



Report No. 40275 Rev 1

FORMER WATERSIDE PUB, SUMMERSEAT

Desk Study and Preliminary Risk Assessment

December 2018



Kingsley Properties Ltd
Sterling House
4 Mill Lane
Whittle-le-Woods
Chorley
Lancashire
PR6 7LX

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Appendix A

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Appendix B

- Groundsure Enviro, Geo and Map Insight, Report Ref. 5190559-61

1 Introduction

Ground and Project Consultants Ltd (GPCL) have been instructed by Kingsley Properties Ltd to undertake a desk study (preliminary risk assessment) at a site in Summerseat. The proposals for the site comprise a four-storey residential property comprising seventeen flats with associated utilities, car parking and landscaping.

2 Scope and Objective

The scope of this report and approach are as follows:

- Obtain and review of the relevant GroundSure reports;
- Develop a summary of the site history, geology, hydrogeology, hydrology and pertinent environmental data;
- Development of a conceptual site model to assess any potential contamination risks.
- Recommendations, as appropriate for further work

The report does not consider geotechnical aspects in detail although we have provided commentary on the findings of the Groundsure Geo-Insight report.

3 Site Information

i. Site Location

The site is located at Kay Bridge, Summerseat, Bury with the closest post code being BL9 5PE. The National Grid Reference for the site is 379380, 415075.



Figure 1: Ordnance Survey Drawing

ii. Proposals

The proposals for the site comprise seventeen one and two bedroom flats over four storeys with car parking in the west of the site and a footpath along the northern boundary adjacent to the River Irwell. Landscaping including existing and proposed trees are proposed across the site.

iii. Site Description and Topography

It is understood that the site was previously the car park for The Waterside public house which was located over the River Irwell, adjacent to Kay Bridge, until it collapsed during a flood in December 2015.

A walkover was carried out on 24th May 2018. The site is predominantly open ground with a ground surface comprising asphalt which was noted to be damaged in places and slopes down gently towards the north.

The River Irwell marks the northern boundary. The site is raised above the river and has a retaining wall marking the site boundary with a metal fence and semi-mature trees and shrubs. There is no metal fence or vegetation marking the northwest boundary where it is understood The Waterside public house was historically located.

A stairway leads down towards mature woodland in the east of the site.

A steep slope marks the southeastern boundary which reduces in height to the west and has retaining walls in places which appear to be dry stone walling. The site is

approximately at 115m AOD, with the top of the slope being up to 119m AOD in the southeast. Mature trees are located across the slope. A mound of logs and branches are noted to the southwest of the site which is thought to be debris from a flood. The site backed onto the gardens of residential properties to the South.

Key Street marks the western boundary.

The bridge to the northwest of the site is damaged and is closed to traffic and is now for pedestrian use only.



Figure 2: View north of location of the historic Waterside public house and Kay Bridge.



Figure 3: View south of the site and retaining wall.



Figure 4: View southeast of slope and retaining wall.



Figure 5: View southwest of debris and retaining walls.



Figure 6: View southwest of stairs in the east of the site.



Figure 7: View east from Kay Street of site including hard standing and mature trees.

iv. Geology

The available geological maps (BGS Sheet 76) indicate the site is underlain by Glaciofluvial Deposits with Glacial Till uphill 19m to the south. Alluvium is associated with the river channel to the north. A landslide is shown to the northwest of the site. The solid geology beneath the site is the Marsden Formation from the Namurian Stage which comprises mudstone and siltstone beneath the site (yellow on the map), however, the lithological description for the formation as a whole comprises sandstone (orange on the map) interbedded with siltstone and mudstone and subordinate marine black shales, thin coals and seatearths.



Figure 8: BGS Drift Map



Figure 9: BGS Bedrock Map

The closest BGS borehole, located 110m to the south, encountered Made Ground to 1.4m bgl, overlying soft silty clay to 2.3m bgl, overlying dense silty very sandy clayey gravel with cobbles to 4.0m bgl, overlying medium dense clayey sandy gravel to 4.95m bgl. Groundwater was struck at 3.0m bgl.

The site is within a Coal Mining Report area. This is due to the site being located in an area with vein minerals which may have been subject to sporadic underground mining of restricted extent. It is stated in the Groundsure report that 'potential of difficult ground conditions is unlikely and localised and are at a level where they need not be considered'.

The site has been rated as high risk from landslides with a recorded landslip 92m to the northwest and a moderate risk of compressible ground.

The site is within an area where between 1% and 3% of properties are above the radon action level.

v. Hydrology and Hydrogeology

The closest watercourse is the River Irwell, adjacent to the north of the site, flowing to the west. The site is within a Flood Zone 2 and 3, with a medium risk of flooding. This is subject to a separate flood risk assessment report.

There are no active licenced surface water discharge or abstraction consents within 250m. The Biological Quality Grade of the River Irwell was rated C in 2009, with a Chemical Quality Grade of A.

The Alluvium, Glaciofluvial Deposits and the Marsden Formation are Secondary A Aquifers. The Glacial Till is a Secondary Aquifer (undifferentiated).

There are no active groundwater abstraction licences within 250m. The closest active potable groundwater abstraction licence is 1716m to the northwest, with the site being outside any source protection zones.

vi. Site History

From the first map in 1850, the site was developed with terraced houses and small detached buildings on Irwell Street in the north and Willow Street in the south of the site. By 1955 most of the terraced houses on site have been removed, with two remaining in the east of the site up until the 1977-1978 edition map where the site appears to be hardstanding with a path leading to woodland in the east of the site. On the 1992 edition map, the hardstanding has been extended to the centre north of the site with the area to the east and south of the site being labelled as non-coniferous trees. No significant changes are indicated on the last available map in 2014.

In the immediate surrounding area, from the first map in 1850, a large slope is shown immediately to the east of the site which slopes down towards the River Irwell to the north of the site. Terraced houses are located to the south and west of the site and a bridge (Kay Bridge) crosses the river to the northwest. The houses immediately to the south of the site were removed by 1977 and have since been utilised as the gardens of properties on Hill Street.

Brooksbottoms Mill (Cotton) was located to the north, beyond the River Irwell, with reservoirs and chimney. By 1891, the Mill was extended which included over some of an area indicated to be a reservoir and a new Mill was located adjacent to Kay Bridge and the site. On the 1927 edition map, tanks and aqueduct are also shown to be present at Brooksbottoms Mill. By 1992, the Mill adjacent to the site is labelled as a public house and Brooksbottoms Mill has been redeveloped into The Spinnings which comprises sixty-four properties.

In the wider area historical mapping shows a number of relevant features and industries including:

- Springs are located approximately 30m to the southeast, 150m to the northeast and 180m to the south on the early edition maps.
- A railway is located approximately 40m to the west with an associated tunnel 150m to the northwest. A goods shed and sidings were present from 70m to the southwest, until 1937 when the sidings were removed, and the goods shed is labelled warehouse.
- Between 1910 and 1992 a sewage works was located from approximately 100m to the southwest with sludge tanks and filter beds.
- A reservoir is shown from approximately 100m to the southwest on the 1850 edition maps only and later being labelled as allotment gardens.
- A Sandstone Quarry is located approximately 170m to the southeast from the earliest map and shown to be disused by 1910.
- A burial ground with chapel is located approximately 260m to the southeast.
- From the 1970 edition map an electricity sub station is shown 50m to the south of the site.

vii. Environmental Information

Existing potentially contaminative industries within 250m to the site include an electricity substation located 51m to the south and gas governor station 179m to the west of the site. There are no current or historic petrol/ fuel sites within 250m. There are no recorded pollution incidents within 250m.

Potentially infilled land highlighted in the Groundsure report is located 72m to the east related to an historic reservoir, 75m to the southwest due to a sewage works, 115m to the southwest due to an unspecified heap.

There are no operational landfill or waste treatment, transfer or disposal sites within 250m. However, there is one historic landfill site within 250m, located 189m to the south for inert waste between 1979 and 1987.

In terms of designated environmentally sensitive sites, there is ancient woodland from 82m to the northeast.

The Groundsure Reports and historical maps are included as Appendix B.

4 Conceptual Site Model

The findings of the above desk study highlight that there may be possible contaminant sources on the site from the historical development and off site Made Ground/infilled ground. Due to the proposed development being flats with limited landscaping there is a reduced/limited pathway to receptors. The potentially contaminative industries highlighted in the Groundsure report are limited due to the distance and the limited mobility of PCBs from the electricity substation.

Table 1: Conceptual Site Model

Source	Pathway	Receptor	Risk Rating
Made Ground on site from historical terraced houses and car park	Inhalation, dermal contact, ingestion	Construction workers	Low
	Inhalation (dust), dermal contact, ingestion	Future residents and visitors	Low
	Migration / Leaching	Secondary A Aquifers	Low
		River Irwell	Low
Hydrocarbon spills from car parking	Inhalation, dermal contact, ingestion	Construction workers	Low
	Inhalation, dermal contact, ingestion	Future residents and visitors	Low
	Migration / Leaching	Secondary A Aquifers	Low
		River Irwell	Low
	Direct contact	Water supply pipes	Low
PCBs from electrical substation	Migration / Leaching	Future residents and visitors	Low
Ground gases from on and off site Made Ground sources	Inhalation	Future residents	Medium
Radon	Inhalation	Future workers and visitors	Negligible
Sulphate	Direct contact	Concrete	Medium

Risk Rating (probability versus severity)

Negligible: Unlikely to be a source, pathway or receptor and insignificant consequence.

Low: Possible to likely source with insignificant consequence or unlikely to possible source with minor to moderate consequences.

Medium: Certain source with insignificant consequence to unlikely source with major consequence.

High: Likely to certain source and minor to moderate consequence or likely source with moderate to high consequence.

Very High: Certain source with major consequence.

5 Conclusions and Recommendations

The conceptual site model indicates that there is a low risk to human health and controlled water receptors from potential contaminants caused by historical site uses on site. However, there is medium risk from ground gases due to possible Made Ground/infilled ground, organic pockets in the Alluvium or possible shale/carboniferous beds in the Marsden Formation beneath the site. The risk to water supply pipes from potential hydrocarbons is low and sulphates corroding below ground concrete is considered to be a medium risk from the Marsden Formation.

It is recommended that a ground investigation be carried out to clarify the risk to residents from potential ground gases and determine if there is sulphate at levels aggressive to concrete.

Due to the likely presence of Made Ground and the proposed four storey building, it is recommended that a geotechnical investigation is carried out simultaneously which will facilitate foundation design. The proposed exploratory holes can have a dual purpose of providing geotechnical and geo-environmental data.

The recommended scope of the ground investigation includes boreholes for installations and sampling to send for laboratory analysis. Due to the presence of Made Ground and potential cobbles in the Glaciofluvial Deposits a cable percussive method would be most suitable to the site. Allowance should also be made for the inclusion of gas monitoring wells. In addition, trial pits provide high quality information at a relatively low cost, will help to delineate the depth of Made Ground and assess excavation stability across the site.

Appendix A

Proposed Site Plan, John Holt Architects Ltd, Drawing No. 18-518-11