



# **PHASE I PRELIMINARY RISK ASSESSMENT OF LAND AT 27 BRITANNIA STREET, LONDON**

**ISSUE 1.2**

**T/10/850/PRA**

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**James Blyth**

**Prepared For:**

**Watkin Jones Group**

**Tier Consult**

**Elm House Farm, Saughton, CH3 6EN**

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APPENDIX C - GROUNDSURE REPORT

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## EXECUTIVE SUMMARY

<b>Introduction</b>	Tier Consult was commissioned by Watkin Jones Group to undertake a Phase I Preliminary Risk Assessment of land at 27 Britannia Street, London. The purpose of the investigation was to identify the potential for significant pollutant linkages to current and future site users and other receptors within the vicinity.
<b>Site location</b>	27 Britannia Street, London, WC1X 9JP. A site location plan is included as Drawing No. T/10/850/PRA/1 within Appendix A. The approximate Grid Reference for the centre of the site is 530605, 182860.
<b>Site history</b>	<p>The following information has been derived from the desk study part of this report.</p> <ul style="list-style-type: none"><li>• An historic chemical works has previously occupied an area of land adjacent to the southern border of the site of the site, but are no longer shown and appear to have been infilled;</li><li>• The site been developed since at least 1873 and has been in its current for since c.1900;</li><li>• A railway cutting is present along the eastern border of the site;</li><li>• The majority of the site has been covered in either buildings or hardstanding during the developed history;</li></ul>
<b>Ground stability</b>	No significant ground stability issues have been identified, with the exception of the anticipated presence of made ground at the site.
<b>Contamination</b>	The made ground at the site has the potential to have metal, PAH, asbestos and sulphate concentrations which could pose a risk to human health. Furthermore, there is the potential for mobile contaminants to migrate onto the site from the historic chemical works to the south of the site. No risk to controlled waters has been identified.
<b>Gas protection</b>	On and off site made ground soils have the potential to affect the site and as such a hazardous gas risk assessment is recommended, in accordance with CIRIA C665.
<b>Further works</b>	It is recommended that a Phase II site investigation and geoenvironmental appraisal is undertaken at the site to characterise the risk to identified receptors from potential contaminated made ground soils and hazardous gas generation.



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## **1. INTRODUCTION**

Tier Consult was commissioned by Watkin Jones Group to undertake a Phase I Preliminary Risk Assessment of land at 27 Britannia Street, London, WC1X 9JP (the "Site"). This report is designed to support an upcoming planning application at the site. It is understood that, under current proposals, the site is to be partially redeveloped for a mixed commercial and residential end use, with the front facade and a number of the existing buildings to be retained.

Taking into account the planned future use of the Site, the objectives of this appraisal were:

- To determine the land use history from review of available historical documentation and maps.
- To establish the environmental setting of the Site.
- To determine the potential risks posed by any ground contamination.
- To determine risks posed to the Site from hazardous ground gases.
- To evaluate whether past mining or other extractive industries could have an influence on the Site.

The desk-study part of this investigation included the assessment of information provided by GroundSure Ltd. The information provided by this organisation is provided in Appendix C.

This report, which was designed to meet the requirements of all relevant current guidance including the relevant CLR reports, presents the factual information available during this appraisal, interpretation of the data obtained and recommendations relevant to the defined objectives.

It has been assumed in the production of this report that the Site is to be partially redeveloped, with the existing facade being retained and the remaining land developed for a mixed commercial / residential land use. In addition, it is assumed that ground levels will not change significantly from those described in this report. If this is not the case, then amendments to the recommendations made in this report may be required.



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Where the report refers to the potential presence of invasive plants (such as Japanese Knotweed) or asbestos-containing materials, such observations are for information only and should be verified by a suitably qualified expert.

The comments and opinions presented in this report are based on the findings of the desk study, performed by Tier Consult. There may be other conditions prevailing on the Site which have not been revealed by this investigation and which have not been taken into account by this report. Responsibility cannot be accepted for any conditions not revealed by this investigation. Any diagram or opinion on the possible configuration of the findings is conjectural and given for guidance only. Confirmation of intermediate ground conditions should be undertaken if deemed necessary.

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### **2. SITE DETAILS AND DESCRIPTION**

Table 2.1. Current Site Overview.

Site name	27 Britannia Street, London
Site address	27 Britannia Street, London, WC1X 9JP. A site location plan is included as Drawing No. T/10/850/PRA/1 within Appendix A.
Grid Reference	530605, 182860
Location description	The subject site lies on the south side of Britannia Street between Wicklow Street to the west and the railway cutting to the east. The site is located to the south east of Kings Cross station.
Approximate Site area	0.23 Ha
Site shape	The site is roughly trapezoidal in shape.
Site boundaries	The north of the site is bounded by Britannia Street and the eastern boundary is marked by a railway cutting. The south and west of the site are bounded by Wicklow Street.
Current land use	At present the site provides general office and meeting room facilities, but is currently vacant. The site has an atrium in the centre which is currently used for parking.
Adjacent land uses	The surrounding area is predominantly residential, with a number of commercial buildings to the west.

The main Site features are shown on Drawing No. T/10/850/PRA/2 within Appendix A.



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### 3. ENVIRONMENTAL SETTING

#### 3.1. Site History

Extracts of Ordnance Survey (OS) plans dated from 1873 to 2010 were reviewed. These were obtained as part of the GroundSure report for the Site, which is presented in Appendix C.

Table 3.1 presents a summary of the main aspects of the Site from 1873 to 2010, relevant to the current and proposed future end uses. It is not the intention of this report to describe in detail all of the changes that have occurred on or adjacent to the Site, where these are not relevant to the land use.

Table 3.1. Site History.

Source (Map edition, scale)	On-Site features	Off-Site features
1873, 1:10,560	<ul style="list-style-type: none"><li>The site has a number of residential buildings around the perimeter and private gardens in the centre.</li></ul>	<ul style="list-style-type: none"><li>The site is set within a predominantly residential area, with a church to the west.</li><li>A railway cutting runs along the eastern boundary of the site to Kings Cross Station to the north east.</li></ul>
1877, 1:2,500	<ul style="list-style-type: none"><li>No significant changes</li></ul>	<ul style="list-style-type: none"><li>A Chemical Works is shown 10m to the south of the site, on the opposite side of Wicklow Street.</li><li>An Air Shaft for the nearby railway cutting is shown 10m to the east of the site.</li><li>"Industrial Dwellings" are shown 50m east of the site, on the other side of the</li></ul>



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		<p>railway cutting.</p> <ul style="list-style-type: none"> <li>“London General Depository” is shown 100m west of the site.</li> </ul>
1895, 1:10,560	<ul style="list-style-type: none"> <li>The residential houses have now been replaced with a number of larger buildings, considered to be the existing office buildings*.</li> <li>The south west of the site appears to be open ground.</li> </ul>	<ul style="list-style-type: none"> <li>The chemical works to the south is no longer marked as such.</li> <li>A hospital is shown 20m west of the site.</li> </ul>
1896, 1:2,500	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>A tramline runs from north east to south west approximately 65m west of the site.</li> </ul>
1911, 1:10,560	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
1914, 1:10,560	<ul style="list-style-type: none"> <li>The open ground in the south east of the site is now developed.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
1916, 1:2,500	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>The “London General Depository” is now marked as a Bottling Stores.</li> <li>A Boot Warehouse is shown 175m north of the site.</li> </ul>
1938, 1:10,560	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
1940, 1:10,560	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
1952, 1:2,500 and 1:1,250	<ul style="list-style-type: none"> <li>Two ramps are shown in the centre of the site.</li> </ul>	<ul style="list-style-type: none"> <li>The former chemical works building to the south is now a printing works.</li> <li>The “Industrial Dwellings” is now shown as an Engineering Works.</li> </ul>



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		<ul style="list-style-type: none"> <li>An Iron Works is shown 30m north west of the site, on the opposite side of the railway cutting.</li> <li>The Tramlines are no longer shown.</li> </ul>
1957, 1:10,560	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
1963, 1:1,250	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
1968, 1:10,560	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
1973, 1:10,000 and 1:1,250	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>The printing works is no longer shown.</li> </ul>
1976, 1:1,250	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
1982, 1:1,250	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>The iron works to the north west is now marked as a warehouse.</li> <li>The engineering work to the west is no longer shown</li> </ul>
1988, 1:1,250	<ul style="list-style-type: none"> <li>The study site is not shown.</li> </ul>	<ul style="list-style-type: none"> <li>The majority of the study area is now shown.</li> </ul>
1991, 1:1,250	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
1992, 1:1,250	<ul style="list-style-type: none"> <li>The study site is not shown.</li> </ul>	<ul style="list-style-type: none"> <li>The majority of the study area is now shown.</li> </ul>
1994, 1:10,000 and 1:1,250	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
2002, 1:10,000	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>
2010, 1:10,000 and 1:1,250	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>	<ul style="list-style-type: none"> <li>No significant changes.</li> </ul>

\*The building is adjoined to the east by no. 15 Britannia Street, a narrow three storey building constructed of stock brick with red brick detailing, dating to c1875



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### 3.2. Geology

Table 3.2. Geological Summary.

Maps and publications referenced	1:50,000 scale BGS Geological mapping, Sheet No:256
Made ground	None shown on site; however, due to the development history, made ground is anticipated.
Drift geology	No drift geology is recorded on site.
Solid geology	London Clay (Clay, Silt and Sand)
Dip of solid strata	Not established
Faults	None recorded on or in the immediate vicinity of the Site
Coal seams	None shown to outcrop or subcrop on or in the immediate vicinity of the Site



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### 3.3. Mining and Quarrying

Table 3.3. Coal Mining Activities.

	Yes/No	Comments
Is the Site in an area of potential shallow coal workings?	No	
Are there any known shafts, adits, tips, lagoons, or opencast workings likely to affect the Site?	No	An air shaft is depicted on the historical maps; however, this is on the opposite side of the railway cutting and associated with the underground railway system. It is not considered to pose a risk to the site.
Is exploratory work required to investigate the potential risk from shallow mining or quarrying?	No	

Table 3.4. Other Extractive Industries.

	Yes/No	Comments
<b>Superficial drift deposits</b>		
Evidence of extraction on or within 250 m of the Site?	Yes	All shallow ground extractions are associated with the railway cutting and underground railway system and, as such, do not pose a risk to the site.
Action required?	No	
<b>Solid Strata</b>		
Any evidence of mineral extraction on or within 250 m of the Site?	No	
Action required?	No	

Other, undocumented mineral workings on or close to the Site cannot be completely dismissed.



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### 3.4. Hydrogeology

Table 3.5. Groundwater Occurrence and Abstraction.

	Presence/location	Comments
Depth(s)	NR	The only recorded aquifers are associated with Lambeth Group sands and gravels, none of which are considered to be at risk from the site.
Direction of flow	N/A	
Licensed abstractions	None within 500m of the site.	
Private wells	NR	
Source Protection Zones	None within 500m of the site.	
Springs	NR	

NR - none recorded.

For definition of Source Protection Zones, see Appendix D.

Table 3.6. Groundwater Vulnerability Status.

	Environment Agency classification	Comments
Groundwater classification	Non-Aquifer (Negligibly Permeable)	For terms used by the Environment Agency in defining groundwater vulnerability, see Appendix D.
Soil classification	High	For terms used by the Environment Agency in defining soil leaching potential, see Appendix D.



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### 3.5. Hydrology

Table 3.7. Surface Water Features.

	Presence/location	Comments
Environment Agency GQA classified watercourses	None within 250m of the site.	
Unclassified watercourse(s)	None within 250m of the site.	
Licensed abstractions	None within 500m of the site.	
Canals, ponds, lakes, etc.	None within 500m of the site.	
Flood risk status	NR	

NR - none recorded

Environment Agency GQA assessments: A = very good to E = poor

### 3.6. Ecological Features

Table 3.8. Ecological Features.

	Presence/location	Comments
Designated locations	NR	
Land use controls	NR	
Invasive plants	NR	A survey by a qualified invasive plant consultant is required to confirm the absence or extent of invasive species.
Trees and shrubs	NR	

NR - none recorded



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### 3.7. Landfill and Waste Management Activity

Table 3.9. Waste Management Activities.

	Presence/location	Comments
Local authority recorded landfills	NR	
BGS recorded landfills	NR	
Other licensed waste management facilities within 250 m	NR	
Is there evidence of other landfilling on or within 250 m of Site?	Two areas of recorded made ground are located within 250m of the site.	The two areas are 198m south east of the site and 223m south of the site.
Walkover evidence of fly-tipping on Site?	NR	
Is a landfill/ground gas risk assessment required?	Yes	The presence of on and off site made ground and the relative vulnerability of the proposed end use suggests that a program of 4 visits over 2 months would be sufficient to characterise the gas regime at the site.

NR - none recorded





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### 3.8. Local Potentially Contaminative Activities

Other potentially contaminative activities are shown in Table 3.10. The entries relate to activities within *circa* 250 m of the Site, with the exception of COMAH facilities where the assessment is extended to a distance of *circa* 1 km from the Site.

Table 3.10. Other Potentially Contaminative Processes in the Locality.

	Location	Comments
Discharge Consents	NR	
Prosecutions relating to controlled waters	NR	
Substantiated pollution incidents	NR	
IPPC permits/air pollution controls	NR	
Registered radioactive substances	13 are located within 500m of the site.	All those within the vicinity of the site are associated with proximal hospitals and, as such, are not considered to pose a risk to the site.
Prosecutions relating to authorised processes	NR	
Enforcement and prohibition notices	One is within 250m of the site.	Associated with petrol stations; Shell Kings Cross Road (166m south of the site) - Petrol Vapour Recovery.
Planning - hazardous substances consents and enforcements	NR	
COMAH sites	NR	



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NIHHS sites	NR	
Fuel station entries	The GroundSure report does not list any fuel station entries within 250m of the site; however, there are records of a fuel station 166m south of the site.	Fuel station entry is obsolete and petrol vapour recovery has been undertaken. The relative distance and records of remedial measures suggests that this entry will have a negligible effect upon the site.
Pertinent contemporary trade directory entries	39 contemporary trade directories are within 250m of the site.	None are considered to pose a significant risk to the site.

NR - none recorded

COMAH - Control of Major Accident Hazards (regulations); NIHHS - Notification of Installations Handling Hazardous Substances (regulations)

### 3.9. Radon Risk

Table 3.11. Radon Risk Status.

	Radon protection measures required? (Yes/No)	Comments
BRE (1999), Report 211	No	
BGS Site-specific report	No	



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### 3.10. Summary

Although the site has had a limited development history, the following points are considered salient when considering the environmental setting and developing a conceptual model of the site;

- A historic chemical works has previously occupied an area of land adjacent to the southern border of the site, but are no longer shown and appear to have been infilled;
- The site been developed since at least 1873 and has been in its current for since c.1900;
- A railway cutting is present along the eastern border of the site;
- The majority of the site has been covered in either buildings or hardstanding during the developed history;
- There are no surface water course within the vicinity of the site;
- The site is located on a Non Aquifer;
- The published geology for the site suggest that it will be underlain by London Clay; however, made ground is anticipated;
- Areas of made ground are recorded within 250m of the site.



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#### **4. PREVIOUS INVESTIGATION FINDINGS**

No previous desk study or site investigation reports pertaining to this Site have been made available.