



Hinckley Day Case

Phase 1 Ground Investigation Report
(March 2025)

Prepared for Darwin Group

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Contents

1	Introduction	4
1.1	Objectives	4
1.2	Proposed Development.....	4
1.3	Limitations and Constraints.....	4
1.4	Methodology.....	4
1.5	Design Information	5
2	Previous Environmental Assessments and Consultations	6
2.1	Previous Environmental Assessments.....	6
2.2	Consultations	6
3	Site Setting.....	7
3.1	Site Description	7
3.2	Land Use History.....	8
3.3	Geology	11
3.4	Ground Gas.....	14
3.5	Vapour.....	16
3.6	Controlled Waters	16
3.7	Walkover Survey	20
3.8	Geotechnical Assessment.....	20
4	Conceptual Model and Preliminary Risk Assessment	21
4.1	Introduction	21
4.2	Sources of Contamination.....	22
4.3	Pathways for Migration.....	22
4.4	Potential Receptors	22
5	Conclusions.....	25
5.1	Environmental	25
5.2	Geotechnical	25

Tables

Table 3.2-1: Summary of Historic Maps	8
Table 3.4-1: BGS Estimated Soil Chemistry	15
Table 3.7-1: Surrounding Land Use	20
Table 3.8-1: Initial Conceptual Ground Model	20
Table 4.2-1: List of Possible Contamination	22
Table 4.4-1: Plausible Contaminant Linkages and Qualitative Preliminary Risk Assessment	24

Figures

Figure 3.1-1: Site Location Plan	7
Figure 3.2-1: Aerial View of the Site July 1948	10
Figure 3.3-1: Extract from BGS Drift & Solid Geology 1:50,000 (Sheet 169, 1994)	11
Figure 3.3-2: Stratigraphical Relationships of the Wolston Glaciogenic Formation	12
Figure 3.3-3: UXO Risk Map	13
Figure 3.6-1: Extent of Surface Water Flooding	18
Figure 3.6-2: Extent of Flooding from Rivers or the Sea	19
Figure 3.6-3: Extent of Flooding from Reservoirs	19

Appendices

Appendix 1: Photographs from Walkover Survey

Appendix 2: Envirocheck Report

1 Introduction

1.1 Objectives

Nova Geo Consulting (NGC) has been commissioned by Darwin Group to undertake a preliminary investigation at Hinckley and District Hospital in Leicestershire in order to ascertain the potential ground conditions for the construction of the new Day Case Centre building and to assess the risk to the development from contamination and ground gas.

1.2 Proposed Development

The proposed location of the new Day Case Centre is within the current Hinckley and District Hospital grounds. The proposed building is a two-storey I-shaped modular building approximately 28m x 36m in plan area. The proposed development also includes the construction of car parking, landscaping and retaining walls.

This report comprises a desk study review of publicly available information related to the site and the surrounding area. NGC has not been provided with the proposed loadings for the building at this stage.

1.3 Limitations and Constraints

The findings presented in this report specifically relate to the site controlled by Darwin and should not be extrapolated to include any areas outside Darwin's designated site boundary. The comments given in this report and any opinions expressed are based in part on information made available by Darwin Group and other Third Parties. NGC has proceeded in good faith on the assumption that this information is accurate and accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied. There may be conditions pertaining to the site which have not been disclosed by the investigation and which therefore could not be taken into account in this report. In particular, old foundations or underground services may be present that could affect the proposed development.

It should also be noted that the effects of ground and waterborne contamination on the environment are constantly under review, and authoritative guidance values are potentially subject to change. The conclusions presented herein are based on the guidance available at the time this report was prepared, and no liability can be accepted for the retrospective effects of any changes or amendments to the legislation or guidance.

1.4 Methodology

This Phase 1 preliminary study has been undertaken in accordance with the 2020 LCRM Guidance. Land Contamination: Risk Management Guidance (LCRM: Environment Agency, 8 October 2020). The objectives of the desk study are:

- to define the overall site objectives.

- to collate the available current and historic information for the site to determine whether any previous land use may have given rise to land contamination.
- to identify ground hazards that require further investigation.
- to develop an Initial Conceptual Ground Model for the site in respect to the anticipated ground conditions and the potential for ground contamination.
- to provide a qualitative risk assessment; and
- to make recommendations for further works.

1.5 Design Information

The following ground investigation and design information has been provided:

- 180769-DG-02-XX-DR-A-1402, Version P2, Proposed Landscaping Plan_Option 1
- 180769-DG-02-XX-DR-A-2100, Version P7, Elevations_Option 1_A&B
- 180769-DG-02-XX-DR-DR-2101, Version P7, Elevations_Option 1_C&D
- 180769-DG-02-ZZ-DR-A-2000, Version P7, General_Arrangements_Option 1
- 180769-DG-02-ZZ-DR-A-2103, Version WiP, Mount Road Streetscape_Option 1
- 180769-DG-02-ZZ-DR-A-2202, Version WIP, Option 1_Massing
- Phase 1 Desktop Study, WIE19831, Waterman, Issue 02 February 2023

The following publicly available information has been used to inform the desk study:

- Envirocheck® Report, September 2023
- BGS 1:50,000 Bedrock and Superficial Map, Sheet 169, 1994
- [Map images - National Library of Scotland \(nls.uk\)](#) (accessed on 03/03/2025)
- [Interactive Map Viewer | Coal Authority \(bgs.ac.uk\)](#) (accessed on 03/03/2025)
- <https://zeticauxo.com/downloads-and-resources/risk-maps> (accessed on 03/03/2025)
- <https://check-long-term-flood-risk.service.gov.uk/> (accessed on 03/03/2025)
- [UKradon - UK maps of radon](#) (accessed on 03/03/2025)
- [Flood map for planning - GOV.UK \(flood-map-for-planning.service.gov.uk\)](#) (accessed on 03/03/2025)
- [GeoIndex \(onshore\) - British Geological Survey \(bgs.ac.uk\)](#) (accessed on 03/03/2025)

2 Previous Environmental Assessments and Consultations

2.1 Previous Environmental Assessments

A Phase 1 Desktop Study was undertaken by Waterman in February 2023. The report concluded that, based on the proposed end use, the site was considered to pose a low risk to human health and would present a low risk with respect to controlled waters.

The Asbestos Risk Profile Report dated 23/09/22 states that the existing x-ray and ultrasound building has a high risk rating for asbestos. There are numerous asbestos containing materials within the building.

2.2 Consultations

2.2.1 Environmental Health

Information has been requested from the Environmental Health Officer.

2.2.2 Planning Department

Information has been requested from the local Planning Department.

2.2.3 Building Control Department

Information has been requested from the Building Control Department.

3 Site Setting

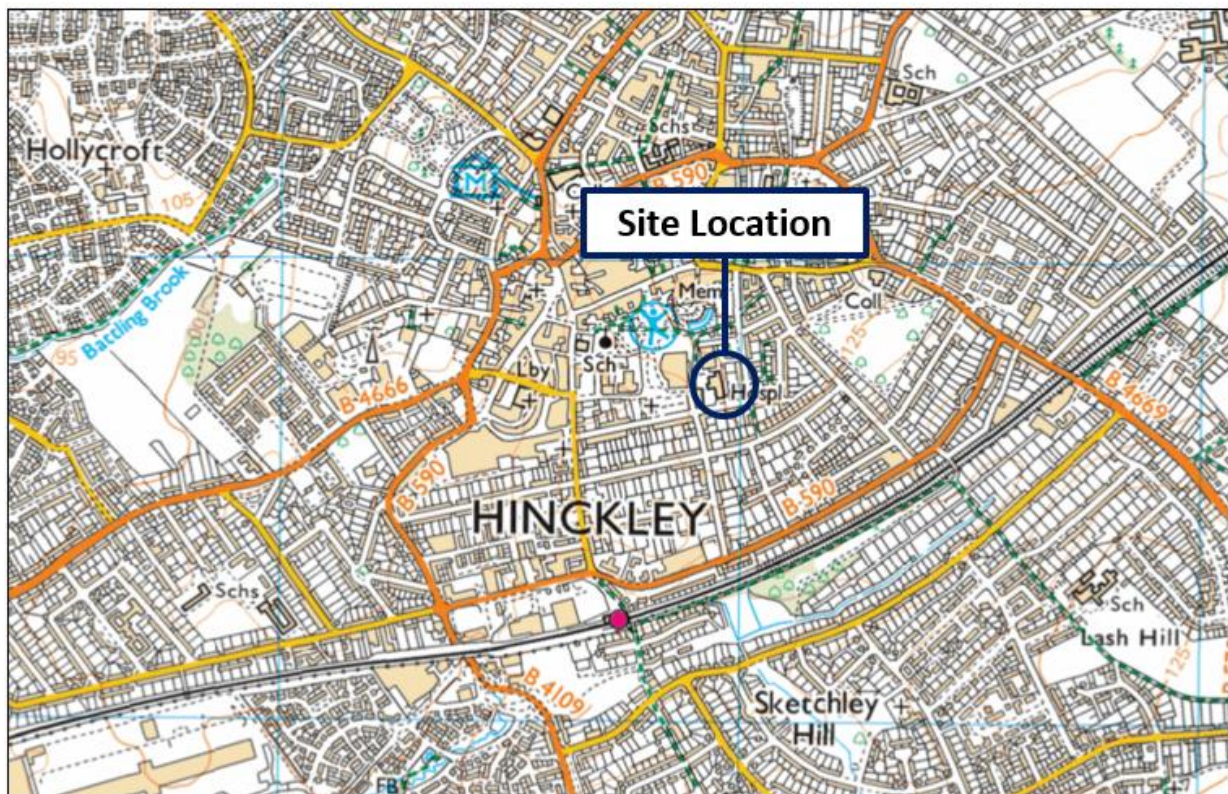
3.1 Site Description

The site is located at Hinckley and District Hospital, which is occupied by the University Hospitals of Leicester NHS Trust. The site of the new Day Case Centre (DCC) is located at National Grid Reference 442954mE, 293729mN within the site boundary of the existing Hinckley and District Hospital, shown on Figure 3.1-1. The postcode for the site is LE10 1DS.

Darwin's controlled area currently comprises the existing x-ray and ultrasound building and surrounding area. The existing building will be demolished and replaced with a new single storey modular structure. The development of the site will include car parking and retaining walls.

Figure 3.1-1: Site Location Plan

(courtesy of Bing Maps)



3.2 Land Use History

3.2.1 General

The Landmark Information Group (Landmark) was commissioned to provide an Envirocheck® Report for the adjacent development site, which was also developed by Darwin. This report, including the Historical Ordnance Survey Maps, is presented in its entirety in Appendix 2. The maps have been reviewed to determine historical on-site and off-site land use. Where appropriate, these have been supplemented/correlated by other information from web-based sources.

3.2.2 Historical Land Uses and Features

The review focuses on the land use within the site boundary and the land immediately adjacent to the site controlled by Darwin. Additional comment on the land use further from the site is added if noteworthy from a geotechnical or land contamination context.

A review of the historic maps for the site shows that a number of substantial changes to the site have occurred. The 1889 map shows the site and the surrounding land being agricultural land. By 1903 a building called Cottage Hospital had been constructed on the site. This is the existing building that forms the frontage of the site. By 1924, the Cottage Hospital building had been extended to the north. By 1961, the cottage hospital building was further extended to the north and the Hinckley Health Centre Surgery, which is currently located to the north of the site had been constructed. On the 1968 map an electrical sub-station is present to the north-east of the site. On the 1986 map, additional hospital buildings had been constructed on land to the east of the site and the electrical sub-station has been removed.

Table 3.2-1: Summary of Historic Maps

Mapping Date	Scale	Site Land Use	Adjacent Land Use (0-250m)
1889	1:2,500	Agricultural land. Possibly two small ponds on the site	• Agricultural land surrounding the site • Church and graveyard 250m NW • Castle Moat and town centre 200m N • Shoe manufacturer 200m NE • Pump 150m E
1903	1:2,500	Cottage Hospital constructed on the site	• Residential development to the east of the site • Pump 175m E no longer present
1924	1:2,500	Extension of Cottage Hospital to the north	• Residential development immediately surrounding the site to the S and W • Construction of tennis ground west of the Site
1955	1:10,000	Unchanged	Building developed on NE boundary of the Site related to hospital development

Mapping Date	Scale	Site Land Use	Adjacent Land Use (0-250m)
1961	1:2,500	Unchanged	• Development of the hospital along E boundary and renamed to Hinckley and District Hospital • Dairy 300m N • Chemical Works 185m N
1968	1:1,250	Unchanged	• Electrical substation to north-west • Gas Gov 50m W • Tennis grounds demolished W of the Site and converted into a car park • Construction of the Council Offices 100m NW • Public Baths W no longer present
1980	1:10,000	Unchanged	Construction of Hinckley Health Centre on NE boundary of Site
1986	1:1,250	Unchanged	• Electrical substation to north-west has been removed • Residential buildings to east of site replaced with hospital buildings
1999	1:10,000	Unchanged	• Dairy to north no longer present • Chemical Works to north no longer present • Clothing factory to north-east no longer present
2023	1:10,000	Unchanged	• Construction of the Leisure Centre to NW • Demolition of council office to NW

Figure 3.2-1: Aerial View of the Site July 1948

(National Library of Scotland)



3.2.3 Current Surrounding Land Use

The land to the south of the site is currently in use as residential land. The land to the west, north and east of the site is part of the Hinckley and District Hospital estate.

There are no fuel station entries within 450m of the site with the nearest located c.473m south-west of the site at Tesco Hinckley.

3.3 Geology

The BGS Solid and Drift Geology Map for the area (Sheet 169, 1994) shows the site to be located on superficial deposits of the Wolston Glaciogenic Formation (WGF). The WGF was deposited approximately 780-126 thousand years ago and consists of the Oadby Member overlying the Wolston Sands and Gravels and the Wolston Clays (Bosworth Clay Member).

The Oadby Member is a diamicton that consists of brown to grey silty clay, with chalk and flint fragments and lenses of sand and gravels. The Wolston Sands and Gravels consist of red or yellow sands and gravels and the Wolston Clays (Bosworth Clays) consist of grey clays.

The bedrock at the site is Mercia Mudstone Group (MMG) and consists of dominantly red mudstones and siltstones with thin beds of halite, gypsum, anhydrite and sandstone. The Mercia Mudstone was deposited c.246-201 million years ago.

The BGS memoirs that accompany the geological map (sheet 169) contain additional information and maps/sections that further classify the superficial deposits. The memoirs suggest that the superficial deposits around Hinckley are expected to be between 75-80m thick overlying the MMG. A summary of the stratigraphical relationships of the glacial succession is included in Figure 3.3-2.

Figure 3.3-1: Extract from BGS Drift & Solid Geology 1:50,000 (Sheet 169, 1994)

(courtesy of British Geological Survey)

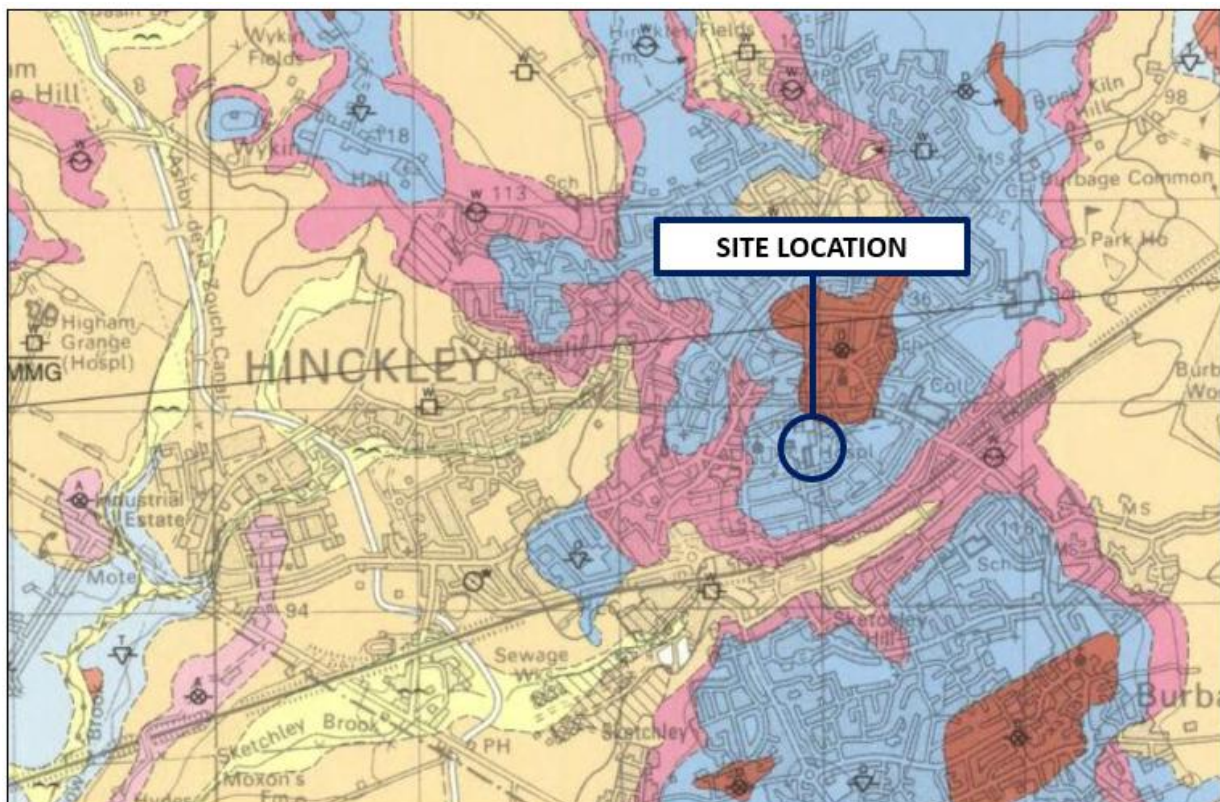
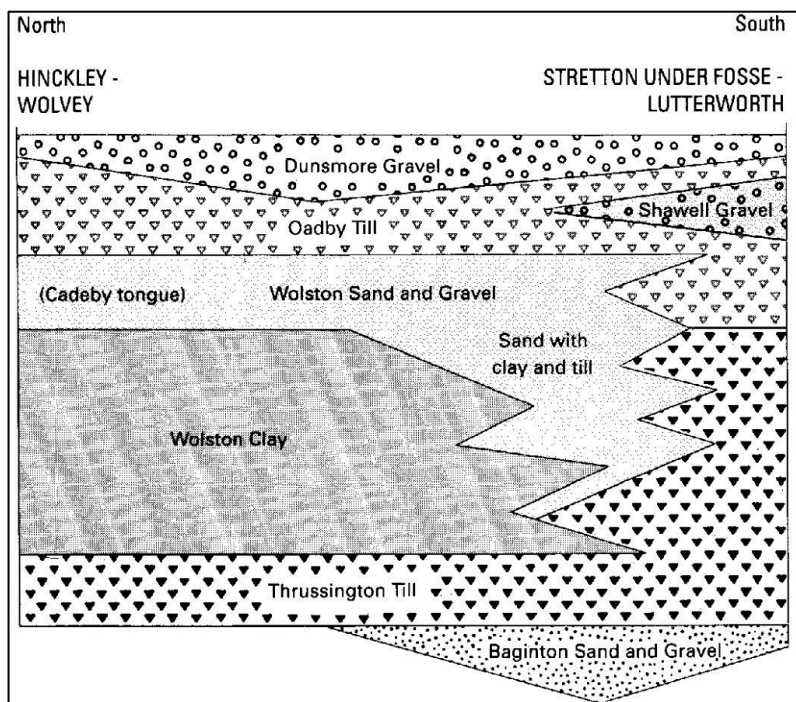


Figure 3.3-2: Stratigraphical Relationships of the Wolston Glaciogenic Formation

(From BGS Memoirs sheet 169,1998)



3.3.1 Coal Mining

The Envirocheck® report indicates that the site is not within a coal mining area. The Coal Authority website shows that the site is not within a Coal Mining Reporting Area.

3.3.2 Mineral Workings

The BGS GeoIndex website shows no recorded Mineral Sites within 1000m of the Site.

3.3.3 Ground Stability

The Envirocheck® Report indicates the soils found on site are classified as being 'No Hazard' or having very low to low hazard potential for the following:

- Potential for collapsible ground.
- Potential for compressible ground.
- Potential for dissolution.
- Potential for landslide.
- Potential for running sand.
- Potential for shrink/swell in clay ground.

3.3.4 Volume Change Potential

BGS data presented in the Envirocheck® Report indicated that the volume change potential was low.

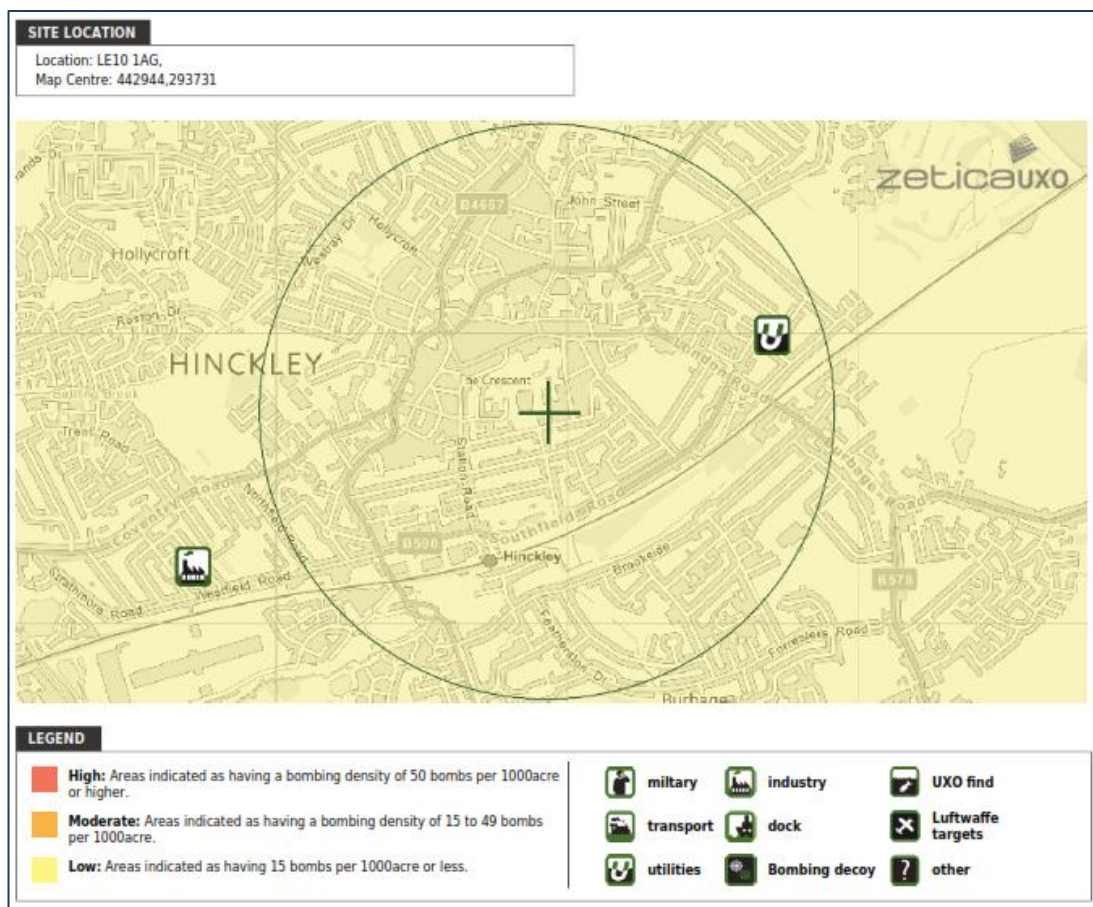
3.3.5 Ground Aggressivity

The bedrock of MMG is classed as principal sulphate and sulphide bearing strata and has potential to contain elevated sulphate levels which may be aggressive towards concrete. The WGF is composed partially from bedrock of Triassic age, including the MMG.

3.3.6 Unexploded Ordinance Risk

The Site is considered to have a **low UXO risk** according to the Zetica website.

Figure 3.3-3: UXO Risk Map



3.4 Ground Gas

CIRIA C665 and the CL:AIRE 2012 RB17 guidance document state that ground gases pose a risk to developments when the following can be satisfied.

- An accumulation of a large volume of gas in the ground in or near the buildings (source).
- A pathway that would allow gas to migrate through and/or out of the ground into a building or other structure sufficiently quickly to allow it to build up inside the building (pathway).
- A confined space within the building or structure where gas can build up to unacceptable levels (receptor).

This follows the principles of the source – pathway – receptor model in the LCRM guidance.

For a ground gas hazard to exist, a source – pathway – receptor linkage needs to be present. This requires a sufficient quantity of gas to pose a hazard and one or more pathways to be present by which it may cause significant harm to people. For sustained gas migration to occur, gas must be replenished at the source to overcome the effects of attenuating factors such as oxidation of the methane/carbon dioxide to oxygen in the aerobic zone or low permeability soils decreasing the migration potential. Therefore, sustained high levels of gas generation are required for ground gas to migrate via advective or diffusive flow and cause high ground gas concentrations at the surface/within built structures. The volume of ground gas is therefore the principal factor which should be considered rather than the ground gas concentration and not the gas concentration present in the ground (or monitoring well) which is commonly mistaken as posing a risk to future site users.

There are no licensed or historic landfill sites within 500m of the site and the nearest potentially infilled land is in excess of 300m away. In addition, the nearest Waste Management Facility is in excess of 750m from the site.

From a review of the site history and anticipated ground conditions, no significant ground gas generating sources have been identified.

Any Made Ground at the site has been present for at least 100 years, and this is likely to be comprised of generally inert material with low volume of readily degradable material. The environment in which any Made Ground has been left in-situ is unlikely inhibitors to organic matter degradation. A qualitative assessment of the Made Ground considers that it has a low potential for the generation of ground gas.

Off-site ground gas sources are only be considered a risk where the presence of a significant ground gas generating source can be identified. A review of historical maps identified no significant sourced for ground gas generation.

3.4.1 Waste

One Local Authority Landfill Coverage areas has been recorded in the north-western corner of the site (NGR 442914mE 293719mN). The landfill is registered with Hinckley and Bosworth Borough Council with no landfill data available.

One potentially infilled land (non-water) site has been recorded within 500m of the site. It is located c.359m southwest of the site and is described as Unknown Filled Ground (Pit, Quarry etc).

Four potentially infilled land (water) sites have been recorded within 500m of the site. The nearest is located c.280m southwest of the site and is recorded as Unknown Filled Ground (Pond, Marsh, River, Stream, Dock etc).

None of the following Waste or Hazardous Substance designations are located within 500m of the site - BGS Recorded Landfill Sites, Historical Landfill Sites, Integrated Pollution Control Registered Waste Sites, Licensed Waste Management Facilities, Local Authority Recorded Landfill Sites, Registered Landfill Sites, Registered Waste Transfer Sites, Registered Waste Treatment or Disposal Sites, Control of Major Accident Hazards Site (COMAH), Explosive Sites, Notification of Installations Handling Hazardous Substances (NIHHS), or Planning Hazardous Substance Consents/Enforcements.

3.4.2 BGS Estimated Soil Chemistry

The table below lists the BGS Estimated Soil Chemistry Values for arsenic, cadmium, chromium, lead and nickel; these are assumed to represent the background concentrations for the soil chemistry. According to BGS/DEFRA Technical Guidance Sheet (TGS) on normal levels of contaminants in English soils, Benzo(a)pyrene, Technical Guidance Sheet TGS04, July 2012 the background concentrations for Benzo(a)pyrene (BaP) are 3.6mg/kg for an Urban Domain and 0.5mg/kg for Principal Domain (for all areas outside an Urban Domain).

Table 3.4-1: BGS Estimated Soil Chemistry

Element	Location	Concentration
Arsenic	Estimated Values (0m from site)	<15 mg/kg
Cadmium	Estimated Values (0m from site)	<1.8 mg/kg
Chromium	Estimated Values (0m from site)	40 - 60 mg/kg
Lead	Estimated Values (0m from site)	<100 mg/kg
Nickel	Estimated Values (0m from site)	15 – 30 mg/kg

3.4.3 Radon

The Envirocheck® Report and UK Radon Map both state that the site is in a lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). The Government website recommends that no radon protective measures are necessary in the construction of the proposed development.

3.5 Vapour

No land uses with the potential to result in ground contamination with vapour risks to the site have been identified.

A single pollution incident relating to oils or fuels within 250m of the Site is recorded in the Landmark Envirocheck report. The incident was recorded on site on 16th June 1997 where 50 gallons of diesel was spilt during a delivery. The receiving water was not specified. The incident was categorised as Category 3 – Minor Incident (Ref. 2702670). Given the age of the pollution incident, it is considered unlikely that the contaminant still has potential to create a vapour risk on site. However, this will be investigated further as part of the ground investigation.

3.6 Controlled Waters

The hydrogeology and groundwater vulnerability at the site has been assessed and is summarised in the following sections.

3.6.1 Classification of Aquifer

The bedrock at the site is classified as a Secondary B aquifer. Secondary B aquifers are defined as: “mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks and openings or eroded layers”.

The superficial deposits at the site are classified as an Undifferentiated Secondary aquifer. Undifferentiated Secondary aquifers are defined as “where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type”.

3.6.2 Groundwater Vulnerability

The strata beneath the site are classified as Medium Vulnerability.

The site is not in an area where there is a Soluble Rock Risk.

3.6.3 Source Protection Zone

The site is not within a Source Protection Zone.

3.6.4 Hydrology

With reference to the 1:50,000 Ordnance Survey map for the site, the nearest surface water feature is a moat approximately 115m to the north-east of the Site. Sketchey Brook, a minor tributary to the River Anker is located approximately 515m south of the Site.

One pollution incident to controlled waters has been recorded within a 250m radius of the proposed Site. This incident is located c.41m to the northwest of the Site and occurred on the 16th June 1997 and categorised as a Category 3 – Minor Incident.

3.6.5 Discharge Consents

There has been a total of 28 Discharge Consents within 1000m of the site; the closest of which is located c.388m south of the site and are operated by Severn Trent Water Ltd.

3.6.6 Water Abstraction

No water abstraction points are located within 250m of the Site. The closest abstraction point is located c.388m south of the site and operated by Richard Roberts Holdings Ltd. This abstraction point has a permit start date of 24th October 1978 and no permit end date has been supplied.

3.6.7 Environmentally Sensitive Land Uses

Two Nitrate Vulnerable Zones are located within the proximity of the site; one Nitrate Vulnerable Zone is in the north-western corner of the Site and the other is c.758m north-east of the Site and is associated surface water run-off to the River Derwent, a tributary to the River Trent.

None of the following environmentally sensitive land uses areas have been identified within 1000m of the proposed site – Ancient woodland, Areas of Adopted or Unadopted Green Belt, Areas of Outstanding Natural Beauty, Environmentally Sensitive Areas, Forest Parks, Local Nature Reserves, Marine Nature Reserves, National Nature Reserves, National Parks, Nitrate Sensitive Areas, Ramsar Sites, Sites of Special Scientific Interest, Special Areas of Conservation, Special Protection Areas, or World Heritage Sites.

3.6.8 Risk of Flooding

The flood risk classification for the site on the government flood risk mapping website is defined as having **no risk** for surface water flooding on site. Approximately 20m north-east of the site there is a low-medium risk of surface water flooding. The site is not within an area designated as being at risk from flooding from rivers, the sea and reservoirs

The Envirocheck® Report states that the groundwater flooding potential for the site is classified as having **no risk**.

The Environment Agency (EA) Flood Map for Planning shows the site to be within a Flood Zone 1 in an area with a low (0.1% chance per year) probability of flooding. A flood risk assessment is not required on Site unless any of the following is true:

- The site is bigger than 1 hectare.
- The site is in an area with critical drainage problems as notified by the EA.
- The site is Identified as being at increased flood risk in future by the local authority's Strategic Flood Risk Assessment.
- The site is at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling).

Figure 3.6-1: Extent of Surface Water Flooding

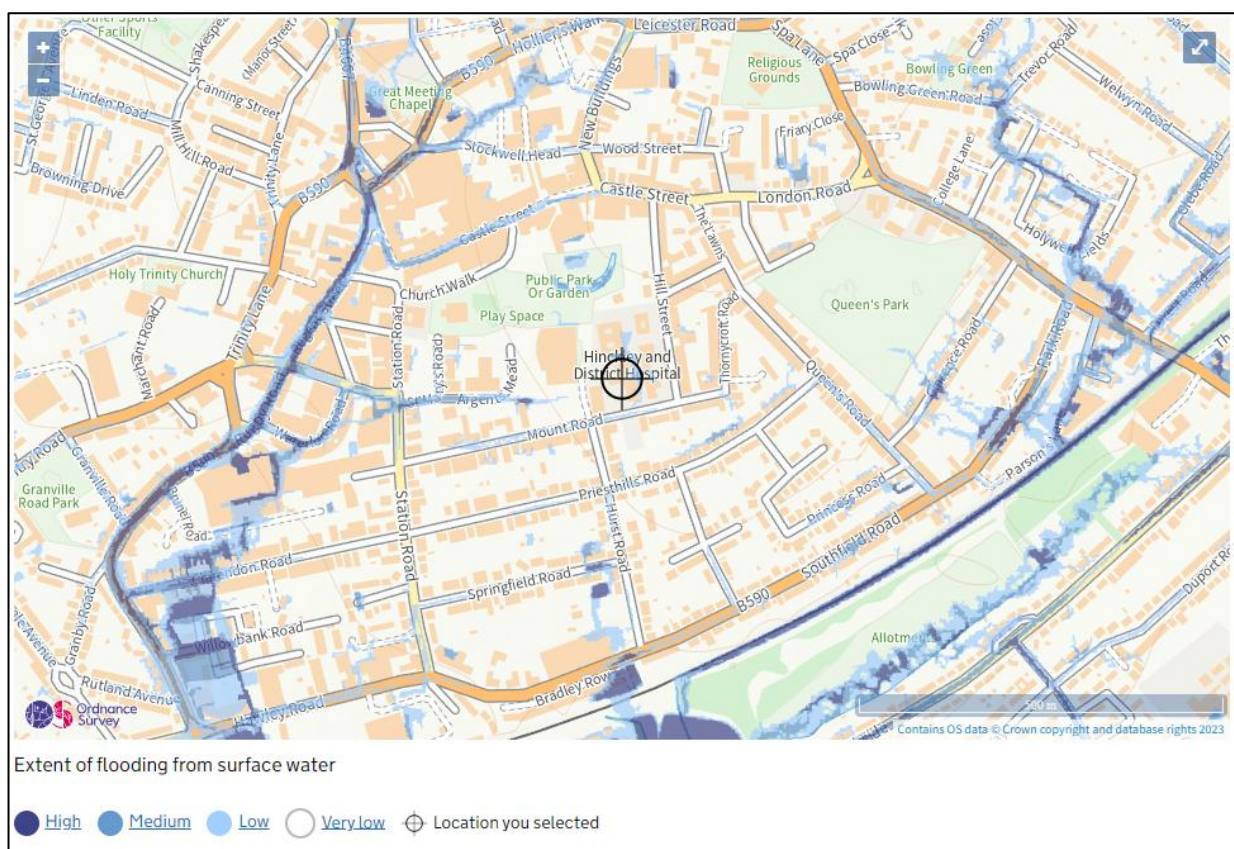


Figure 3.6-2: Extent of Flooding from Rivers or the Sea

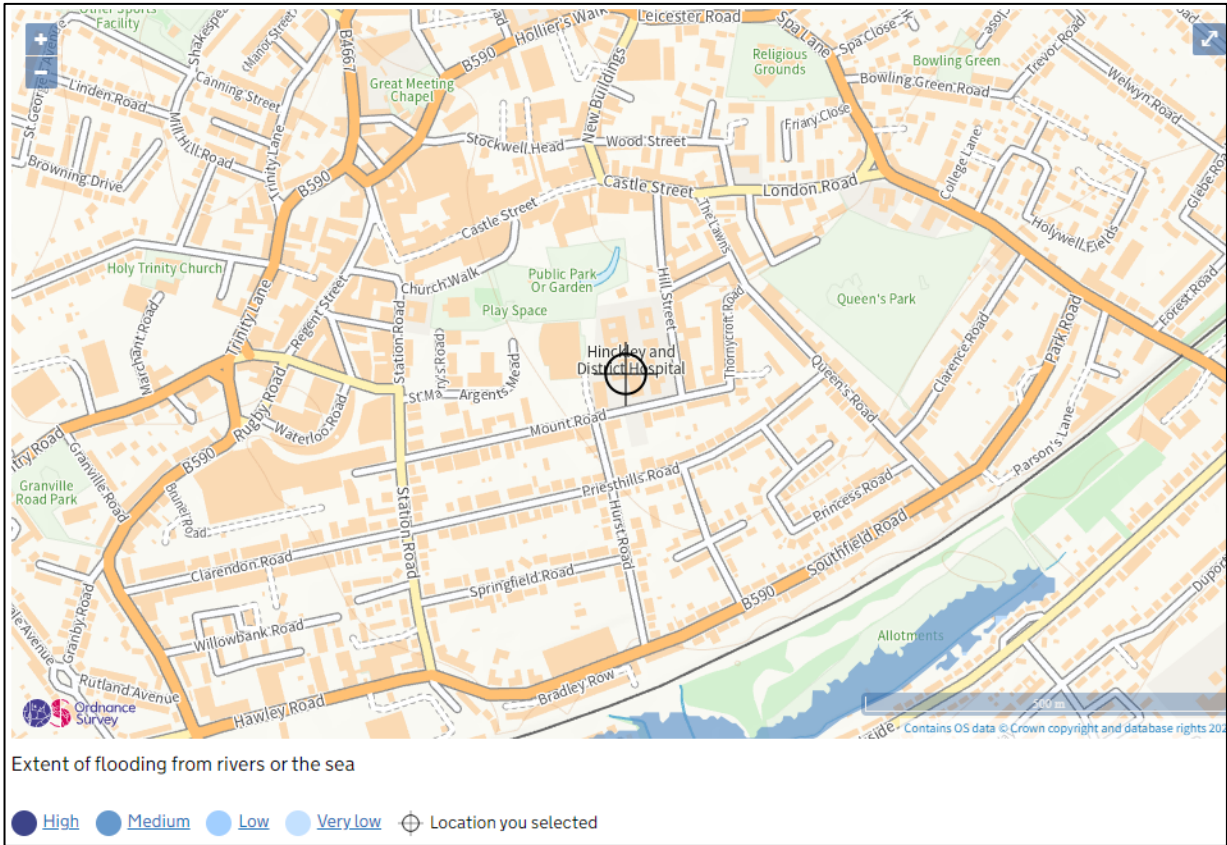
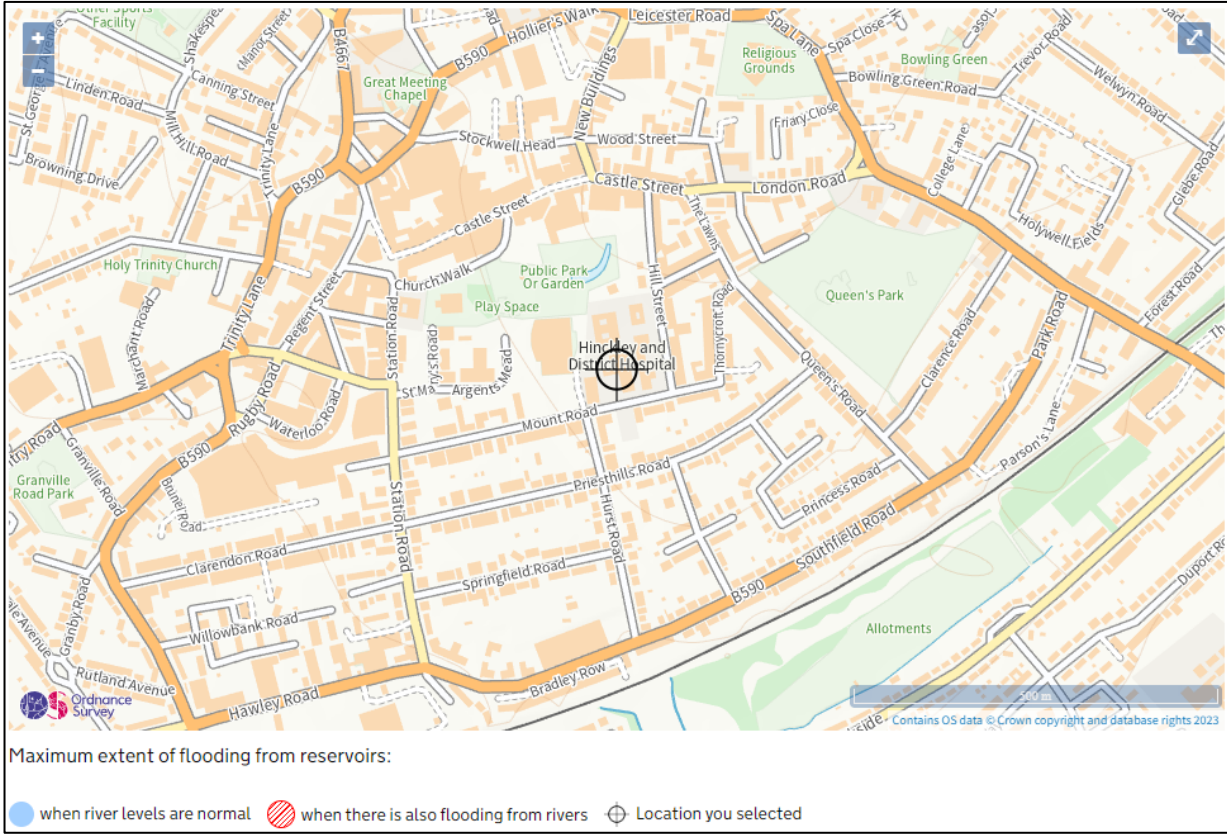


Figure 3.6-3: Extent of Flooding from Reservoirs



3.7 Walkover Survey

A walkover survey of the site was undertaken on 05/03/25.

Much of the site is currently covered by the x-ray building which is dilapidated and in the process of being demolished. There is numerous evidence of buried services across the site with multiple service covers and service buildings being present on the site.

No surface water bodies, or groundwater was identified during the walkover survey.

The site is surrounded by the existing Hinckley and District Hospital building to the east, staff car park to the north, an access road and leisure centre to the west and public road to the south. The nearest residential building is approximately 8m south.

Table 3.7-1: Surrounding Land Use

Direction	Land Use	Potentially Significant Contamination Source	Identified Receptors
North	Hospital buildings	None identified	N/A
East	Hospital buildings	None identified	N/A
South	Residential properties	None identified	N/A
West	Hospital buildings	None identified	N/A

3.8 Geotechnical Assessment

The following ground conditions are anticipated at the site.

Table 3.8-1: Initial Conceptual Ground Model

Anticipated Strata	Expected Depth Range (mBGL)	Expected Thickness (m)	Comments
Made Ground	0 – 1.0	1.0	Anthropogenic ground associated with the previous site use.
Oadby Member	1.0 - 6.0	5.0	Sandy slightly gravelly clay
Wolston Sand and Gravel	6.0 - 15.0	9	Slightly gravelly sand

4 Conceptual Model and Preliminary Risk Assessment

4.1 Introduction

This section of the report comprises a qualitative assessment of the potential for contaminated land to be present at the site. The statutory definition for “contaminated land” being as follows:

“any land which appears to the local authority in whose area it is situated to be in such a condition by reason of substances in, on, or under the land, that:

1. significant harm is being caused or there is significant possibility of such harm being caused; or
2. significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused.”

Consequently, the assessment of contaminated land can be seen as a two-phase risk-based process, comprising:

1. A qualitative assessment of the likelihood of plausible contaminant linkages, i.e. there must not only be a source of contamination, but a pathway and a receptor; and
2. A quantitative element which will seek to determine the degree of harm and the significance of such harm on a receptor.

The Statutory definition of contaminated land was introduced through Part 2A of the Environment Protection Act 1990 to specifically address the historical legacy of land contamination. Where a site is being submitted for redevelopment under the planning regime it should on completion be suitable for use and should not be capable of being determined Contaminated Land under Part 2A of the Environment Protection Act 1990.

It is proposed to construct a new single-storey building within the development area controlled by Darwin. The construction is assumed to be a modular construction. The Darwin Group drawing reference 180769-DGL-02-XX-DR-A-1402(P3) – Proposed Landscaping Plan indicates that the new building will be surrounded by a mixture of hard and soft landscaping.

Considering the proposed end use of the site and the findings from the desk study presented in the preceding sections a Conceptual Site Model (CSM) has been derived identifying plausible contaminant linkages and a preliminary risk assessment undertaken as set out below to determine whether plausible significant contaminant linkages are present.

4.2 Sources of Contamination

The site has potential for the following sources of contamination:

Table 4.2-1: List of Possible Contamination

Contaminant	Source of Contamination		
	Made Ground including the area of the diesel spill	Existing building including boiler room	Former Electrical Substation.
Metals	x		
PAH's	x	x	
TPH's	x	x	
PCB's			x
Combustible Materials		x	
BTEX			
VOC/SVOC			
Asbestos	x	x	
Detergents acid/alkali			
Ground Gas			
Vapours	x	x	

4.3 Pathways for Migration

Whilst the pathways for migration of potential contaminants are limited in places by the presence of hard cover when the redevelopment is completed, there are areas of proposed soft landscaping.

The site is underlain by strata which is classified as being medium vulnerability in terms of groundwater protection as it offers some protection from pollution.

The presence of any Made Ground above the soil strata would increase the potential for migration/leaching of contaminants and ground gases.

There is also the potential for pathways to be created along new infrastructure including utility trenches and pipework as well as foundations. The development could also result in direct contact between any contaminants and construction materials.

4.4 Potential Receptors

The potential receptors include, site users, maintenance workers, construction workers, buildings and buried structures and services, controlled waters (Secondary B Aquifer) and flora.

4.4.1 Assessment of Plausible Contaminant Linkages

A risk assessment of the identified plausible contaminant linkages has been undertaken for the site in line with current legislation described above. (The assessment takes into consideration the sources of possible contamination risk and the presence of any plausible pathways or receptors as outlined in the Environmental Protection Act 1990 (Part 2A)). The risk assessment has been undertaken on the understanding that the site is to be developed as a single-storey building. As such, some assumptions have been made with respect to the following assessment as set out immediately below. The geo-environmental risk assessment should be reviewed in the event that the proposed end use is significantly altered from that described in Section 3.1.

It has been assumed that appropriate health and safety practices will be adopted during site clearance, preparation, earthworks and construction, and appropriate environmental protection / mitigation measures will be employed. It is also assumed that the proposed development will not introduce contaminative substances into the ground. It is proposed that the new building will be surrounded by hard landscaping with limited soft landscaping.

In summary as can be seen from the PRA, there is a perceived low risk of contamination affecting the development. Table 4.4-1 presents a qualitative assessment of the significance of the plausible contaminant linkages identified, those that are likely to only occur during construction are highlighted in italics. The classifications of consequence (severity) are taken from R&D Publication 66 (NHBC and Environment Agency, 2008). Whilst this is for housing the classifications have been applied to a broad range of development scenarios. It should be noted that as this PRA is based on desk study information, it has been assumed where there is no definite evidence of whether contamination is present or not or the significance of this contamination, that generally a “medium” consequence category has been selected.

In summary, as can be seen from the PRA above, there is generally a perceived Low Risk of contamination affecting the development.

Table 4.4-1: Plausible Contaminant Linkages and Qualitative Preliminary Risk Assessment

For the Proposed Development (Based on desk study information)

Source	Pathway	Receptor	Consequence	Probability	Risk
Hazards to Human Health					
Made Ground including the areas of the diesel spill	Direct Contact / Ingestion / Inhalation	Site Users/ Maintenance Workers	Medium	Low Likelihood	Low Risk
	Direct Contact / Ingestion / Inhalation	Construction workers ^{1 2}	Medium	Low Likelihood	Low Risk
	Permeation to potable water supplies	Site Users	Medium	Unlikely	Low Risk
Existing building including boiler room	Direct Contact / Ingestion / Inhalation	Site Users/ Maintenance Workers	Severe	Low Likelihood	Low Risk
	Direct Contact / Ingestion / Inhalation	Construction workers ^{1 2}	Severe	Low Likelihood	Low Risk
	Permeation to potable water supplies	Site Users	Severe	Unlikely	Low Risk
Former Electrical Substation	Direct Contact / Ingestion / Inhalation	Site Users / Maintenance Workers	Medium	Low Likelihood	Low Risk
	Direct Contact / Ingestion / Inhalation	Construction workers ^{1 2}	Medium	Low Likelihood	Low Risk
	Permeation to potable water supplies	Site Users	Medium	Low Likelihood	Low Risk
Hazards to Building Fabric, Structures and Services					
Made Ground including the areas of the diesel spill	Direct Contact	Buried structures (concrete)	Medium	Low Likelihood	Low Risk
Sulphates within natural soils	Direct Contact	Buried structures (concrete)	Medium	Low Likelihood	Low Risk
Controlled Waters					
Made Ground including the areas of the diesel spill	Surface water run-off and/or direct percolation from surface into nearby surface water drain	Secondary B Aquifers	Medium	Low Likelihood	Low Risk
Flora					
Made Ground including the areas of the diesel spill	Plant Uptake	Flora in soft landscaping	Medium	Low Likelihood	Low Risk

Notes:

- 1 Due to health and safety requirements risks to workers should be removed by use of appropriate work methods and use of PPE. Information on the risks must be provided in advance of works in accordance with CDM 2015. Residual information on risks shall also be retained on-site in the Health and Safety File to ensure future maintenance workers understand the risks and can mitigate accordingly.
- 2 Plausible contaminant linkages that are likely to only occur during construction are highlighted in italics.
- 3 A source - pathway – receptor connection was not considered to be present for the potential ground contamination associated with the nearby Electrical Substation (PCBs) as the area is currently covered with hardstanding and is down-slope from the proposed development.

5 Conclusions

5.1 Environmental

The site is considered to present a low risk to future users from contamination or gas. The existing building contains a significant amount of asbestos containing materials. These materials are currently being removed by a specialist contractor and the building is due to be demolished.

It is recommended that an intrusive ground investigation is undertaken at the site. Samples of the shallow soils should be taken during the intrusive ground investigation works to confirm the presence of the potential contaminants listed in Table 4.2-1.

Depending on the depth of any Made Ground encountered during the ground investigation, it may be necessary to install gas monitoring standpipes to allow the gas monitoring to be undertaken.

5.2 Geotechnical

The intrusive ground investigation should confirm the strata below the site in the potential zone of influence of the foundations. In-situ and laboratory testing should be undertaken to determine the characteristic properties of each strata for geotechnical design. The presence of any groundwater should be recorded and groundwater levels should be monitored. The aggressivity of the ground should be assessed to confirm the potential effects on construction materials.

Appendix 1: Photographs from Walkover Survey

Photograph 1: Northern Part of Site Looking South



Photograph 2: Western Part of Site Looking South



Photograph 3: Southern Part of Site Looking North



Photograph 4: Western Part of Site Looking North



Appendix 2: Envirocheck Report