



Construction

Consultancy

Collaboration

Completion

40 Station Approach

Ruislip

HA4 6RZ

Geoenvironmental &
Geotechnical Desk Study

Site Reference

40 Station Approach

Ruislip

HA4 6RZ

Client

Albion Housing Limited

Date

23/03/2021

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0.0 Executive Summary

Background	The purpose of this report is to provide a desk based assessment of the site, which is proposed for redevelopment into a dental surgery with 6 residential flats and associated car parking and landscaped areas.
Location	The site is located in South Ruislip in the London Borough of Hillingdon. The site address is 40, Station Approach, South Ruislip, HA4 6RZ.
Previous & Current Site Use	The site was initially developed by 1935 and based on historical mapping, may have been redeveloped on two occasions, between 1940-1960 and 1976-1991. The site is currently used as a Dental practice with a residential flat above. Car parking and hardstanding areas are located to the front and rear.
Geology	Based on available geological mapping, the site is underlain by the London Clay Formation.
Hydrogeology	The London Clay Formation is listed as 'Unproductive Strata'.
Hydrology	The nearest surface water body is Yeading Brook, approximately 550m to the south east.
Geotechnical	Geotechnical risks on site are considered Low to Negligible.
Contamination	Risks ranging from Negligible to Moderate/Low have been identified with regards to potential land contamination.
Recommendations and Conclusions	A Moderate/Low risk to human health has been identified, which can be reduced to Low through use of PPE on site and the use of appropriate construction methods to reduce dust. Site workers should have undertaken asbestos awareness training and have access to appropriate PPE including P3 masks, if required. If ACM is identified on site, an appropriately qualified person should attend site to inspect and advise. Intrusive investigation is not deemed necessary to further assess contamination risks.

1.0 Introduction

1.1 Background & Objectives

This report is a Phase 1 Geoenvironmental and Geotechnical Desk Study to support the planning application for the redevelopment of the property at 40, Station Approach, South Ruislip, HA4 6RZ. The proposed development includes a dental surgery, 6 units with a mix of purpose-built one and two bedroom flats together with associated facilities and allocated car parking.

The purpose of this report is to provide an assessment of the ground conditions (including environmental, geological, hydrological and hydrogeological conditions) likely to be present at the site, based on available desk study information. By reviewing the historical land use on site and in the surrounding area, an understanding of any potential contamination can be established, and a conceptual site model can be developed to identify any risks which may exist or arise as a result of the development.

1.2 Methodology

The assessment has included a review of available information about the site and the surrounding area from both the Groundsure Insight report and public sources together with a site visit undertaken in June 2020.

Information concerning current and past use of the site has been obtained from the site walkover and by reviewing the historical maps provided as part of the Groundsure Insight report.

1.3 Framework for Contaminated Land Assessment

Contaminated land risk assessment follows a tiered approach which begins with the establishment of a conceptual model for the site. The model identifies linkages between potential sources of contamination (hazards) associated with the historic and current uses of the site and receptors which could be impacted by the hazard. The conceptual site model establishes pollutant linkages that can be assessed qualitatively using desk based information combined with a site visit (Phase 1). This can then be enhanced through gaining improved data through ground investigation (Phase 2).

This approach is in accordance with the DEFRA / Environment Agency (EA) Model Procedures CLR11 (Environment Agency, 2004), CIRIA Contaminated Land Risk Assessment, A Guide to Good Practice (CIRIA, 2001), Guidance for the Safe Development of Housing on Land Affected by Contamination (Environment Agency, 2008) and Greenleaves III Guidelines for Environmental Risk Assessment and Management (DEFRA, 2011). The risk assessment undertaken in this document comprises a 'preliminary risk assessment' in the terminology used in CLR11 and the Environment Agency Contaminated Land Risk Management guidance available online (www.gov.uk).

1.4 Report Structure

General details about the site are presented in Section 2, including information on the location and layout of the existing site, the surrounding land uses and information from the site walkover visit. The environmental setting of the site is described in Section 4, including information on the site geology, hydrology and hydrogeology. A review of the development history of the site and the surrounding area is included in Section 3. A site conceptual model is discussed in Section 5 along with a preliminary risk assessment of potential pollutant linkages.

1.5 Limitations

This desk-based assessment is based on information obtained from the Groundsure Insight report as well as other publicly available data. The information obtained has been assumed correct as it would be impractical to fully authenticate the data. Further information on the ground conditions located on site can be obtained through intrusive investigation.

2.0 Site Information

2.1 Site Location

The site is located in South Ruislip in the London Borough of Hillingdon. The site address is 40, Station Approach, South Ruislip, HA4 6RZ. The site occupies an area of approximately 0.04Ha centred on NGR 510946, 185214. The site is bound by Station Approach to the north and Northolt Avenue to the west, residential properties and a commercial unit to the west and a service road to the south.

2.2 Site Description

The site comprises a detached 2 storey building with paved areas at the front and rear of the property. The area to the front of the property is used as an informal car park and the rear is used as an informal car park and storage yard for bins. The property is currently used as a dental practice (Ivory Dental Practice) with a residential flat above. The site is flat and located at approximately 37mAOD. The rear yard of the property is accessed from Northolt Avenue via a gravel track.

2.3 Surrounding Land Uses

The area immediately surrounding the site is predominately residential, with associated infrastructure and landscaped green areas and small scale commercial properties. Directly adjacent to the east of the site is a convenience store. Opposite the site is a recent residential development. Approximately 250m to the east of the site is South Ruislip train station, which is served by both the national rail train network (Chiltern Railways) and the London Underground (Central Line). Approximately 300m to the west is the eastern boundary of RAF Northolt, an active Royal Air Force station with one runway, servicing civilian and military aircraft. A petrol station is located 290m to the north west, located on West End Road.

2.4 Observations from Site Visit

A site walkover was completed in June 2020. The site observations support the descriptions of the site and surrounding areas contained in Sections 2.2 & 2.3. The building appeared to be in reasonable condition with no significant cracks or damage. The car park area at the front of the property consisted of randomly orientated block paving set in concrete. On the edges of the paving were small areas of gravel landscaping. The yard to the rear of the property consists of block paving and vegetation is growing through the cracks.

Utilities

It is assumed that, as a functional building, the standard utilities of water, sewage, electricity and communications are all feeding the building. Street based evidence of these are contained in the site photographs in Appendix A. It is advised a full Utility survey report is obtained for further information on the on-site utilities.

Drainage – surface water

Standard road-side surface water drains were observed in the gutters of the adjacent roads.

Waste Storage Areas

Bins were noted to the rear of the property.

Asbestos Containing Materials

It is beyond the scope of this assessment to identify asbestos containing materials (ACMs) in the fabric of building on-site. However, given the possible development which has occurred and the age of the building, it is possible that ACMs are present and this should be assessed by a suitably qualified person, prior to any works taking place.

3.0 Site Setting

3.1 Sources of Information

Information relating to the environmental site setting has been obtained from the following sources;

- Groundsure Insight Report
- Observations during site visit (June 2020)
- British Geological Society (BGS) Online GeoIndex Viewer:
(<https://www.bgs.ac.uk/geoindex/>)
- Zetica UXO Risk Map: (<https://zeticauxo.com/downloads-and-resources/risk-maps/>)
- Flood Map for Planning: (<https://flood-map-for-planning.service.gov.uk/>)
- Multi-Agency Geographic Information for the Countryside website:
(www.magic.gov.uk)

3.2 Published Geology

3.2.1 Made Ground

British Geological Survey (BGS) online GeoIndex viewer indicates there is no recorded artificial ground present on site or within the surrounding area. Given the nature of the site and the development history, a small amount of Made Ground may be present.

3.2.2 Superficial Geology

British Geological Survey (BGS) online information, indicates that superficial strata are absent at the site, and in the surrounding 500m.

3.2.3 Solid Geology

The site is indicated as being underlain by the London Clay Formation described by the BGS as “bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. It commonly contains thin courses of carbonate concretions (‘cementstone nodules’) and disseminated pyrite. It also includes a few thin beds of shells and fine sand partings or pockets of sand, which commonly increase towards the base and towards the top of the formation. At the base, and at some other levels, thin beds of black rounded flint gravel occurs in places. Glauconite is present in some of the sands and in some clay beds, and white mica occurs at some levels.”.

3.2.4 Historical Boreholes

The British Geological Survey online viewer has no records of boreholes within the site boundary. The closest borehole is situated 230m offsite within a cluster of boreholes to the north east. The maximum depth reached is 8m, with London Clay Formation recorded to this depth.

Borehole records published by BGS within 500m of the site typically show Topsoil overlying London Clay.

3.2.5 Ground Instability

The Groundsure Report identifies the ground stability risks as follows:

- Risks associated with shrink swell clays onsite are rated low, ground conditions are predominantly medium plasticity.
- Risks associated with collapsible deposits are rated very low.
- Risks associated with running sands are rated very low.
- Risks associated with both dissolution of soluble rocks and compressible deposits are rated negligible.
- Risks associated with landslides are assessed as very low.

3.2.6 Mine workings

The Groundsure report identifies the potential for Chalk mining geo-referenced to a location 318m north west of the site.

3.2.7 Radon

The site is not located within a Radon Affected Area, with less than 1% properties above the Action Level. No radon protective measures are required for new properties.

3.3 Hydrogeology

The bedrock on site (London Clay) is designated Unproductive Strata. This is defined as rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow. One potable groundwater abstraction is listed within 1km of the site; located 874m to the south at C & L Country Club (it is assumed the source for the groundwater is below the London Clay Formation).

Groundwater sensitivity – Low

The site is underlain by Unproductive strata with soils of low leaching potential. The site is not located within a SPZ, but groundwater is abstracted locally (874m to the south) for potable water supply.

3.4 Hydrology

The closest surface water feature is Yeading Brook, situated approximately 550m south-east of the site.

3.4.1 Flooding

The Flood Map for Planning indicates the entirety of the site to lie within flood zone 1, rendering land and property a low probability of flooding. The Groundsure Insight report shows the risk of surface water flooding on site to be negligible and the risk of groundwater flooding to be low.

3.5 Environmental Designations

The site is within 1km of two environmental designated areas. Islip Manor is located approximately 800m the southeast and is designated as a Local Nature Reserve. There are also areas of 'Green Belt' located approximately 300m to the south east and 550m to the south.

The site is located within a SSSI Impact Risk Zone, which specifies any infrastructure development to do with aviation or any developments likely to cause air pollution (specifically livestock & poultry units with floorspace >500m², slurry lagoons >750m² and manure stores >3500t) require consultation. This does not affect the proposed development.

Ecological sensitivity – Low

The proposed development will not require consultation within the SSSI Impact Risk Zone and will not affect the Local Nature Reserve or the areas of Green Belt.

Regulatory Information

The Groundsure report provides details of licenses, consents, authorisations, permits, incidents related to various activities (e.g. waste disposal, industrial processes) and as such provides a useful indication of potentially contaminative land uses in the surrounding area.

The Groundsure report is included in full in Appendix B. A summary of relevant information is contained in this section.

3.6.1 Waste Management

No landfill sites are identified by the Groundsure report within 500m of the site. A waste storage facility which is exempt from needing a permit is located 380m to the north east and is named as 'Harrow Containers, Rear of 1 Long Drive, South Ruislip, Middlesex, HA4 0HG. The recorded activities include storage of waste in a secure place, manual treatment of waste, recovery of scrap metal, sorting mixed waste, recovery of textiles and preparatory treatments (baling, sorting, shredding etc). This facility is not deemed to be close enough to have an impact on the site.

3.6.2 Permits, Incidents and Registers

A single pollution incident was listed by the Groundsure report, located 300m to the north east, dated 16/03/2002. The impact to water and land was Category 3 (Minor) and the impact to air was classified Category 4 (No Impact). This is unlikely to present a risk to the site.

Licensed pollutant release records are shown in Table 3.1.

Table 3.1 – Licensed pollutant release records

Location	Address	Details
177m W	Star Ruislip, 225 West End Road, Petrol Filling Stations, Ruislip, Middlesex, HA4 9NS	Process: Unloading of Petrol into Storage at Service Stations Status: Historical Permit Permit Type: Part B
284m W	Shell UK Oil Products Ltd, Shell Northolt, 300 West End Road, Ruislip, HA4 6QQ	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B
290m W	Shell Ruislip, West End Road, Middlesex, HA4 6QG	Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B
436m NE	XL Cleaners, 522 Victoria Road, Ruislip, Middlesex, HA4 0HD	Process: Dry Cleaning Status: Current Permit Permit Type: Part B

437m NE	J Sainsburys PLC, Sainsburys Filling Station, 11 Long Drive, South Ruislip, HA4 0HQ	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B
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3.6.3 Current or recent petrol stations

Current or recent petrol stations are listed in Table 3.2, below.

Table 3.2 Current or recent petrol stations

Location	Address	Details
220m SW	225, West End Road, Station Approach, South Ruislip, Ruislip, Outer London, HA4 6QG	Obsolete
270m W	Shell, 300, West End Road, South Ruislip, Ruislip, Outer London, HA4 6QQ	Open
415m N	Asda, Old Dairy Lane, South Ruislip, The Old Dairy Centre, Ruislip, Outer London, HA4 0EF	Open

3.6.4 Industrial Land Uses

The Groundsure report lists 22 ‘recent industrial land uses’ within 250m of the site boundary, and 3 ‘historical industrial land uses’. 1 historical unspecified tank is recorded 232m to the north east and 1 historical garage, 166m to the south west. An electrical substation is located 76m to the north of the site. The 3 historical industrial land uses located within 250m of the site include: Railway station 235m north east, Railways sidings 248m north and the Aerodrome 249m west.

Recent industrial land uses are summarised in Table 3.3.

Table 3.3 – Recent and Industrial land uses

Location	Company	Address	Activity
78m NE	Pinnacle Fire & Electrical	Morritt House 54-60, Station Approach, South Ruislip, Ruislip, Greater London, HA4 6SA	Electronic Equipment

79m NE	Talking Rubbish	Morritt House 54-60, Station Approach, South Ruislip, Ruislip, Greater London, HA4 6SA	Waste Storage, Processing and Disposal [note – this is an office rather than an industrial premises]
79m NE	Excel Environmental Technical Services Ltd	Suite 1 Morritt House 54-60, Station Approach, Ruislip, Greater London, HA4 6SA	Pest and Vermin Control
88m N	Electricity Sub Station	Greater London, HA4	Electrical Features Infrastructure and Facilities
92m NW	Electricity Sub Station	Greater London, HA4	Electrical Features Infrastructure and Facilities
142m SW	Antoria Carriage	9, Station Approach, South Ruislip, Ruislip, Greater London, HA4 6RU	New Vehicles Motoring
151m NE	Curious Books	Howard House, The Runway, Ruislip, Greater London, HA4 6SE	Stationery, Stamps, Tags and Labels
151m SW	Ruislip Services	5, Station Approach, Ruislip, Greater London, HA4 6RU	Vehicle Repair, Testing and Servicing Repair and Servicing
155m SW	H G B Motorcycles Ltd	3-5, Station Approach, South Ruislip, Ruislip, Greater London, HA4 6RU	New Vehicles Motoring
168m N	Works	Greater London, HA4	Unspecified Works Or Factories
175m W	Wembley Stadium Taxi	19, Dudley Drive, Ruislip, Greater London, HA4 6QN	Airlines and Airline Services Transport, Storage and Delivery
179m NE	Electricity Sub Station	Greater London, HA4	Electrical Features
192m NE	South Ruislip Garage	69, Station Approach, South Ruislip, Ruislip, Greater London, HA4 6SD	Vehicle Cleaning Services Personal, Consumer and Other Services
206m N	M G A Contracts Ltd	Unit 6, The Runway, Ruislip, Greater London, HA4 6SE	Construction Completion Services Construction Services

206m N	R & D Management London Ltd	Unit 6, The Runway, Ruislip, Greater London, HA4 6SE	Construction Completion Services Construction Services
207m N	Works	Greater London, HA4	Unspecified Works Or Factories
210m NW	Odyssey Business Park	Greater London, HA4	Business Parks and Industrial Estates Industrial
227m N	A B M UK	Artemis House, Ruislip, Greater London, HA4 6QE	Electrical Equipment Repair and Servicing Repair and Servicing
229m N	Alphatheta E M E A Ltd	Artemis Odyssey Business Park, West End Road, Ruislip, Greater London, HA4 6QE	Electronic Equipment Industrial Products
236m S	Electricity Sub Station	Greater London, HA4	Electrical Features Infrastructure and Facilities
240m NE	South Ruislip Station	South Ruislip Station, Station Approach, South Ruislip, Ruislip, Greater London, HA4 6TP	Underground Network Stations Public Transport, Stations and Infrastructure
243m NE	South Ruislip Rail Station	Greater London, HA4	Railway Stations, Junctions and Halts. Public Transport, Stations and Infrastructure

3.7 Unexploded Ordnance

The Zetica UXO Risk Map¹ designates the site as Low risk. The Northolt Aerodrome (in use since 1915) was a potential target of Luftwaffe bombing during WW2 and near misses may have impacted the site area. However, Bomb Sight mapping (utilising national archive data) does not show any bomb locations within 500m of the site. Also, given that the site was developed during the 1930's (before the war), it is unlikely that any ordnance which fell on the site would have remained unexploded. Also, the site is likely to have been redeveloped since the war, which reduces the risk further. It is advised that expert advice be sought prior to breaking ground.

¹ <https://zeticauxo.com/downloads-and-resources/risk-maps/> (accessed 22/07/2020 and included as Appendix C)

4.0 Site History

4.1 Sources of Information

Information on the site history has been obtained from the following sources:

- Groundsure Insights report including historical mapping and recent aerial photographs.

4.2 Detailed Site History

A summary of details noted on historical maps provided within the Groundsure Insights report is provided in Table 4.1.

Table 4.1 – Historical Map Review

OS Survey Plan (Scale)	Site Description	Surrounding Area Description
1868 – 1897 (1:2,500 & 1:10,560)	The site is located on an area of farmland	The surrounding areas appear to be open fields / farmland associated with the following farm buildings: Hundred Acres Farm (250m to the east), Bourne Farm (500m to the north east) and Priors Farm (600m to the south)
1912 (1:10,560) 1914 (1:2,500)	No buildings are recorded within the site boundary, but the roads 'Station Approach' and 'Northolt Avenue' have been built, in the same orientation as present-day. Although no buildings are listed on site, it would appear as though the area is no residential in purpose.	The train line has been built named the 'Central Joint Railway' running north-west to south-east, approximately 250m to the north-east of the site (consistent with the location of the present day train line) and Northolt Junction Station is recorded at the location of the present day South Ruislip Station. As well as Northolt Avenue, several other streets have been recorded running south from Station Approach, including Mahlon Avenue, Hardy Avenue, Deane Avenue and Bourne Avenue.
1935 (1:2,500 & 1:10,560)	Two structures, likely to be for residential use are recorded within the eastern half of the site boundary, one larger structure and one smaller possible outbuilding.	In the areas around the site along the roads parallel to Northolt Avenue (Hardy Avenue and Deane Avenue etc.), numerous new structures are recorded, which are assumed to be residential properties. A school is located 100m to the north and the train station is now named 'South Ruislip and North Junction Station'.
1940 (1:2,500)	No changes to area within site perimeter	On the opposite site of Station Approach to the site, Acol Crescent is now present, along with numerous

1938 (1:10,560)		properties and gardens. A large school structure has been built approximately 200m to the north.
1960 (1:2,500) 1960 (1:10,000)	The main building on site is displayed as a square structure rather than a rectangle, indicating redevelopment. The outbuilding is no longer present on site.	Unspecified 'Works' are recorded on the opposite side of Station Approach to the site. Northolt Airfield is now named approximately 400m to the west of the site, although no infrastructure is displayed. Unspecified 'Works' are recorded, located approximately 150m to the north east. Further residential development has occurred along Northolt Road and the adjacent roads. The train station is now listed as 'South Ruislip Station'. The large school structure 200m to the north is now listed as offices.
1972 – 1976 (1:1,250) 1966-1970 (1:10,000)	No significant change on site.	The 'Works' listed on the opposite side of Station Approach, north of the site, has been redeveloped and the new structure is listed as a social Services centre. An Electrical substation is located approximately 90m to the north east. Runway infrastructure is now shown on Northolt airfield (listed as Northolt Aerodrome). A large 'Depot' area has been developed, 300m to the north of the site, on the opposite side of the railway track.
1991 – 1993 (1:1,250) 1993 (1:10,000)	The site appears to have been developed, resulting in the enlargement of the structure on site, resulting in the present day configuration	A Day Nursery has been built alongside the Social Services centre on the opposite side of Station Approach.
2003 (1:1,250) 2020 (1:10,000)	No significant changes noted.	No significant changes noted

4.3 Historical Summary

Historical O.S. Mapping indicates that until 1912 the site consisted of open fields / farmland. The first evidence of development on and around the site is recorded in 1912 when the roads Station Approach, Northolt Avenue, Mahlon Avenue, Hardy Avenue, Deane Avenue and Bourne Avenue were built, with some properties, which appear to be residential. This

coincides with the construction of the railway line (the Central Joint Railway) and Northolt Station. The train line lies 250m to the north-east of the site and runs north-west to south-east.

By 1935, two structures are recorded within the site boundary, which possibly represent a residential property and an outbuilding. In the area around the site there has been continued residential development.

By 1960 the structure on site appears to have been demolished and redeveloped. The outbuilding is no longer present. Directly to the north of the site, on the other side of Station Approach is a new building listed as 'Works'. This is redeveloped by 1976 and a new building (Social Services centre) is present. This is accompanied by a day nurse by 1991. It is not evident from the maps when these structures were demolished but it is apparent on the aerial photography in the Groundsure report that the structures were present in 2015. A review of Google earth shows the buildings were still present in 2017, cleared in 2018 and the site was being redeveloped (to become residential flats based on site walkover observations) during 2019.

Further unspecified 'Works' are located adjacent to the train line, these are currently used as commercial office spaces / warehouses. Likewise, the large 'Depot' area is now in use as an Asda supermarket.

By 1991 the structure on site appears to have been redeveloped again into the present day configuration.

5.0 Conceptual Site Model and Risk Assessment

5.1 Introduction

The information obtained and presented in the previous sections have been evaluated to establish a conceptual site model and a preliminary risk assessment for the site. The site has been considered in regard to current UK legislation and guidance, including CLR11 and CIRIA C552: Contaminated Land Risk Assessment, A Guide to Good Practice (Rudland et al., 2001).

For a risk harm to occur as a result of ground contamination, all of the following must be present in order for a 'pollutant linkage' to be formed:

- Source i.e. a substance that is capable of causing pollution or harm;
- Pathway, i.e. a route by which the contaminant can reach a target; and
- Receptor (target), i.e. something which could be adversely affected by the contaminant.

If one of these element is absent, then there is deemed to be no significant risk. If all are present then the magnitude of the risk can be considered as a function of the size and mobility of the source, the nature of the migration pathway and the sensitivity of the receptor.

5.2 Possible Sources, Pathways and Receptors

5.2.1 Possible Sources

On site

- Made Ground which may underlie the site could include demolition materials associated with former structures and it is possible that asbestos containing materials (ACM) could be present. Based on the nature of the former developments (i.e. residential) it is unlikely that significant contamination of industrial origin is present.
- Potential spills and leaks from parked cars could have penetrated through cracks in the paving into the soils. Any such losses of fuels / liquids would have been small and it is unlikely that extensive of significant contamination is present.

Off site

- A number of contaminative land uses have been identified in the surrounding area including petrol stations, railway land and historically an unnamed works (opposite side of Station Approach). Generally, however, due to the distance of these land uses from site and the low permeability of the underlying ground conditions it is

considered unlikely that significant contamination might have migrated on to site from off-site sources.

5.2.2 Possible Receptors

- Human – Construction workers
- Human – Future site users
- Human – off site
- Controlled Waters (groundwater)
- Controlled Waters (local surface water)
- Property

5.2.3 Possible Pathways

The following potential pathways have been identified with regards to each receptor:

Human Health

- Ingestion of and/ or direct dermal contact with contaminated soils and soil derived dust;
- Ingestion of and/or direct dermal contact with contaminated groundwater within excavations;
- Off site migration of contaminants in soil derived dust followed by inhalation / dermal contact / ingestion.

Controlled Waters

Controlled waters are not deemed a receptor as the site is underlain by Unproductive strata.

Property

- Direct contact with buildings / structures leading to chemical attack and damage.

5.3 Preliminary Conceptual Site Model & Risk Assessment

In order to identify an unacceptable risks to the named receptors, a preliminary CSM has been produced as Table 5.1. A qualitative assessment of the identified pollutant linkages has been included, with the likelihood of the linkages being present and the consequences associated with these linkages have been evaluated using a matrix approach and a level of risk has been assigned to each.

Table 5.1 Conceptual Site Model and Risk Assessment

Source	Pathways	Receptor	Consequence	Likelihood	Risk
On Site Sources:					
Made Ground	- Ingestion of and/ or direct dermal contact with contaminated soils and soil derived dust; - Off site migration of contaminants in soil derived dust followed by inhalation / dermal contact / ingestion.	Human construction worker Human future site users Human off site	Medium	Low Likelihood , it is anticipated that best practice construction methods are used to minimise direct contact with soils.	Moderate to Low, reduced to Low through use of PPE and assuming appropriate dust mitigation measures during demolition and construction.
	Direct contact with buildings / structures leading to chemical attack and damage.	Property	Mild	Low Likelihood , it is anticipated that any building materials used will be appropriate for the ground conditions	Low
Potential spills and leaks from cars	- Ingestion of and/ or direct dermal contact with contaminated soils and soil derived dust; - Ingestion of and/or direct dermal contact with contaminated groundwater within excavations; - Atmospheric transfer of contaminants onto site from off-site sources, via soil derived dust followed by ingestion / dermal contact / inhalation; and - Off site migration of contaminants in soil derived dust followed by inhalation / dermal contact / ingestion.	Human construction worker Human future site users Human off site	Medium	Low Likelihood , it is possible that there have been leaks from vehicles parked on site which have migrated into the soil and this may be exposed during the construction phase.	Moderate reduced to Low, with use of appropriate PPE

	Direct contact with buildings / structures leading to chemical attack and damage.	Property	Mild	Low Likelihood , it is anticipated that any building materials used will be appropriate for the ground conditions	Low
Off Site Sources:					
Petrol stations and current and former industrial processes	- Ingestion of and/ or direct dermal contact with contaminated soils and soil derived dust; - Ingestion of and/or direct dermal contact with contaminated groundwater within excavations; - Atmospheric transfer of contaminants onto site from off-site sources, via soil derived dust followed by ingestion / dermal contact / inhalation	Human construction worker Human future site users Human off site	Medium	Unlikely due to distance from site and anticipated low permeability of the soils	Low.
	- Dissolution or leaching of contamination in soils and subsequent migration of contaminants in groundwater; - Lateral and vertical migration of contaminated groundwater; and - Lateral and vertical migration of dissolved phase contaminants via preferential pathways e.g. drains, underground service ducts etc).	Controlled Water(groundwater) Controlled Water (surface water)	Medium	Low Likelihood due to distance from site and anticipated low permeability of the soils	Moderate/Low
	Direct contact with buildings / structures leading to chemical attack and damage.	Property	Mild	Unlikely, it is anticipated that any building materials used will be appropriate for the ground conditions	Negligible

6.0 Conclusions and Recommendations

This desk study has been undertaken to identify any potential geological or geo environmental risks to support the planning application for redevelopment of the site at 40 Station Approach. An assessment of potential land contamination risks has been undertaken

6.1 Risk Assessment Summary

The risk assessment has identified risks ranging from **Negligible** to **Moderate/Low**.

A **Moderate/Low** risk to human health has been identified with on site workers, future site users and the general public all potentially coming into contact with potentially contaminated soil and groundwater. This can be mitigated and reduced to a **Low** risk rating through use of PPE on site and the use of appropriate construction methods to reduce dust.

6.2 Recommendations

These ratings have been based on the potential for contamination to exist on site and in the surrounding area, based on the information obtained. Based on the levels of risk identified in the Risk Assessment, intrusive investigation is not deemed necessary to assess contamination risks further. There is a possibility that ACM could be present in the sub-soil and the building contractor should ensure that procedures are in place to reduce risks associated with ACM. As a minimum, the workers should have asbestos awareness training and access to PPE including P3 masks. A provision of water on site should be made in order to water the soil down to reduce dust, if required. It is recommended that an appropriately qualified expert be lined up to visit site and inspect the soil, if suspected ACM is encountered.

7.0 References

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Appendix A – Site Walkover Photographs



Figure 1 – east side gate of property



Figure 2 0 – view east down Station Approach



Figure 3 – Evidence of services on Northolt Avenue side of property



Figure 4 – Front view of property



Figure 5 – view south down Northolt Avenue



Figure 6 – Rear service track