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Report No 21966/1

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**PRELIMINARY RISK
ASSESSMENT
for land at
BARRINGTON STREET, CLAYTON
MANCHESTER**

Prepared for

**BRINDLE AND YAM SOLICITORS
Ground Floor
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1. Introduction

The Arley Consulting Company Limited (TACCL) has been instructed on behalf of Brindle & Yam Solicitors to prepare a Preliminary Risk Assessment for land at Barrington Street, Clayton, Manchester.

The site is located in a predominantly residential area some 4.1 km to the east-north-east of Manchester city centre. It comprises a vacant plot between Barrington Street and existing residential properties on North Road.

A planning application is being prepared by others for the development of two residential units with car parking and a small area of landscaped outside space.

Under current planning policy guidance local authorities require a preliminary risk assessment report for sensitive developments including those for residential use.

This preliminary risk assessment comprises a site walkover and the assessment of the environmental setting and historical development of the site, based on available records, in order to produce a preliminary conceptual site model to identify potential pollutant linkages with respect to the proposed development and the environmental setting, in accordance with current UK policy and guidance.

The conclusions and recommendations presented in this report are the result of our professional interpretation of the information obtained. TACCL reserves the right to amend the conclusions and recommendations if further information becomes available.

2. Site Description

The site is located to the south of Barrington Street, Clayton, some 4.1 km to the east-north-east of Manchester city centre.

The approximate National Grid Reference for the site is 395000, 397000.

A site walkover/inspection was undertaken on 7 September 2021. A series of photographs are presented in Appendix F.

The site is situated in a predominantly residential area. The site boundaries and adjacent land uses are described as follows:

North Barrington Street with residential properties beyond (Nos 115 to 121).

East A new residential property, currently under construction. This boundary is defined by temporary Herras fencing.

South A narrow surfaced footpath/ginnel beyond which are residential properties, including Nos 111 to 117 North Road). The boundary is defined by a palisade fence.

West A narrow, tarmac surfaced road, with a vacant plot beyond which extends through to North Road. This area is currently grassed.

The development site is roughly rectangular in shape and occupies approximately 300 m².

The existing layout is illustrated on STUDIO TIAN Drawing No 21061-S01 – Existing Site Survey Plan, presented in Appendix G.

From the inspection and the topographic data presented on Drawing No 21061-S01 it can be seen that the site is slightly raised above the level of Barrington Street. The site slopes to the north (towards Barrington Street) and west (towards a small section of road). The general site layout is illustrated on Photograph No 1.

The southern and eastern boundaries are marked by fences as illustrated on photographs presented at Appendix F.

The site generally comprises an area of rough grass with some low shrubs. These will be cleared to enable the development to proceed.

There is some fly-tipped waste including a pile of black bin bags, some spoil from the adjacent development site to the east and general rubbish as illustrated on Photograph Nos 1, 2 and 4. This material shall be removed as part of the preparatory site clearance works.

No potentially significant sources of contamination were observed at the site.

3. Site History

Copies of historic Ordnance Survey (OS) maps for the period 1848 to 2021 have been obtained from Landmark (Appendix A).

From the earliest edition maps it can be seen that the site was undeveloped and occupied by agricultural land in the mid 1800's.

North Road was present at this time and Clayton Hall was situated to the south.

Some residential properties are evident along North Road on the 1893 edition map, but the site remains vacant. The area of Clayton is located to the south-west and includes residential development as well as an oil works, and cotton mill (Sheldrake Mill) both approximately 350 m to the south-west. Clayton Hall, church and school are located some 130 to 165 m to the south and south-east. A possible pond is located approximately 35 m to the north of the site.

By 1908 there has been a large expansion of residential development to the north and west of the site as well as construction of properties immediately to the south on North Road.

The site has been split into 3 or 4 separate parcels which might be gardens to the properties on North Road. The lane/ginnel between the site and the houses to the south, is also shown

Also at this time, a Brick Works has been developed within the farmland to the north of the site with the removal of the former pond. The brick works buildings appear to have been cleared by 1932 with only a chimney (165 m north) and pond possibly within the former brick works pit (185 m to the north-north-east) remaining.

A large expansion of residential development is shown on the 1938 map, which covers the former brick works site and surrounding land.

On the 1949/51 edition maps the site is shown as a single undeveloped plot rather than a number of thin separate areas. It remains like this until the 1956 edition map, when there appears to be a number of small structures on the site, possibly garages or sheds. These are present on maps up to 1992.

A 'Club' is shown on the 1978 edition map, located some 30 m to the north-east of the site. This is still present with a car park at the western end but is currently closed and boarded up.

In the mid to late 1970's the land to the west of Clayton Street (some 35 west of the site and beyond) is redeveloped. This appears to comprise clearance of old terraced houses and construction of a health centre and new residential development. Later a public house (1992 map) and Childrens Day Centre (observed during site inspection) are also constructed to the west of Clayton Street.

The 1986 edition map shows a library on the currently vacant plot to the south-west of the site. The library was demolished and the site cleared sometime between 2006 and 2021.

From around 1992 the site appears to be as it is today.

Google Earth images are available for the period 2000 to 2020 (Appendix B). From these images it can be seen that the buildings were removed prior to 2000 but possible concrete ground slabs remained to around 2009. The site appears to have been reclaimed and landscaped at the same time as the adjacent library.

4. Geology

The geological setting has been established from the British Geological Society (BGS) records including map extracts supplied by Landmark (Appendix C) and the BGS interactive map.

From these records it can be seen that the site is underlain by glacial Boulder Clay which in turn overlies northerly dipping Manchester Marls Formation rocks.

No artificial ground is shown at the site on the relevant map supplied. Areas of made ground are highlighted around the site as follows:

- 155 m to the north
- 400 m to the south-east
- 420 m south

The closest area of made ground underlies residential properties to the north of John Heywood Street.

The BGS records indicate that there are a series of confidential investigation boreholes for the Wells Centre to the west of the site.

The land to the east of the site is currently being redeveloped. A search on the Manchester City Council Planning Portal shows that the site was formerly occupied by a garage and workshop associated with No 119 North Road.

There is a condition on the planning consent (Ref 12276/FO/2019) which required submission of a preliminary Risk Assessment as well as a site investigation and remediation strategy (depending upon the PRA findings). No relevant reports are available on-line.

Visual inspection of some of the spoil currently at the site, and also spilled onto this development plot indicates gravelly clay soils with some brick and concrete fragments, see Photograph Nos 3 and 4.

An Envirocheck Report has been obtained from Landmark (Appendix D). According to Landmark the anticipated soil chemistry at the site is as follows:

Arsenic	15 - 25 mg/kg
Cadmium	<1.8 mg/kg
Chromium	60 - 90 mg/kg
Lead	100 - 200 mg/kg
Nickel	15 - 30 mg/kg

These concentrations would not represent a significant potential risk to the development although it should be noted that the C4SL for lead on a residential site with homegrown produce is 200 mg/kg.

5. Mining & Ground Stability

It can be seen, from the historic records discussed at Section 3, that there was a brick works to the north of the site although this was later redeveloped as a large residential estate.

A Coal Mining Report has been obtained from the Coal Authority (Ref 51002653842001 dated 6 September 2021 (Appendix E). TCA reports that the site *'is in a surface area that could be affected by underground mining in 2 seams of coal at 660m to 710m depth, and last worked in 1961. Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.'*

TCA also reports that:

- *'there are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property'*

- *'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'*
- *'the property is not within the boundary of an opencast site from which coal has been removed by opencast methods.'*
- *'the property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.'*
- *'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.'*
- *'the Coal Authority has no record of a mine gas emission requiring action.'*

According to the Coal Authority website the site is in a coal mining reporting area. The following additional information is also provided:

- There are no coal mine entries within influencing distance of the site.
- The site is not in a Development High Risk Area.
- There are no fissures and breaklines.
- There is no surface mining (past or present) in the vicinity of the site.
- There are no past shallow mine workings in the vicinity of the site.
- There are no coal outcrops in the vicinity of the site.
- There are no probable shallow coal mine workings in the vicinity of the site.

The Envirocheck Report (Appendix D) also contains information on ground stability, as summarised below:

Collapsible Ground:	Very Low
Compressible Ground:	No Hazard
Ground Dissolution:	No Hazard
Landslide:	Very Low

Running Sand: Very Low

Shrinking or Swelling Clay: Very Low

It can be seen from above that risks associated with subsidence are very low to no hazard and these issues are not considered further.

6. Hydrogeology

The Envirocheck Report contains information on the environmental setting of the site and the groundwater information here has been sourced from the EA Groundwater Vulnerability Maps.

The glacial clay that underlies the site is classified by the EA as a 'Secondary Undifferentiated Aquifer'. This classification is given where it has not been possible to attribute the aquifer as 'Secondary A' or 'B'. It should be noted however that in TACCL's experience Boulder Clay will have a very low natural permeability and will actually be unproductive strata. This clay will act as a barrier to the migration of contamination from off-site sources.

The bedrock (Manchester Marls) is classified as a 'Secondary A Aquifer'.

Secondary A Aquifers are described as '*permeable layers capable of supporting water supplies at local rather than strategic scale, and in some cases forming an important source of base flow to rivers*'.

The site is not within a currently defined source protection zone.

There are three groundwater abstractions within 500 m of the site, as follows:

Air Products Chemicals Ltd, 295 m south

Victor Wolfe Ltd, 300 m south (revoked)

Evonik Chemicals Ltd, 330 m south-west

According to Landmark, the site is in an area where '*there is limited potential for groundwater flooding to occur*'.

The nearest recorded pollution incidents to controlled waters are more than 300 m to the north and south-west and are unrelated to the site or activities in the vicinity of the site.

7. Hydrology

There are no surface water features in the vicinity of the site. Landmark reports that the closest surface water feature (the moat around Clayton Hall) is located some 106 m to the south-east.

The closest surface water abstraction is at the Ashton Canal some 342 m to the south-west of the site.

According to Landmark, the site is not located in an area that may be affected by flooding from rivers or sea without defences.

As stated at Section 6 the nearest recorded pollution incidents to controlled waters are more than 300 m to the north and south-west and are unrelated to the site or activities in the vicinity of the site.

8. Landfill Sites & Contaminated Land

Information provided in the Envirocheck Report indicates there are no historic, local authority recorded or registered landfill sites within 250 m of the development site.

The closest landfill site is reported to be at Clayton Vale Power Station some 466 m to the north of the site. It is reported that the site was used for the disposal; of inert, industrial, commercial, household and special waste and liquid sludge between 1965 and 1968.

Given the distance of the landfill site from the site and the presence of shallow low permeability glacial clay TACCL considers that the risk to the site from mobile / leachable contamination and mobile landfill gas is considered to be very low.

In addition, landmark identifies areas of potentially infilled land. Six specific areas are identified within 250 m of the site, as follows:

Unknown filled ground (pit, quarry etc)

46 m N (1993) this is the former brickworks site which was redeveloped as a residential housing estate

Unknown filled ground (pond, marsh, river, stream, dock etc)

51 m N (1894) former pond now residential land

73 m SW (1848) former pond

- 157 m N (1909) former brickworks pond now residential land
- 186 m E (1848) possible former pond, now housing
- 210 m S (1909) possible former pond close to current Ashton
New Road

Given the distance of these features from the site and the time elapsed since probable filling the risk from ground gas from these features is considered to be very low. Most have been incorporated into other hard developments.

Other sites are identified beyond 250 m but these are considered to be too far away to have had any impact on the development site.

Landmark provides details of potentially contaminative land uses in the vicinity of the site. According to these records there are:

- no contaminated land register entries within 500 m of the site
- no integrated pollution prevention and control sites within 250 m of the site
- no fuel stations within 250 m of the site,
- no COMAH or NIHHS sites within 250 m of the site
- no Hazardous Substance Consents within 250 m of the site
- no significant Points of Interest sites within close proximity to the site
- no waste management facilities within 250 m of the site

9. Radon

The Building Research Establishment (BRE) has issued guidance *'for reducing the concentration of radon in new dwellings, hence reducing the risk to occupants of exposure to radon'*.

Using the maps contained in the BRE guidance document it can be seen that the site is not located in an area that may be affected by radon.

According to Landmark *'the property is in a lower probability radon area (less than 1% of homes are estimated to be at or above the action level)' and consequently 'no radon protection measures are required in the construction of new dwellings or extensions'*.

10. **Sensitive Land Uses** The site is not affected by any of the ecological systems identified as a statutory receptor in the DETR Circular 01/2006.
11. **Proposed Development** It is proposed to construct two residential units with car parking and a small area of landscaped outside space. The proposed site layout is shown on a STUD/O TIAN Drawing Nos 21061-A01 - Proposed Site Plan and 21061-A05 – Proposed Houses 3D Models at Appendix G.
- From the drawing it can be seen that the building occupies the northern part of the site with car parking spaces in the north-eastern and south-western corners. A small garden is shown in the south-eastern part of the site.
- From the visual inspection it is evident that the site is currently slightly raised above the level of the surrounding land. It is therefore expected that the surface soils will be removed as part of the preparatory works.
12. **Preliminary Conceptual Model** The Environment Act 1995 makes provision for a risk based framework for the identification, assessment and management of potentially contaminated land through the assessment of risk.
- The process of risk assessment is an evaluation of the probability of harm, and comprises the identification of sources of contamination, receptors that may be affected by the contamination and pathways by which the receptors may be harmed.
- In this section of the report TACCL provides a qualitative assessment of risks based on potential contamination, plausible pathways and all significant receptors.
- The risk assessment is based upon the proposed change of use at the site. Should the nature of the development change or the activities undertaken on the site alter in the future the environmental assessment should be reviewed and altered accordingly.
- Potential Contaminative Sources**
- The general area was developed for residential use having previously been farmland, development commenced in the late 1800's expanding rapidly from around 1908. The site itself appears to have been occupied by gardens and open space for the majority of its history but between 1956 and 1992 appears to have been occupied by small buildings, possibly garages.

There is potential for made ground deposits and/or existing ground contamination to be present at the site.

No significant major off-site sources of potential contamination have been identified in the area. Records show a former brick works to the north, later redeveloped for housing and a workshop immediately to the east which is currently being redeveloped for a single residential property.

It is considered possible that the site may have been affected by activities at the adjacent workshop.

- Hazardous Gas

There are no landfill sites within 250 m of the site.

Landmark has identified some areas of potentially 'infilled ground' within 250 m, most are former ponds shown on old OS map editions and most of these have been redeveloped and are presently occupied by residential developments.

The natural glacial clay strata would severely limit the migration of hazardous gases from any potential off-site source should they actually exist.

The site is underlain by coal bearing strata, although these are present beneath a significant thickness of glacial clay which would act as a barrier to mine gas migration.

- Conclusions

Based on the available information, reviewed as part of this assessment, the potential for significant contamination to be present at the site is considered to be Low to Moderate.

Potential Contaminative Pathways

The following potential contamination pathways may exist based on the potential contaminants of concern, the environmental setting and the proposed residential development:

1. Ingestion of contaminated soil
2. Inhalation of contaminative dust/vapours
3. Ingestion of homegrown vegetable/soil attached to vegetables

4. Physical contact
5. Asphyxiation or explosion resulting from build-up of hazardous gases.

Potential Receptors

The potential receptors listed below are relevant considering the proposed development of the site.

Receptors that may be affected by potential contamination are:

1. Future Site Users
2. Buildings and Structures
3. Controlled Waters
4. Adjacent Properties
5. Construction Workers

No controlled waters have been identified in proximity to the site therefore this receptor may be discounted for the development site under consideration.

Risk Assessment

The assessment of risk is based on the concept of the source - pathway - receptor linkage.

Risks posed to each of the identified potential receptors are discussed separately below in accordance with CIRIA Guidance Document: Contaminated Land Risk Assessment - A Guide to Good Practice.

An environmental risk rating of Negligible, Very Low, Low, Moderate or High has been assigned to each identified receptor.

Future Site Users

The site has been associated with adjacent residential properties since early 1900's and may have been occupied by garages between 1956 and 1992. A workshop was located on the land immediately to the east.

The potential risk to future site users is considered to be Low to Moderate.

Buildings and Structures

Potential risk to buildings and structures due to contaminated ground or hazardous gas is considered to be Low.

Controlled Waters

There are no controlled waters in the vicinity of the site.

Therefore, there can be no potential risk of contamination associated with the site.

Adjacent Properties

The potential risk to the existing neighbouring property and people is considered to be Low.

Construction Workers

In the unlikely event that contaminated made ground is encountered at shallow depth beneath the site, construction workers exposure to potential contaminants of concern would be severely limited (during the short lifetime of the development works).

Notwithstanding the above, construction workers should adopt standard health & safety precautions including appropriate personal protective equipment (PPE).

The potential risk to the construction workers are considered to be Very Low.

13. Conclusions & Recommendations

TACCL has been instructed on behalf of Brindle & Yam Solicitor to prepare a Preliminary Risk Assessment for land at Barrington Street, Clayton, Manchester.

The report is required to support a planning application for the construction of two residential units with car parking and a small area of landscaped outside space.

TACCL has assessed the degree of risk posed by the site, surrounding land and conclude that the potential risks are Low to Moderate.

TACCL therefore considers that intrusive Phase 2 ground investigation is required to determine the actual site-specific ground conditions and risks to determine whether or not remedial measures are required.

The site conditions are not likely to prevent the safe development of the site and therefore any Phase 2 requirements should not prevent the local authority determining the application and could be conditioned if permission is granted.

The investigation should comprise a series of trial holes (pits, boreholes or auger holes) which should target the strata immediately below the proposed formation level. Samples should be collected for chemical testing and the test suite should be based on potential contaminants of concern, including petroleum hydrocarbons and asbestos.

The potential risks from hazardous ground gas are low and therefore the low risk approach recommended by CL:AIRE?? could be used without expensive and time-consuming gas monitoring. If this is the case the chemical test suite should include total organic carbon or other appropriate assessment of the organic content of the soils present.

If the developer proposes to re-use existing topsoil in the garden areas, samples should be collected for chemical testing as part of the Phase 2 works.

If contamination is identified the risk should be assessed and a remediation strategy developed to enable the safe redevelopment of the site.

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