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# KINGDOM HALL, STATION ROAD, ASHINGTON DESK BASED REPORT

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*Report Ref 21016X issue 18 February 2021*



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## Executive Summary

Intersoil was commissioned to undertake a desk based report on land occupied by the Kingdom Hall off Station Road, Ashington. Scrutiny of historical maps indicate the church hall was the first development and the land has remained in the same use until recently. The hall is currently unoccupied. Internally, it appears to be in good order. There is a garden to the rear and grass at the front. A number of tree trunks are evident. In the wider area a bus depot, coal yard, bakery and garage occupied land within 100m of the site in the past. All three sites have now been redeveloped.

The site is shown to overlies glacial clays with Coal Measures below. The Coal Authority Report suggests that there are probable workings below the site that may affect surface stability. Rotary drilling would be the method used to establish the condition of the bedrock. The Coal Report identifies a mine gas incident 380m from the study area. Rotary drilling in 2016 and 2018 within the former leisure centre immediately south of the plot showed a number of coal seams within 30m depth. The thickest was 0.4m thick present at 8m depth. The bedrock dips south eastward which means that the coal is expected to be present at shallower depth below the church hall than at the Leisure centre. There was, however, no thick seams encountered. In addition there was no voids or old workings recorded.

Soil gas monitoring from within the made ground and drift on the leisure centre site did not record any methane and carbon dioxide levels did not exceed 5%. There is no reason to consider that the site is at risk from gas, particularly given that it has been in use in largely the same layout for over a century. However, Northumberland County Council may harbour an alternative view. It is noted that while they have asked for the installation of gas measures, they provide no specific reason as to why this would be required. The site is not close to any old landfill sites or waste related sites. No shallow workings have been identified on the adjacent property.

The site is not underlain by a sensitive aquifer and there are no surface water features close to the site.

Refurbishment plans include landscaping work. It would be prudent to have soils tested to ensure that adequate information is available on soil quality to ensure that appropriate safe systems of work for ground workers and construction workers can be planned.

The site is considered to be a 'low risk' in terms of likely perceived risks to human health.



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Our Ref No. 21016 -X  
Date: 18 February 2021

Mr M Sproat  
The Portland  
Station Road  
Ashington

## **KINGDOM HALL, STATION ROAD, ASHINGTON DESK BASED REPORT**

### **1. Introduction, Purpose and Objectives**

#### **Commission**

Intersoil was commissioned to undertake a desk based report for a proposed refurbishment of Kingdom Hall, on Station Road, Ashington.

#### **Reliance**

This report documents the Phase 1 work. The report has been prepared for use solely by Mr M. Sproat (the Client). It should not be used or relied upon by third parties. Where referenced, depths are from surface and distances are stated in metres (m). This report is limited to a review of ground conditions and does not include any assessment of the existing structure. This report is valid for 12 months from the date of issue.

#### **Purpose**

The purpose of this report is to provide an overview of the environmental and historical context of the site and local ground conditions via various desk based searches.

#### **Principal Guidance & References**

Elements of this report have been prepared broadly in reference to guidance published for use by developers and consultants by a group of Local Authorities (YAHPAG). Reference has also been made with the Contaminated Land Planning Procedure (October 2018) issued by Northumberland County Council.



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## 2. Site Location & Description

### Site

The Ordnance Survey Grid Coordinates for the plot are 426650E, 587652N and the postcode is NE63 8HF. A walkover survey was undertaken on the 4<sup>th</sup> February by a Chartered Geologist. The site location and study area is appended. With an area of around 1500m<sup>2</sup> the plot is dominated by a former church hall with grass and a short drive at the front and a modest garden at the rear. The grass at the front is on flat ground. There are several tree trunks around the perimeter of the grass. Two of these have been dug up. The drive is covered in tarmac and rises slightly to Station Road.

At the rear of the hall the short garden is enclosed by a wooden fence to the south with a grass lawn and planter boxes. A number of shrubs were present with paths covered by chippings and a geotextile below. A number of manholes were noted. There is access along one side of the building

Internally, the building was in good order with a wide entrance foyer/lobby leading to a large hall, a quiet room and a number of smaller rooms including toilets, kitchen, storage cupboards and ancillary room with concrete floor. Elsewhere the floors were covered by carpet. There was no evidence of poor housekeeping or areas of concern which might give rise to ground contamination



FIGURE 1: AERIAL PHOTOGRAPH 1999 (RED OUTLINE) FIGURE 2: AERIAL PHOTOGRAPH 2016

### Surroundings

In the wider area new housing is present south of the plot. Well established housing is present to the north and beyond Station Road. The Portland Hotel is present immediately to the west of the study area with a recent accommodation annex to the south west. There is a mix of well established terraced housing and shops along Station Road.





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### 3. Development History

#### Old Maps

A number of maps previously issued by the Ordnance Survey were acquired and selected large scale maps are presented in the Appendices. Table 1 shows summarised observations of maps from 1855 to 1994.

Date	Onsite	Offsite	Comments of note
1855	Field	Road immediately north	Field
1897	Church Hall	Church shown 20m east. Portland Arms Hotel 10m west and south west (stables?). Extensive housing to the north	Church Hall. Area well developed
1923	Minor changes to layout including greenhouses to south	Greenhouse 10m south	Minor changes to layout
1932	L/C	Housing plots shown 40m south east	
1959	L/C	Bakery immediately to south Bus depot 30m east. Garage 100m east. Abattoir 130m south west	
1968	Minor changes to layout	Warehouse and coal yard 20m east behind bus depot	
1981	L/C	Bakery replaced by Leisure Centre	
1994	L/C	L/C	

**TABLE 1: SUMMARY OF HISTORICAL LAND USE (AS DESCRIBED IN MAP EXTRACTS)**

#### L/C – Little change

The site was developed as a church hall with the adjacent church late in the 19<sup>th</sup> Century. There was a bakery immediately south of the plot for some time before this was replaced by the leisure centre (understood to be built in the early 1970's), now demolished and replaced by housing. The Portland Hotel appears to have been built around the same time as the church hall.

In the wider area, a coal depot and warehouse were present south of a bus depot 30m east of the plot.



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## 4. Environmental Database Search & Planning Register

A Groundsure Enviro-insight Report (dated 25<sup>th</sup> January) was acquired as part of the study. The following aspects of environmental information considered salient are summarised as follows:

Description	Onsite (Y/N)	Close to site (Y/N)	Comments
Historical land uses	Y	Y	Groundsure report shows the plot on the edge of colliery ground (1938map). 17m north railway sidings. 90m south west abattoir (1974)
Historical Tanks	N	N	Nearest tank 200m west – unspecified use (1982/96)
Historical Energy	N	N	Substation 160m west
Former Petrol stations & garages	N	N	80m east garage 1958-1996
Infilled land	N	N	None noted
Dangerous Substances	N	N	None noted
Control of Major Accident Hazards	N	N	None noted
Env. Permits & Discharges	N	N	None noted
Pollution inventory	N	N	None noted
Landfill Sites	N	N	Nearest is the Peoples Park active for inert and industrial waste 1945-1952. 150m south.
Waste Operator & Sites	N	N	None noted
Contemporary Land Uses	N	Y	Nearest substation is 37m south
Gas or High Voltage Cables	N	N	None noted (see above)

**TABLE 2: ENVIRONMENTAL DATA** The Groundsure report is copyright.  
 Near to site means within 50m

It is unclear why the northern edge of the site and houses to the north are considered to be on colliery impacted land. There is no obvious evidence from the historical maps that spoil heaps were present on this land.



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### Planning Register

The planning register was inspected on the County Council Website. However, while there were records pertaining to the Portland Hotel there was nothing indicating any significant changes to the church hall.

## 5. Geology, Mining & Previous Investigation Work

### Drift Geology

Reference to information published by the British Geological Survey (BGS) and presented in the Groundsure data suggests the presence of Till in the area. This typically comprises deposits of stoney clay.

### Solid Geology

The solid geology is shown to comprise the Pennine Coal Measures. These typically comprise units of sandstones, mudstones, siltstones and thin coal seams. An extract from the geological map (Rothbury Sheet 9) is presented below:



**FIGURE 3: SOLID GEOLOGY (MAP EXTRACT) SHOWING DIP OF 3.5 DEGREES SOUTH EAST**

### Coal Mining

The site is within a Coalfield. A Coal Consultants Report was acquired from the Coal Authority. It is appended. In summary it shows the following:

- Previous recorded underground mining in 6 seams at depths of between 55m and 196m below ground dating from 1880 to 1950.
- Probable shallow workings
- No underground roadways
- No mine entries within or close to the site
- No coal outcrops below the site
- No recorded geological faults
- No former opencast workings within or close to the site.

The report shows the typical range in dip between 2.8 and 5.0 degrees. The dip is to the south east meaning the coal seams get deeper toward the south east.



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A mine gas incident is recorded to have taken place 380m north of the plot. The Coal Authority recommend acquiring a coal mine emissions report. This includes details of the incident and gas monitoring data.

Reference to the Coal Authority Website shows the area is underlain by up to 5 sub-cropping seams. The area is highlighted as being within a 'development high risk zone'.

Reference made to the geological memoir for the area suggests that the Moorland Seam splits into 2 or 3 leaves and these may be encountered up to 3m apart.

### Previous Work & Proximal Investigations

The Coal Authority Report indicates that they are not in possession of any site investigation data within 50m of the plot. However, Intersoil are aware of an investigation undertaken in 2016 by consultants Patrick Parsons at Ashington Leisure Centre on behalf of Gleeson Developments. The report was updated in 2018. The document identifies between 5.8m and 7.5m of made ground and drift overlying bedrock. The made ground extended to 2.1m (former swimming pool). The drift comprised a stiff or laminated clay of intermediate or high plasticity. The clays did not contain high sulphate content and acidity was near neutral. The Parsons report identifies 3 coal seams that merit investigation. These are as follows:

- Bottom Ryhope five quarters
- Ryhope Little
- Moorland

The Parsons report includes 5 rotary boreholes sunk to explore the mining situation (BHR1-5). The plan that is appended to the report includes a plan showing the exploratory locations. It shows soil borehole locations WS6 and WS7 close and just beyond (south of) the rear garden of the Kingdom Hall. These, however, only extended to around 1m and were both terminated in made ground. The plan only shows 3 of the 5 rotary borehole locations (BHR1,R2,R3). A table is provided in the report narrative summarising the results of the rotary boreholes. An extract is provided as Figure 3:

Borehole	Depth to rockhead (m bgl)	Depth to base of coal seam (m bgl)	Thickness of coal seam (m)
RH01	6.20	12.80	0.2
		38.3	0.1
RH02	5.90	8.1	0.4
		10.6	0.2
		29.4	0.2
		36.2	0.1
RH03	5.80	N/A	N/A
RH04	7.50	16.8	0.2
		20.8	0.2
RH05	7.2	15.8	0.3
		20.2	0.2

FIGURE 3: EXTRACT OF FINDINGS FROM ROTARY BORING: FORMER LEISURE CENTRE



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Scrutiny of the borehole logs show 2 seams of coal (or leaves) around 2.5 to 4m apart. The top seam was encountered at 8m in BHR2 and 12m in BHR1. In Borehole BHR4 the first seam was encountered at 16m and in BHR5 it was reported at 15.8m. The seams may be expected to be slightly shallower below the study area.

The Parsons report concludes that the seam thicknesses were not thick enough to have been economically mined and, as a result, the risks to the proposed residential development from shallow underground mining in the three seams were deemed to be 'low'. It is noted that one seam in BHR2 was 0.4m thick and encountered at 8.1m depth with rockhead at 5.9m depth. This was the only locations where there was insufficient rock overburden above the seam (using a rule of thumb that a seam requires ten times rock overburden above the seam thickness to provide adequate protection from the risk of instability above).

A number of standpipes were installed in the soil boreholes and eight gas monitoring surveys were undertaken. The results were summarised in the 2018 report and is reproduced as Figure 4.

Location	Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow (l/hr)	Barometric Pressure (mb)	Maximum GSV*	
						CO <sub>2</sub>	CH <sub>4</sub>
WS02	0.0	3.0 – 4.8	18.2 – 19.6	0.2	982 - 1016	<0.07	<0.07
WS03	0.0	2.9 – 3.6	19.1 – 19.8	0.2			
WS04	0.0	0.0 – 2.9	17.6 – 21.0	0.2			
WS10	0.0	0.4 – 1.7	19.4 – 20.5	<0.1			
WS11	0.0	2.5 – 4.7	17.9 – 19.4	<0.1			
WS12	0.0	1.1 – 1.8	18.7 – 20.4	<0.1			

**FIGURE 4: EXTRACT OF FINDINGS FROM GAS MONITORING: FORMER LEISURE CENTRE**

No methane was detected. Carbon dioxide concentrations reached a maximum of 4.8%. Flow did not exceed 0.2 litres per hour.

A number of old borehole logs from an investigation at the leisure centre site in 1972 are held by the BGS. The nearest borehole (Ref: NZ28NE337: BH3) shows ashy and brick fill to 0.4m, clayey fill extending to 1.2m with boulder clay and inclusions of sand and gravel extending to 6.1m. Water was reported at 1.95m and was recorded standing at 1.1m.

In addition to the above, Intersoil undertook a coal mining risk assessment for the adjacent Portland Hotel extension. The assessment, undertaken in 2011 concluded that rotary boring should be undertaken. However, Intersoil were not requested to undertake any further fieldwork and have no records as to the outcome of any fieldwork.

## 6. Radon

Reference to the 'Ukradon' website shows that less than 1% of properties in the area may be affected by radon. The plot is not thought to be affected by Radon. A radon report acquired and appended confirms this.



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## 7. Hydrogeology

The drift and bedrock are considered as 'Secondary Aquifers'. There are no surface water features close to the site. Flooding is shown as low risk (groundwater) according to the Groundsure data. The Groundsure data does not provide details of any water abstractions.

## 8. Hydrology

There is one pocket of occasional historical surface water flooding around 50m west of the site. A number of manholes were noted within the plot and a drainage network appears to be present.

## 9. Historic Contaminating Land Uses

Based on an assessment of the historical maps and environmental information provided, the site has been exposed to the following:

Situation	Details
Major Contaminative use Onsite	None
Minor Contaminative use Onsite	None
Offsite Contaminative use (immediate vicinity)	None
Offsite Contaminative use (wider area)	Bakery, bus depot, coal yard, abattoir, garage and colliery within 250m
Other	Information from a previous investigation in 2016 added to in 2018 immediately south of the site has been reviewed. Rockhead expected between 5m and 7m depth.

TABLE 3: SUMMARY OF CONTAMINATIVE EXPOSURE

## 10. Desk Based Study Assessment

The data collated from site has been assessed and the following possible receptors have been considered within a 'conceptual model'. This is a summarised assessment which outlines the potential contamination issues within or near the site that may impact the proposed development.

### Proposed Development

It is understood that the Hall is to be re-purposed as a hotel sports facility and spa.

### General Concept of Risk Assessment – Risk

Land is considered to be 'contaminated' if there is a possibility (or risk) of significant harm being caused. These are the means by which sources of contamination may reach sensitive receptors. Risk can be defined as a combination of probability or frequency of occurrence and the magnitude of the consequences of that occurrence. For a risk to be present three elements must be present and/or plausible. These are a) a source b) a pathway and c) a receptor. If one of these elements is missing, there can be no significant harm.

CATEGORY	DEFINITION (SCALE)
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<b>SEVERE</b>	Acute risks; Catastrophic damage: major pollution of waters
<b>MEDIUM</b>	Chronic risk; significant damage: pollution of waters
<b>MILD</b>	Minor damage: pollution of non sensitive waters
<b>MINOR</b>	Requirements for PPE: Damage to non sensitive eco-systems/species

**TABLE 4A: CATEGORIES AND DEFINITION OF RISK SEVERITY.**

<b>CATEGORY</b>	<b>DEFINITION (SCALE)</b>
<b>HIGH LIKELIHOOD</b>	Risk almost certain
<b>LIKELY</b>	Risk probable
<b>LOW LIKELIHOOD</b>	Risk possible
<b>UNLIKELY</b>	Risk improbable

**TABLE 4B: RISK PROBABILITY**

The probability of risk is then set against the potential severity and forms a matrix of risk as follows:

<b>PROBABILITY OF OCCURENCE</b>	<b>POTENTIAL SEVERITY OF CONSEQUENCE</b>				
		<b>SEVERE</b>	<b>MEDIUM</b>	<b>MILD</b>	<b>MINOR</b>
<b>HIGH LIKELIHOOD</b>		Very High	High	Moderate	Low
<b>LIKELY</b>		High	Moderate	Low	Very Low
<b>LOW LIKELIHOOD</b>		Moderate	Low	Very Low	Negligible
<b>UNLIKELY</b>		Low	Very Low	Negligible	Negligible

**TABLE 4C: RISK ASSESSMENT MATRIX**



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### Potential Sources

The following potential sources have been identified:

ELEMENT	COMMENTARY
<b>MADE GROUND</b>	Soils at the front exposed in places and appear ashy Ashy soils can contain elevated metals, be acidic and contain elevated Hydrocarbons In mitigation, the site has been subject to only one development (the church hall) so thick made ground and demolition rubble is not expected
<b>GROUND GAS</b>	The gas regime within the site is uncertain. In mitigation, there is likely to be thin made ground. The drift is not expected to be particularly organic. There is expected to be a thick capping (5-7m) of cohesive drift over bedrock. No shallow workings encountered on an adjacent property Monitoring on the adjacent site did not detect elevated methane or carbon dioxide or elevated flow.

**TABLE 4D: POSSIBLE SOURCES**

### Potential Pathways

These are the means by which sources of contamination may reach sensitive receptors. This may comprise:

- Dermal contact
- Ingestion
- Inhalation
- Migration in dust
- Migration in vapours
- Groundwater
- Surfacewater

### Potential Receptors

There are a number of potential receptors to be considered when re-development is planned. These may comprise:

RECEPTORS	COMMENTARY
<b>CURRENT USERS</b>	None
<b>CURRENT PUBLIC</b>	Passing Public
<b>GROUNDWORKERS</b>	Likely to be required for landscaping/surfacing works
<b>NEIGHBOURS</b>	Houses present to south and east
<b>FUTURE USERS</b>	Hotel Guests
<b>FUTURE PUBLIC</b>	Passing Public
<b>BUILDING FABRIC</b>	Subsurface concrete and potable water pipe
<b>VEGETATION</b>	Plants and trees
<b>ANIMALS</b>	Small mammals
<b>SURFACEWATER</b>	Existing surface water network present. No close surface water features
<b>GROUNDWATER</b>	Secondary Aquifer present

**TABLE 4E: POSSIBLE RECEPTORS**

For a potential hazard to be present there must be a relationship between the source and the receptors (or those at risk from contamination). This is termed the *source-pathway-receptor* relationship. Assuming all 3



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elements are present, there are various combinations which may appear to be relevant to this site, albeit remote. A number of these are, or may be, perceived to be either likely (in terms of occurrence) or unlikely and a risk rating (in terms of potential effects or impact) has been assigned accordingly. The Conceptual Model (presented in tabular form) provides information on relevant relationships that are thought possible or likely based on the sites current use.

Re-development plans are for internal refurbishment and re-landscaping of the land outside. It is possible that given the age of the building and grounds that soils will be ashy. However, this is an aspect of minor importance and is not unusual for urban sites. The ground to the front is to be hard landscaped and it is expected that surface soils will be removed and the area capped with hard landscaping.

Northumberland County Council have a mine gas policy which imposes a requirement for gas protection measures across much of the County. They have advised that they are expecting gas protective measures to be installed to meet Gas Classification Category CS2. There is no explanation why this has been requested.

SOURCE	PATHWAY	RECEPTOR	PROBABILITY	SEVERITY OF CONSEQUENCE	PERCIEVED RISK
Soil Gas (inc Mine gas) and volatiles	Inhalation	Human Health	Low Likelihood	Medium	<b>LOW</b>
		Construction			
	Inhalation	Public	Low Likelihood	Medium	<b>LOW</b>
	Migration and accumulation	Existing Property cable and pipes	Unlikely	Medium	<b>VERY LOW</b>
		& enclosed spaces			

**TABLE 5: RISK MATRIX WITH SOURCE: GAS/VOLATILES**

Probability Classes:      Highly Likely      Likely      Low Likelihood      Unlikely  
 Consequence Classes:      Severe      Medium      Mild      Minor



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SOURCE	PATHWAY	RECEPTOR	PROBABILITY	SEVERITY OF CONSEQUENCE	PERCIEVED RISK
<b>MADE GROUND</b>	Inhalation (dust/fibres)	Human Health	Likely	Medium	<b>MODERATE</b>
		Construction			
	Dermal contact	Human Health	Likely	Minor	<b>VERY LOW</b>
		Construction			
	Ingestion	Human Health	Low Likelihood	Medium	<b>LOW</b>
		Construction			
	Inhalation (dust/fibres)	Public	Low Likelihood	Medium	<b>LOW</b>
	Dermal contact	Public	Unlikely	Mild	<b>NEGLIGIBLE</b>
	Ingestion	Public	Unlikely	Mild	<b>NEGLIGIBLE</b>
	Contact or migration via groundwater	Existing Property cable and pipes	Unlikely	Minor	<b>NEGLIGIBLE</b>
	Ingestion, inhalation	Animals	Unlikely	Minor	<b>NEGLIGIBLE</b>
	dermal contact				
	Rooting	Flora	Unlikely	Minor	<b>NEGLIGIBLE</b>
	Leaching from source	Surface Water	Low Likelihood	Mild	<b>VERY LOW</b>
	Leaching/migration from source	Groundwater	Low Likelihood	Mild	<b>VERY LOW</b>
Impacted Perched: Groundwater	Draining/seepage/flow	Groundwater	Low Likelihood	Mild	<b>VERY LOW</b>

**TABLE 6: RISK MATRIX WITH SOURCE: MADE GROUND (CONTU'D)**

Future users are expected to only encounter exposed soils at the rear. Construction Workers may be exposed to impacted shallow made ground and it would be prudent to have some of the soils tested. The site is shown to be within a 'high risk development zone' (coal). The presence and risk, albeit remote, from shallow workings has not been discounted. Rotary drilling is the traditional methodology for establishing the condition of bedrock and the presence of coal, voids and broken ground.

This desk based investigation has not identified any obvious sources of substantial soil contamination. However, it may be prudent to have soils tested to check their composition. This would provide an indication is they contain potentially hazardous determinants including polyaromatic hydrocarbons, asbestos and heavy metals.



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The site is generally considered low risk. However, in the absence of a previous soil investigation report, it would be prudent to acquire contemporary data on ground and soil gas conditions should groundwork be planned.

## 11. Summary & Conclusions

Intersoil was commissioned to undertake a desk based report on land occupied by the Kingdom Hall off Station Road, Ashington. Scrutiny of historical maps indicate the church hall was the first development and the land has remained in the same use until recently. The hall is currently unoccupied. Internally, it appears to be in good order. There is a garden to the rear and grass at the front. A number of tree trunks are evident. In the wider area a bus depot, coal yard, bakery and garage occupied land within 100m of the site in the past. All three sites have now been redeveloped.

The site is shown to overlie glacial clays with Coal Measures below. The Coal Authority Report suggests that there are probable workings below the site that may affect surface stability. Rotary drilling would be the method used to establish the condition of the bedrock. The Coal Report identifies a mine gas incident 380m from the study area. Rotary drilling in 2016 and 2018 within the former leisure centre immediately south of the plot showed a number of coal seams within 30m depth. The thickest was 0.4m thick present at 8m depth. The bedrock dips south eastward which means that the coal is expected to be present at shallower depth below the church hall than at the Leisure centre. There was, however, no thick seams encountered. In addition there was no voids or old workings recorded.

Soil gas monitoring from within the made ground and drift on the leisure centre site did not record any methane and carbon dioxide levels did not exceed 5%. There is no reason to consider that the site is at risk from gas, particularly given that it has been in use in largely the same layout for over a century. However, Northumberland County Council may harbour an alternative view. It is noted that while they have asked for the installation of gas measures, they provide no specific reason as to why this would be required. The site is not close to any old landfill sites or waste related sites. No shallow workings have been identified on the adjacent property.

The site is not underlain by a sensitive aquifer and there are no surface water features close to the site.

Refurbishment plans include landscaping work. It would be prudent to have soils tested to ensure that adequate information is available on soil quality to ensure that appropriate safe systems of work for ground workers and construction workers can be planned.

The site is considered to be a 'low risk' in terms of likely perceived risks to human health.

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