. The percentage of homes estimated to be affected by radon in your local area is less than 1%.

Not in a radon affected area

Coal Mining

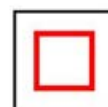


This report is based on, and limited to, the records held by the Coal Authority, at the time we answer the search.



Key

Approximate position of
enquiry boundary shown



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Ordnance Survey Licence number: 100020315

Detailed findings

1. Past underground coal mining

The property is in a surface area that could be affected by underground mining in 2 seams of coal at 460m to 590m depth, and last worked in 1885.

Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

In addition the property is in an area where the Coal Authority believes there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered, particularly prior to any site works or future development activity, as ground movement could still be a risk. Your attention is drawn to the Comments on the Coal Authority information section of the report.

2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3. Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4. Mine entries

There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property.

5. Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6. Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7. Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8. Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9. Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10. Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11. Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

Comments on the Coal Authority information

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/ former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. This report is prepared in accordance with the Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.

Insurance is included as part of this residential report to cover loss in property value arising from any changes in the information contained in this report. Please refer to the attached Certificate of Insurance for the terms and conditions of this insurance. The insurance does not cover non-residential property or further recommended reports.

Disclaimer

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Alternative formats

If you would like the coal mining section of this report in an alternative format, please contact the Coal Authority's communications team on 0345 762 6848 or email communications@coal.gov.uk.

Coal Mining Report Insurance Policy



On behalf of the insurer

Schedule

Policy number: **29109907**

The insurer: **Liberty Legal Indemnities – underwritten by Liberty Mutual Insurance Europe SE**

Binding Authority contract number: **RNMFP2103841**

Property: **74 AIR BALLOON ROAD, ST GEORGE, BRISTOL, BRISTOL CITY, BS5 8LF**

Reference: **81006688048001**

Limit of cover: **£50,000**

Dated: **21 April 2021**

This policy and schedule shall be read together and any word or expression to which a specific meaning has been attached in either shall bear such meaning wherever it may appear.

Where a Coal Mining Report has been obtained in connection with a sale of the property, cover is provided for the benefit of a purchaser and their lender; in the case of a re-mortgage or where the existing owner chooses to obtain a Coal Mining Report, cover is provided for the benefit of the owner and their lender.

The policy offers protection against loss sustained by the owner of the property if any new problems or adverse entries are revealed in a subsequent Coal Mining Report which were not revealed by the original report to which the policy was attached.

The insured shall at all times comply with the requirements of the Conditions of this Policy.

Coal Mining Report Terms and Conditions can be viewed online at this link:

<https://www.groundstability.com/insurance/terms/20190404/terms.html>

Energy summary



The property has been identified to lie within 5km of one or more energy features. The Enviro-All-in-One report summarises these on this page.

If required, full details on these energy features including a detailed location plan relative to the property are available when you purchase a Groundsure Energy and Transportation Report via your preferred searches provider.



Oil and Gas

No historical, active or planned wells or extraction areas have been identified near the property.

Oil and Gas Areas
Oil and Gas Wells

Not identified
Not identified



Wind and Solar

Our search of existing and planned renewable wind and solar infrastructure has identified results.

Planned Multiple Wind Turbines

Not identified

Planned Single Wind Turbines

Identified

Existing Wind Turbines

Not identified

Proposed Solar Farms

Not identified

Existing Solar Farms

Not identified



Energy Infrastructure

Our search of major energy transmission or generation infrastructure and nationally significant infrastructure projects has identified results.

Power stations

Identified

Energy Infrastructure Projects

Not identified
Not identified

Transportation summary



The property has not been identified to lie within the specified distance of one or more of the transportation features detailed below.

If required, full details on these transportation features including a detailed location plan relative to the property are available when you purchase a Groundsure Energy and Transportation Report via your preferred searches provider.



HS2

No results for Phase 1 or Phase 2 of the HS2 project (including the 2016 amendments) have been identified within 5km of the property. However, HS2 routes are still under consultation and exact alignments may change in the future.

Visual assessments are only provided by Groundsure if the property is within 2km of Phase 1 and 2a. Other assessments may be available from HS2.

HS2 Route	Not identified
HS2 Safeguarding	Not identified
HS2 Stations	Not identified
HS2 Depots	Not identified
HS2 Noise	Not assessed
HS2 Visual impact	Not assessed



Crossrail

The property is not within 250 metres of either the Crossrail 1 or Crossrail 2 project.

Crossrail 1 Route	Not identified
Crossrail 1 Stations	Not identified
Crossrail 1 Worksites	Not identified
Crossrail 2 Route	Not identified
Crossrail 2 Stations	Not identified
Crossrail 2 Worksites	Not identified
Crossrail 2 Safeguarding	Not identified
Crossrail 2 Headhouse	Not identified



Other Railways

The property is not within 250 metres of any active or former railways, subway lines, DLR lines, subway stations or railway stations.

Active Railways and Tunnels	Not identified
Historical Railways and Tunnels	Not identified
Railway and Tube Stations	Not identified
Underground	Not identified

Planning summary



Planning Applications

Using Local Authority planning information supplied and processed by Glenigan dating back 10 years, this information is designed to help you understand possible changes to the area around the property. Please note that even successful applications may not have been constructed and new applications for a site can be made if a previous one has failed. We advise that you use this information in conjunction with a visit to the property and seek further expert advice if you are concerned or considering development yourself.

2 Total applications

This total includes large developments within 250 m, small developments within 75 m and house extensions within 50 m. If required, full details on these applications including a detailed location plan relative to the property are available when you purchase a Groundsure Planning Report via your preferred searches provider.



Planning constraints

No protected areas have been identified within 50 metres of the property. Protected areas include nature reserves and other conservation areas.

Environmental Protected Areas Not identified
Visual and Cultural Protected Areas Not identified



Telecoms

There are mobile masts, mobile phone base stations or planning applications for mobile masts identified within 250 metres of the property.

Mobile phone masts

Identified

If required, full details on these Telecoms results are available when you purchase a Groundsure Planning Report via your preferred searches provider.

Mobile phone masts



Mobile phone masts

There is a mobile phone mast within 190m of the property. See below for details of the mast and its location. Please note that this data may be incomplete or out of date and Groundsure recommends checking for any entries in the Mobile Phone Mast Planned section, as masts added since 2012 may appear there instead.

ID	Distance	Direction	Operator	Type	Antenna	Band	Power(dBW)
A	190 m	SE	Orange	GSM	11.8	1800	23.1
A	190 m	SE	Orange	UMTS	11.8	2100	19

This database is taken from Ofcom's Sitefinder database, the Government's database of mobile phone base stations. The last update to this database was applied in May 2012, although some operators ceased providing updates some years before then. Neither Ofcom nor Groundsure can accept any liability for any inaccuracies or omissions in the data provided within Sitefinder. The most recent update is based on the following datasets received at the specified times by Ofcom: O2 (May 2012), Network Rail (April 2012), Hutchison (February 2012), Vodafone (October 2011), Airwave (February 2010), Orange (February 2010) and T-Mobile (August 2005). Sites added since these dates will not appear in the database.

Datasets searched

This is a full list of the data searched in this report. If we have found results of note we will state "Identified". If no results of note are found, we will state "Not identified". Our intelligent filtering will hide "Not identified" sections to speed up your workflow.

Contaminated Land	
Former industrial land use (1:10,560 and 1:10,000 scale)	Not identified
Former tanks	Not identified
Former energy features	Not identified
Former petrol stations	Not identified
Former garages	Not identified
Former military land	Not identified
Former landfill (from Local Authority and historical mapping records)	Not identified
Waste site no longer in use	Not identified
Active or recent landfill	Not identified
Former landfill (from Environment Agency Records)	Not identified
Active or recent licensed waste sites	Not identified
Recent industrial land uses	Not identified
Current or recent petrol stations	Not identified
Hazardous substance storage/usage	Not identified
Sites designated as Contaminated Land	Not identified
Historical licensed industrial activities	Not identified
Current or recent licensed industrial activities	Not identified
Local Authority licensed pollutant release	Not identified
Pollutant release to surface waters	Not identified
Pollutant release to public sewer	Not identified
Dangerous industrial substances (D.S.I. List 1)	Not identified

Contaminated Land	
Dangerous industrial substances (D.S.I. List 2)	Not identified
Pollution incidents	Not identified
Flood Risk	
Risk of flooding from rivers and the sea	Not identified
Flood storage areas: part of floodplain	Not identified
Historical flood areas	Not identified
Areas benefiting from flood defences	Not identified
Flood defences	Not identified
Proposed flood defences	Not identified
Surface water flood risk	Not identified
Groundwater flooding	Not identified
Ground stability	
Natural ground subsidence	Not identified
Natural geological cavities	Not identified
Non-coal mining	Not identified
Mining cavities	Not identified
Infilled land	Not identified
Radon	
Radon	Not identified
Energy Infrastructure	
Electricity transmission lines and pylons	Not identified

Enviro All-in-One

Coal Authority ref: 81006688048001

Reference: 51002456578001

Your reference: suki

Grid reference: 363186 173316

Date: 21 April 2021

Planning constraints

Sites of Special Scientific Interest	Not identified
Internationally important wetland sites (Ramsar Sites)	Not identified
Special Areas of Conservation	Not identified
Special Protection Areas (for birds)	Not identified
National Nature Reserves	Not identified
Local Nature Reserves	Not identified
Designated Ancient Woodland	Not identified
Green Belt	Not identified
World Heritage Sites	Not identified
Areas of Outstanding Natural Beauty	Not identified
National Parks	Not identified
Conservation Areas	Not identified
Listed Buildings	Not identified
Certificates of Immunity from Listing	Not identified
Scheduled Monuments	Not identified
Registered Parks and Gardens	Not identified

Planning

Mobile phone masts	Identified
Mobile phone masts planning records	Not identified

For any coal mining related issues please contact the Coal Authority:

0345 762 6848

groundstability@coal.gov.uk

For all other issues and assistance please contact Groundsure:

0844 415 9000

info@groundsure.com

Contaminated land liability assessment methodology

As part of this report Groundsure provide a professional assessment of the risks posed by key environmental information which could lead to the property being designated as 'Contaminated Land' as defined under Part 2A of the Environmental Protection Act 1990. This assessment is based on the following data:

- historical land use (compiled from 1:10,000 and 1:10,560 maps)
- petrol stations, garages, energy features and tanks (compiled from 1:1,250 and 1:2,500 maps) – for selected areas.
- historic military / ordnance sites
- landfill and waste transfer/treatment or disposal sites (including scrap yards)
- current and recent industrial uses (as defined by PointX data)
- Catalyst petrol station
- Part A(1), Part A(2) and Part B Authorisations
- sites determined as Contaminated Land under Part 2A EPA 1990
- Planning Hazardous Substance Consents
- Environment Agency Recorded Pollution Incidents
- Dangerous Substances Inventory Releases (DSI)
- Red List Discharge Consent

The level of risk associated with the property is either Passed or Action Required. If the report result is Action Required it does not necessarily mean that the site is unsuitable for purchase, but only that further assessment of the risk associated with the site is required.

Method Statement

In assessing specific site risk, Groundsure follows principles used extensively throughout the environmental consultancy sector. Our system looks at the potential for specific industries to have generated residual contamination and for this contamination to remain at a site, or to have migrated to neighbouring sites. Sites are scored based on this system and if a site scores highly it indicates a high level of risk.

Limitations of the Study

This report has been prepared with the assumption that the site is in residential use and that no significant (re)development is planned. The screening process reviews historical mapping and a range of current databases. The historical land use database reviewed for this study does NOT include 1:2,500 or 1:1,250 scale maps except for Groundsure's additional information database of selected features namely tanks, energy features, petrol filling stations and garages. This additional information database covers the majority of the UK, but not all. Where 1:2500 or 1:1250 scale maps are utilised all relevant and available map epochs to Groundsure are used. Additionally, this review does NOT include specific enquiries to the Local Authority who may hold additional information and it does NOT include a site visit/inspection. Your attention is drawn to the Terms and Conditions of Groundsure Limited under which this service is provided.

Flood information

The Flood Risk Assessment section is based on datasets covering a variety of different flooding types. No inspection of the property or of the surrounding area has been undertaken by Groundsure or the data providers. The modelling of flood hazards is extremely complex and in creating a national dataset certain assumptions have been made and all such datasets will have limitations. These datasets should be used to give an indication of relative flood risk rather than a definitive answer. Local actions and minor variations, such as blocked drains or streams etc. can greatly alter the effect of flooding. A low or negligible modelled flood risk does not guarantee that flooding will not occur. Nor will a high risk mean that flooding definitely will occur. Groundsure's overall flood risk assessment takes account of the cumulative risk of river and coastal data, historic flood events and areas benefiting from flood defences provided by the Environment Agency/Natural Resources Wales (in England and Wales) and surface water (pluvial) and groundwater flooding provided by Ambiantal Risk Analytics. In Scotland the river and coastal flood models are also provided by Ambiantal Risk Analytics.

Risk of flooding from rivers and the sea

This is an assessment of flood risk for England and Wales produced using local data and expertise, provided by Environment Agency. It shows the chance of flooding from rivers or the sea presented in categories taking account of flood defences and the condition those defences are in. The model uses local water level and flood defence data to model flood risk.

Historic flood events

Over 86,000 events are recorded within this database. This data is used to understand where flooding has occurred in the past and provides details as available. Absence of a historic flood event for an area does not mean that the area has never flooded, but only that Environment Agency/Natural Resources Wales do not currently have records of flooding within the area. Equally, a record of a flood footprint in previous years does not mean that an area will flood again, and this information does not take account of flood management schemes and improved flood defences.

Surface water flooding

Ambiantal Risk Analytics surface water flood map identifies areas likely to flood following extreme rainfall events, i.e. land naturally vulnerable to surface water or "pluvial" flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though older ones may even flood in a 1 in 5 year rainstorm event.

Proposed flood defences

The data includes all Environment Agency/Natural Resources Wales's projects over £100K that will change or sustain the standards of flood defence in England and Wales over the next 5 years. It also includes the equivalent schemes for all Local Authority and Internal Drainage Boards.

Flood storage areas

Flood Storage Areas may also act as flood defences. A flood storage area may also be referred to as a balancing reservoir, storage basin or balancing pond. Its purpose is to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel. It may also delay the timing of a flood peak so that its volume is discharged over a longer time interval. These areas are also referred to as Zone 3b or 'the functional floodplain' and has a 5% or greater chance of flooding in any given year, or is designed to flood in the event of

an extreme (0.1%) flood or another probability which may be agreed between the Local Planning Authority and Environment Agency/Natural Resources Wales, including water conveyance routes. Development within Flood Storage Areas is severely restricted.

Groundwater flooding

Groundwater flooding is flooding caused by unusually high groundwater levels. It occurs as excess water emerging at the ground surface or within underground structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, in some cases lasting for weeks or months, and it can result in significant damage to property. This risk assessment is based on a 5m Digital Terrain Model (DTM) and 1 in 100 year and 1 in 250 year return periods.

Ambiental FloodScore™ insurance rating

The property has been rated as **Very Low** risk.

Ambiental's FloodScore™ risk rating gives an indicative assessment of the potential insurance risk classification from flooding, which can provide an indication of how likely it is that a property's policy will be ceded to Flood Re. The assessment is based on Ambiental's river, tidal and surface water flood data and other factors which some insurers may use in their assessment are not included.

Flood Re is a re-insurance scheme that makes flood cover more widely available and affordable as part of your residential property home insurance. Properties at higher risk of flooding may have the flood part of their policy ceded to Flood Re by their insurer. It is important to understand that Flood Re does not apply to all situations. Exclusions from Flood Re includes properties constructed after 1 January 2009; properties not within domestic Council Tax bands A to H (or equivalent); commercial properties, certain buy to let scenarios and buildings comprising four or more residential units. A full list of the exemptions can be found on the Flood Re website (<https://www.floodre.co.uk/can-flood-re-help-me/eligibility-criteria/>).

The Ambiental FloodScore™ insurance rating is classified into six different bandings:

Very High indicates a level of risk that may make it more likely that standard insurance premiums will be higher, or additional terms may apply to the provision of flood cover. There is a very high possibility that the cover for flooding at the property will be ceded into the Flood Re scheme, particularly if the property has flooded in the past.

High indicates a level of risk that may make it more likely that standard insurance premiums will be higher, or additional terms may apply to the provision of flood cover. There is a high possibility that the cover for flooding at the property will be ceded into the Flood Re scheme, particularly if the property has flooded in the past.

Moderate-High indicates a level of risk that may make it more likely that standard insurance premiums will be higher, or additional terms may apply to the provision of flood cover. There is a moderate possibility that the cover for flooding at the property will be ceded into the Flood Re scheme, particularly if the property has flooded in the past.

Moderate indicates a level of risk that may make it more likely that standard insurance premiums will be higher, or additional terms may apply to the provision of flood cover. There is a low possibility that the cover for flooding at the property will be ceded into the Flood Re scheme, unless the property has flooded in the past.

Low indicates a level of risk that is likely to mean standard cover and premiums are available for flood cover. There is a low possibility the cover for flooding at the property will be ceded into the Flood Re scheme, unless the property has flooded in the past.

Very Low indicates a level of flood risk that should not have any impact on the provision of flood cover for the property.

Conservation Area data limitations

Please note the Conservation Area data is provided by Historic England and may be incomplete. We recommend reviewing your local search for confirmation.

Subsidence data limitations

The natural ground subsidence assessment is based on the British Geological Survey's GeoSure data. GeoSure is a natural ground stability hazard susceptibility dataset, based on the characteristics of the underlying geology, rather than an assessment of risk. A hazard is defined as a potentially damaging event or phenomenon, whereas a risk is defined as the likelihood of the hazard impacting people, property or capital. The GeoSure dataset consists of six data layers for each type of natural ground subsidence hazard. These are shrink-swell clay, landslide, compressible ground, collapsible ground, dissolution of soluble rock and running sand. Each hazard is then provided with a rating on its potential to cause natural ground subsidence. This rating goes from A-E, with A being the lowest hazard, E being the highest. This is then represented within Groundsure reports as either Negligible-Very Low (A&B ratings), Low (C ratings) or Moderate-High (D&E ratings). The GeoSure data only takes into account the geological characteristics at a site. It does not take into account any additional factors such as the characteristics of buildings, local vegetation including trees or seasonal changes in the soil moisture content which can be related to local factors such as rainfall and local drainage. These factors should be considered as part of a structural survey of the property carried out by a competent structural surveyor. For more information on the "typical safe distance" trees should be from a property please see this guide:

<https://www.abi.org.uk/globalassets/sitecore/files/documents/publications/public/migrated/home/protecting-your-home-from-subsidence-damage.pdf>

Conveyancing Information Executive and our terms & conditions

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- 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.

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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.

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- 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: info@groundsure.com 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: admin@tpos.co.uk We will co-operate fully with the Ombudsman during an investigation and comply with their final decision.

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Data providers

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

Appendix C – Historic Maps





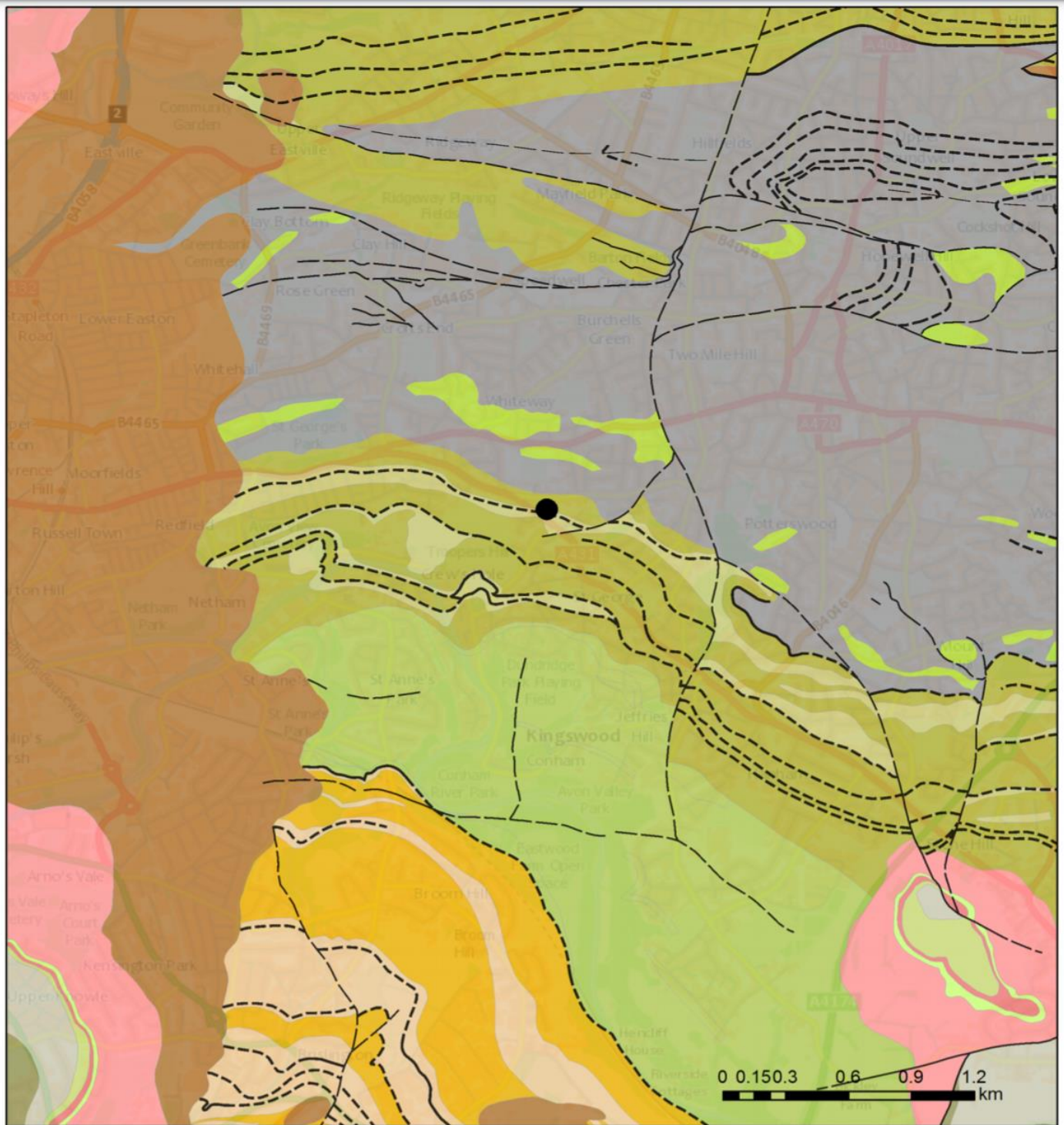


enviro | solution

Date: 1938
Scale 1:10,560

Appendix D – Geological Maps



























Bedrock Geology



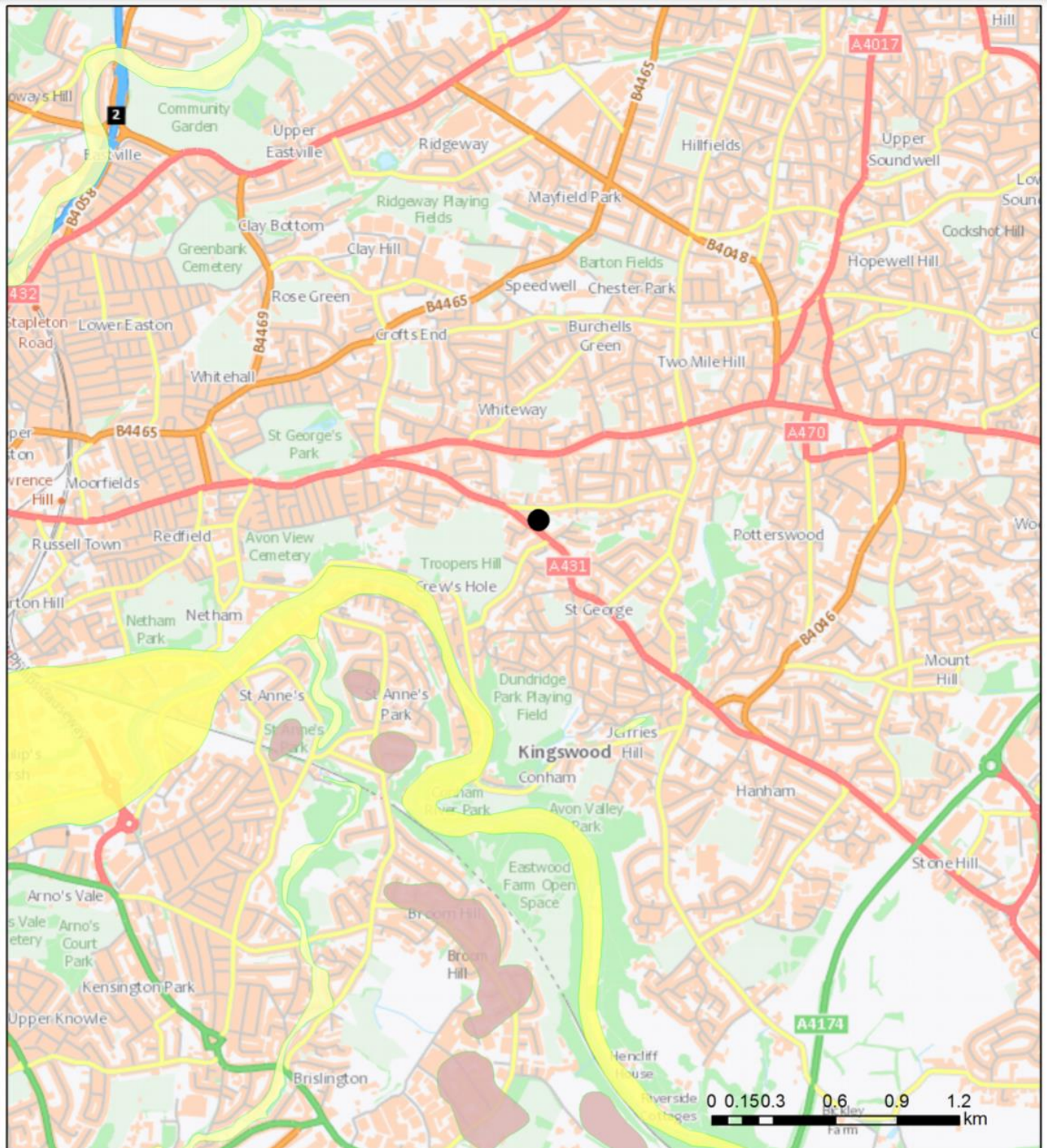
Linear features 1:50,000 scale

- Coal_seam_Inf
- Coal_seam_Obs
- Fault_Inf_Crossmark_on_downthrow_side
- Fault_Obs_Crossmark_on_downthrow_side
- Fold_Anticline
- ◆◆ Mineral_Vein_Inf
- ◆◆ Mineral_Vein_Obs

Bedrock geology 1:50,000 scale

	<u>GOBLIN COMBE OOLITE FORMATION - LIMESTONE, OOIDAL</u>
	<u>CLIFTON DOWN LIMESTONE FORMATION - LIMESTONE</u>
	<u>OXWICH HEAD LIMESTONE FORMATION - LIMESTONE, OOIDAL</u>
	<u>CHARMOUTH MUDSTONE FORMATION - MUDSTONE</u>
	<u>CLIFTON DOWN MUDSTONE FORMATION - DOLOMITE-MUDSTONE</u>
	<u>BEACON LIMESTONE FORMATION - LIMESTONE</u>
	<u>BLACK ROCK LIMESTONE SUBGROUP - LIMESTONE</u>
	<u>QUARTZITIC SANDSTONE FORMATION - SANDSTONE</u>
	<u>RUGBY LIMESTONE MEMBER - LIMESTONE AND MUDSTONE, INTERBEDDED</u>
	<u>MERCIA MUDSTONE GROUP - MUDSTONE AND HALITE-STONE</u>
	<u>FARRINGTON MEMBER AND BARREN RED MEMBER (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE</u>
	<u>MERCIA MUDSTONE GROUP - SANDSTONE</u>
	<u>BLACK ROCK LIMESTONE SUBGROUP - DOLOMITISED LIMESTONE AND DOLOMITE</u>
	<u>SOUTH WALES MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE</u>
	<u>PENARTH GROUP - MUDSTONE</u>
	<u>BLUE ANCHOR FORMATION - MUDSTONE</u>
	<u>LANGPORT MEMBER - LIMESTONE</u>
	<u>DOWNEND MEMBER - MUDSTONE</u>
	<u>CROMHALL SANDSTONE FORMATION - SANDSTONE</u>
	<u>BRIDPORT SAND FORMATION - SANDSTONE</u>
	<u>MANGOTSFIELD MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE</u>
	<u>SALTFORD SHALE MEMBER - MUDSTONE</u>
	<u>PENNANT SANDSTONE FORMATION - SANDSTONE</u>
	<u>DOWNEND MEMBER - SANDSTONE</u>
	<u>REDCLIFFE SANDSTONE MEMBER - SANDSTONE</u>
	<u>DYRHAM FORMATION - SILTSTONE</u>
	<u>FARRINGTON MEMBER AND BARREN RED MEMBER (UNDIFFERENTIATED) - SANDSTONE</u>

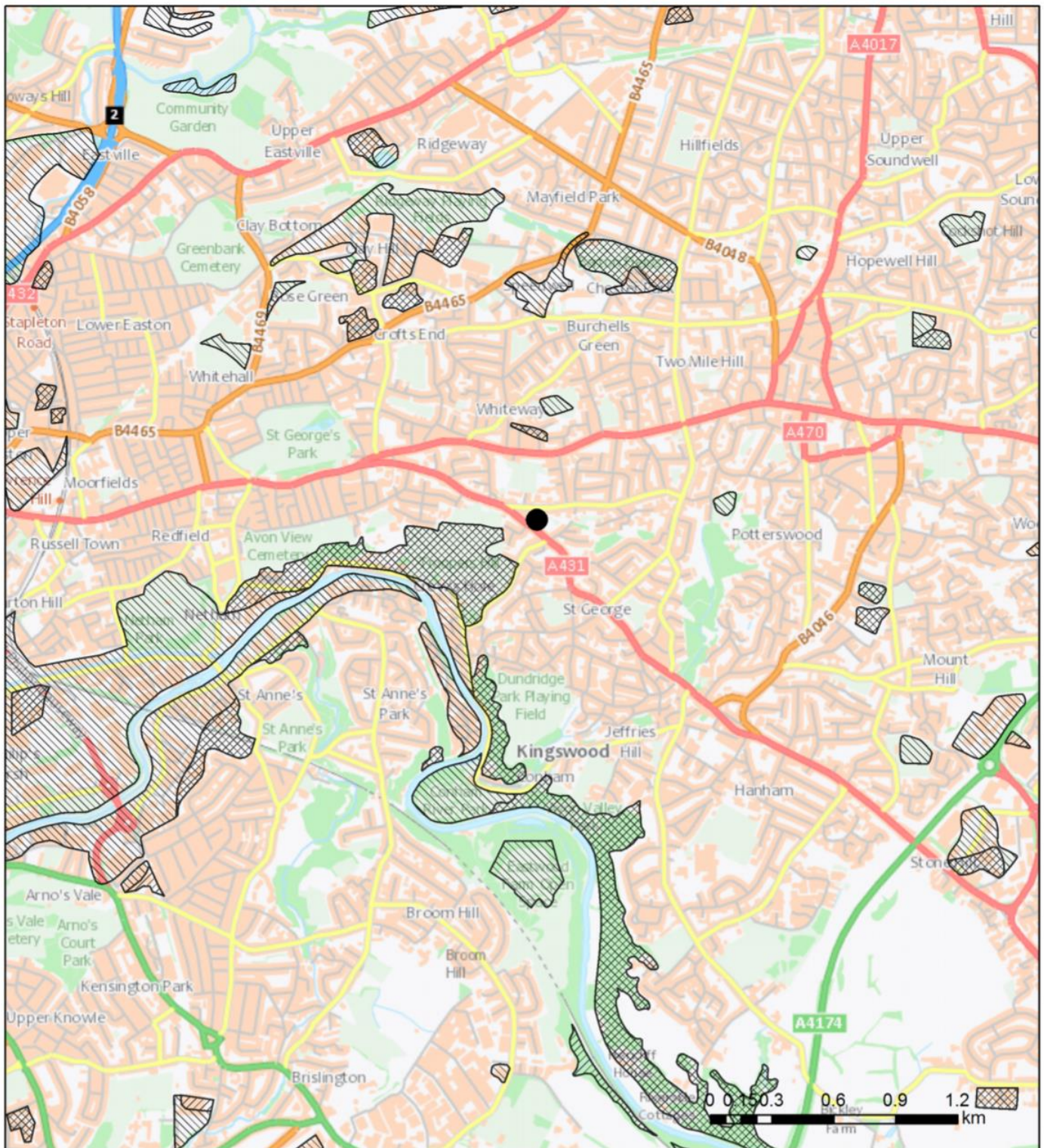
Superficial Geology



Superficial deposits 1:50,000 scale

- ALLUVIUM - CLAY, SILT, SAND AND GRAVEL**
- HEAD - DIAMICTON**
- RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL**
- TIDAL FLAT DEPOSITS - CLAY AND SILT**

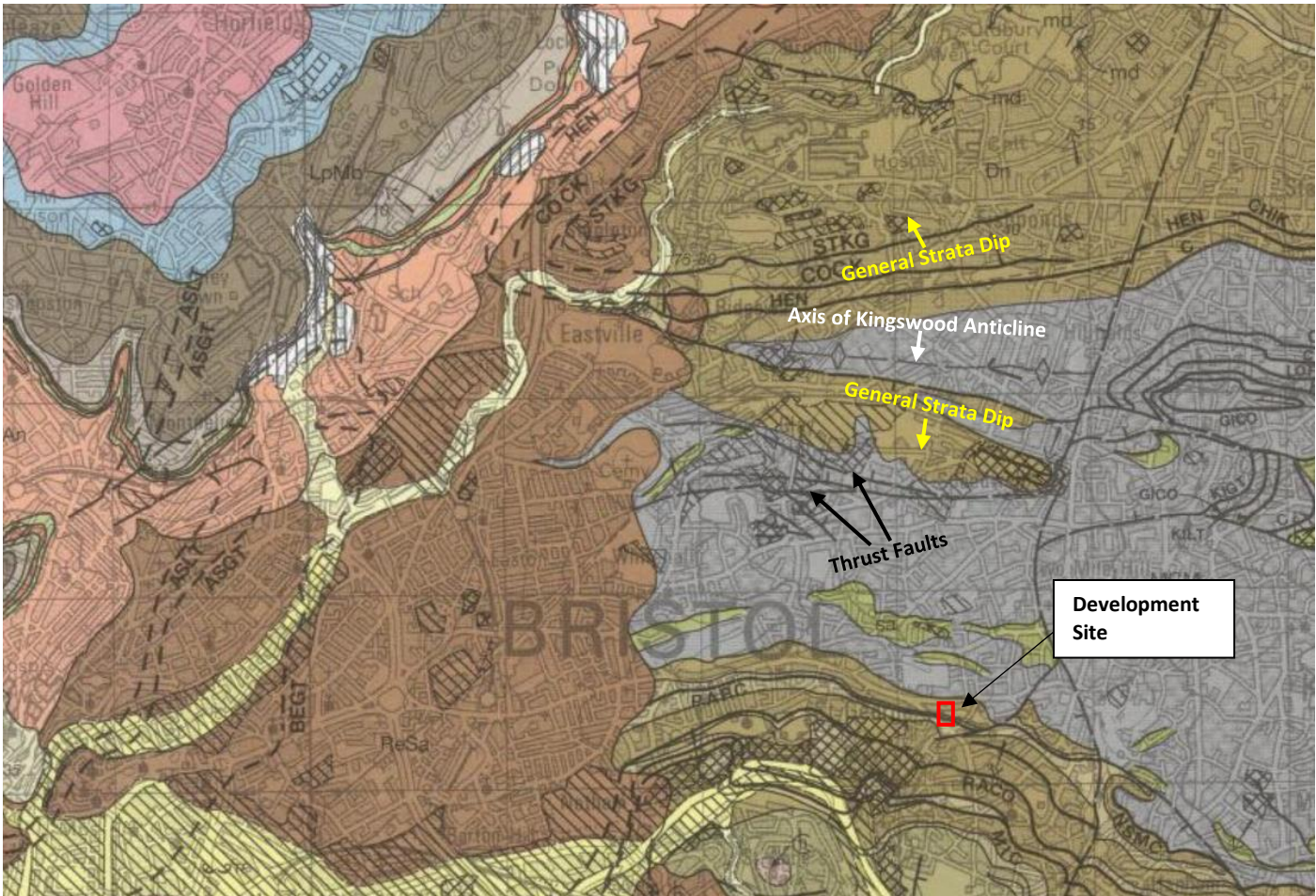
Artificial Geology



Artificial ground 1:50,000 scale

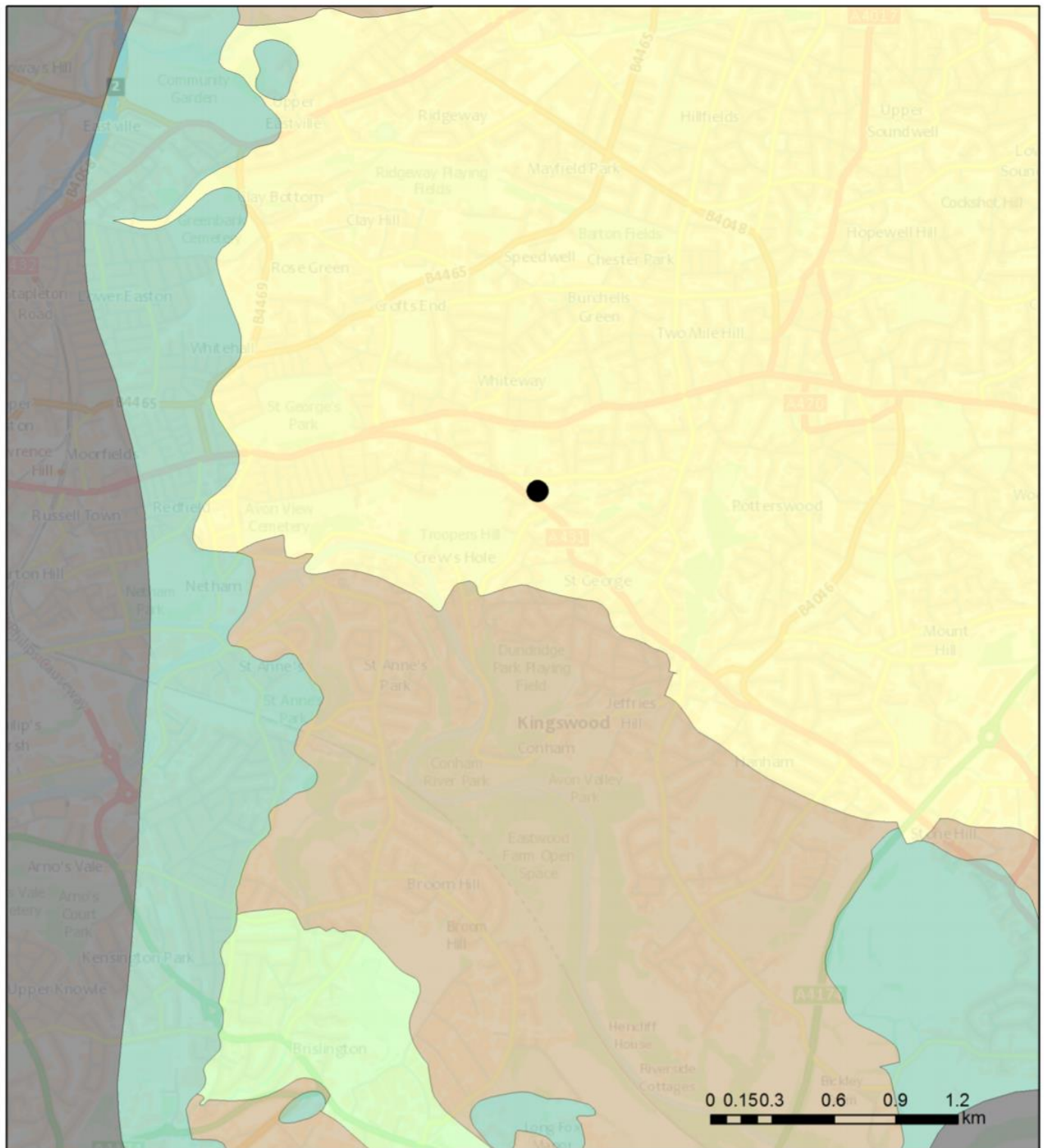
-  **MADE GROUND (UNDIVIDED) - ARTIFICIAL DEPOSIT**
-  **WORKED GROUND (UNDIVIDED) - VOID**
-  **INFILLED GROUND - ARTIFICIAL DEPOSIT**

BGS Geological Survey 1:50,000 Series England and Wales Sheet 264, Bristol



MANGOTSFIELD FORMATION		Made- For- Ever- Seam		
	Temple Cloud	Mangotsfield Coals (MDCO)		
DOWNEND FORMATION	Newbury No.3	Stinking (STKG)		
	Newbury No.2	Cock (COCK)	Upper Millgrit and Lower Millgrit; Millgrit (MIC) Dibble Rag (RACO)	
	Newbury No.1	Chick (CHIK)	Buff (BUFC)	
	Globe	HEN	Parrot (PARC)	
	Small		Muxen	
	Wacky Course		Cuckoo	
			Jones's	
		Adam's		
	Garden Course	Coking and Scrag		
MIDDLE COAL MEASURES	Cambriense (Winterbourne) Marine Band CAMB			
	Great Course Firestone Little Course Dungy Drift	New Smith's (NSMC)	Doxall	
		Upper Five Coals		
		Primrose		
		Liesalong		
	Aegiranum (Croft's End) Marine Band AGMB			
	Hard Argyle Drift	Kingswood Top Thurfer Coal & Lower Five (LOF) = Warmley Five		Bedminster Top (BETP)
		Kingswood Great (KGT)		Bedminster Great (BEGT)
	?	Gillers Inn (GICO)		
		Kingswood Little (KILT)		Bedminster Little
			Bedminster Toad	
?			Backwell Little Smith's	
	Vanderbeckei (Harry Stoke) Marine Band VDMB			

Appendix E – Coal Resource Map



Shallow Coal

- Buried coal resource overlain by up to 50m overburden
- Primary opencast coal resource area
- Secondary opencast coal resource area
- Tertiary opencast coal resource area

Deep Coal

- Deep coal at more than 1200m
- Deep coal between 50m and 1200m

Appendix F – Coal Mining Summary Map

