

Phase 1 Desk Study and
Preliminary Geoenvironmental Assessment

For a site at

Windermere Walk, Openshaw

Undertaken on behalf of

Eco-Res LLP

Report Title:	Windermere Walk, Openshaw Phase 1 Desk Study and Preliminary Geoenvironmental Assessment
Report Reference:	8755G-A-WML-00-XX-RP-G-0001
Client:	Eco-Res LLP
Issue Date:	10th June 2019
Drafted By:	T P Booth 
Reviewed By:	S C Seddon 
Authorised By:	P G Davies 

This document has been prepared for the titled project (or named part thereof) and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authorization being obtained from WML Consulting. WML accepts no responsibility or liability for the consequences of the use of this document, wholly or in part, for any other purpose than that for which it was commissioned. Any persons so using or relying upon this document for such other purpose do so at their own risk.

This report was prepared for the sole use of the Client and shall not be relied upon or transferred to any other party without the express written authorisation of WML. It may contain material subject to copyright or obtained subject to license; unauthorised copying of this report will be in breach of copyright/license.

The findings and opinions provided in this document are given in good faith and are subject to the limitations imposed by employing site assessment methods and techniques, appropriate to the time of investigation and within the limitations and constraints defined within this document. The findings and opinions are relevant to the dates when the assessment was undertaken, but should not necessarily be relied upon to represent conditions at a substantially later date.

The findings and opinions conveyed in this report are based on information obtained from a variety of sources as detailed and which WML assumes to be reliable, but has not been independently confirmed. Therefore, WML cannot and does not guarantee the authenticity or reliability of third party information it has relied upon.

Where opinions expressed in this report are based on current available guidelines and legislation, no liability can be accepted by WML for the effects of any future changes to such guidelines and legislation.

The limitations of liability of WML for the contents of this document have been agreed with the Client, as set out in the terms and conditions of offer and related contract documentation.

WML Consulting Ltd
No. 8 Oak Green,
Earl Road,
Stanley Green Business Park,
Cheadle Hulme,
Cheshire
SK8 6QL

Tel: 0161 482 0600
Email: info@wmlconsulting.com
www.wmlconsulting.com

CONTENTS

1.0	INTRODUCTION	1
	Appointment	1
	Proposed Development	1
	Objective.....	1
	Scope	1
2.0	SITE SETTING.....	2
3.0	ENVIRONMENTAL SETTING	3
4.0	HISTORICAL SETTING.....	6
5.0	PRELIMINARY CONTAMINATION RISK ASSESSMENT	7
	Introduction	7
	Preliminary Risk Assessment.....	9
6.0	PRELIMINARY GEOTECHNICAL AND OTHER CONSIDERATIONS	11
	Geotechnical Considerations	11
7.0	SUMMARY AND RECOMMENDATIONS	12
	Site Investigation.....	12

APPENDICES

Appendix 01	-	Drawings
Appendix 02	-	Site Photographs
Appendix 03	-	GroundSure Environmental Insight Report
Appendix 04	-	Coal Authority Report
Appendix 05	-	Qualitative Risk Assessment Guidance

1.0 INTRODUCTION

Appointment

- 1.1 WML Consulting has been commissioned by Eco-Res LLP to undertake a Phase 1 Desk Study and Preliminary Geo-environmental Assessment at a site located off Windermere Walk in the Openshaw area of Manchester.

Proposed Development

- 1.2 It is understood that the current proposed redevelopment relates to the construction of 8no one and two bedroom bungalows with external hardstanding for parking and private gardens.
- 1.3 A copy of the proposed development plans by GWPA, referenced FO1861-GWP-01-XX-PP-A-CAPACITY-P02.1, is presented in Appendix 01.

Objective

- 1.4 The purpose of the desk study is to collate available geological and environmental data for the site and its environs in order to undertake a preliminary geotechnical and geoenvironmental appraisal and thus inform a site-specific conceptual model.
- 1.5 This enables a preliminary assessment of geo-environmental risks to be undertaken and provides information for the design of a geotechnical and geo-environmental ground investigation.
- 1.6 This follows recommendations set out in the Environment Agency (EA) Model Procedures for the Management of Land Contamination 2004, CLR11.

Scope

- 1.7 The desk study has comprised a site reconnaissance visit on 3rd June 2019 and a review of the following information sources:
- British Geological Survey (BGS) 1:50,000 scale, Sheet 85 'Manchester' (Solid & Drift edition).
 - BGS Digital Geological Map of Great Britain (DiGMapGB-50; available as a web map service).
 - The site and surrounding area's geological and environmental setting from data presented in the site specific GroundSure Environmental Insight Report (Appendix 03).
 - Historical Ordnance Survey maps as provided by GroundSure (Appendix 03).
 - Coal Authority Ground Subsidence Report (Appendix 04).
 - Coal Authority (CA) interactive map viewer (available as a web map service).
 - UKradon Indicative Atlas of radon in England and Wales as provided by Public Health England.
 - BRE Publication 211 (2015) "Radon: Guidance on Protective Measures for New Buildings".
 - Review of free public sector information through QGIS viewer licensed under the Open Government Licence v3.0.

2.0 SITE SETTING

Description	Comments
Site Address	Land at Windermere Close Openshaw Manchester M11 2BB
National Grid Reference	387309E, 397684N
Site Area	0.08 hectares
Site Location	The site is bounded by:- North – Outrington Drive East – Residential structures off Mill Street South – Area of car parking with Mill Court beyond West – Windermere Close with further residential structures beyond The site location is indicated on the plan presented in the Groundsure report in Appendix 03.
Site Description	The site is grassed, with areas of asphalt and concrete paving around the perimeter. Two semi-mature deciduous trees are located adjacent to the site boundary, one to the north-east and one to the north-western corner. Evidence of existing services in the form of two service covers have been identified in the central and south-western sections of the site. Presently, a timber knee rail surrounds the site to all sides with a gap allowing access from Windermere Close located in the south-western corner. Roads bound the site to the north-west and south-west with a paved pedestrian walkway to the north and east. Surrounding land is predominantly occupied by residential developments to the south, west and east, with an area of public open space beyond Outrington Drive to the north. Photographs of the site and immediately surrounding area are provided in Appendix 02.
Topography	The site occupies a generally level area of land which is commensurate with the surrounding topography. However, prior to the issue of this report a topographical survey had not been undertaken.

3.0 ENVIRONMENTAL SETTING

3.1 The following sections on the environmental setting of the site are summarised from the GroundSure Enviro Insight Report and a review of the information sources outlined within Section 1.5.

Description	Comments	
Geology (1:50, 000 scale Map Sheet and digital mapping)	Superficial Deposits	The site is indicated to be underlain by Devensian Glacial Till which mainly comprises clay with locally interbedded sand and gravel horizons.
	Solid Strata	The drift deposits are underlain at greater depths by the Carboniferous Pennine Upper Coal Measures Formation (PUCM). These generally comprise interbedded mudstone, siltstone, sandstone and coal seams. 3no coal seams are conjectured to sub-crop within 500m to the north-east of the site, namely the Openshaw Coal (172m), Charlotte Coal (328m) and Bradford Three Quarters Coal (468m). As the solid geology is indicated to dip generally to the south-west at angles of between 15° and 20°, the coal seams will exist beneath the site at unknown depths.
Radon	The property is not in a radon affected area as defined by the BGS/Public Health England as less than 1% of properties are above the action level of exposure. Therefore, no radon protection measures are necessary for new structures as described in publication BR211 by the Building Research Establishment.	
Mining and Subsidence	In consideration of the information provided within the GroundSure Report and the underlying geology comprising the Pennine Upper Coal Measures, a Coal Authority (CA) Mining Report has been obtained and reviewed. The report, which is presented in Appendix 04, indicates that the property is in the likely zone of influence from 8no seams of coal between 160m to 1040m depth, these being last worked in 1957. The report goes on to state that ground movements from these workings should have stopped by now. The CA states that there are no known mine entries at, or within 20m of the boundary of the property. The CA interactive web-based viewer indicates that the site is not within a 'Development High Risk Area' and is not indicated to be directly underlain by past shallow coal workings. In consideration of the information provided by the CA and BGS, the probability of unrecorded old abandoned mine workings occurring beneath the site is considered low and can be discounted.	
Hydrogeology	Superficial Aquifer	Secondary (Undifferentiated) Aquifer This category is assigned where it is not possible to attribute either category A or B to a stratum.
	Bedrock Aquifers	Secondary (A) Aquifer

Description	Comments		
		These comprise permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.	
	Source Protection Zone (SPZ)	Not located within an SPZ.	
	Groundwater Abstractions within 250m	None.	
Hydrology	Surface Water Features within 250m	Clayton Brook, an underground river is located approximately 210m east at its closest point.	
	Surface Water Abstractions within 250m	None.	
Landfill and Waste Management Activity	Active/closed landfills within 250m	None.	
	Historical (Environment Agency/Local Authority) Landfill within 250m	None.	
	Other Waste Sites within 250m	None.	
Industrial Land Use Information	There are 12no potentially contaminative industrial sites within 250m of the subject site. The most relevant of these relate to:-		
	Distance (m)	Direction	Activity
	65	E	Telephone exchange
	149	NE	Medical equipment, supplies and pharmaceuticals
	182	S	Works
	Underground High Pressure Pipelines within 500m	None.	
	Petrol Filling Stations within 250m	None.	
Environmental Permits, Incidents and Registers	Permits Incidents/Registers	Distance (m)	Comments
	IPC Authorisations, Part A(1),	250	None

Description	Comments		
	Part A(2) Authorised Activities	250	None
	Part B IPPC Authorised Activities	250	None
	List 1 or List 2 Dangerous Substances Inventory Sites	250	None
	Radioactive Substance Authorisations	250	None
	COMAH & NIHHS Sites	250	1no historical COMAH site at Ciba Speciality Chemicals 190m north-east
	Contaminated Land - Section 78R of the Environmental Protection Act 1990	250	None
Potential Flood Risk	Detailed assessment of flood risk is outside the scope of this report. However, reference to the Environment Agency website and the Groundsure report indicates that the Risk of Flooding from Rivers and the Sea (RoFRaS) is currently designated as 'very low'. The site is indicated on BGS records to be within an area which is considered to have a potential susceptibility at the surface to superficial deposits flooding. The BGS confidence rating for this assessment is considered 'Moderate'.		
Environmentally Sensitive Sites	There are no designated environmentally sensitive sites within 250m of the study site.		
Archaeological Information	No archaeological information has been obtained for the purpose of this report. Where considered appropriate reference should be made to an archaeological consultant in this respect.		

4.0 HISTORICAL SETTING

- 4.1 The historical development of the site has been determined by reference to archive Ordnance Survey (OS) map extracts obtained from the GroundSure EnviroInsight Report in Appendix 03.
- 4.2 The site was undeveloped until sometime prior to 1891 when residential terraced housing was constructed along Kendall Street. By the late 1970's the structures had been cleared and the site was redeveloped for continued residential housing, now fronting Windermere Close to the south-east.
- 4.3 The surrounding area has historically comprised undeveloped rural/agricultural land with localised residential developments. During the 1890's and 1900's, mixed residential and industrial development occurred within the surrounding area. During this time the following were noted.
- Clay Pit – 100m south, infilled by 1891
 - Bradford Bleach Works – 100m north-west
 - Otto Gas Engine Works – 300m south
 - Church Fields Brickworks - 400m east, infilled by 1908
 - Clayton Colliery – 400m north-east
 - Clayton Dye Works - 450m east
- 4.4 On the basis of the site's past use, significant sources of ground contamination are not anticipated. However, the presence of Asbestos Containing Material (ACM) and asbestos fibres within near surface soils resulting from historical site demolition cannot be wholly discounted.

5.0 PRELIMINARY CONTAMINATION RISK ASSESSMENT

Introduction

- 5.1 The following paragraphs outline a Preliminary Risk Assessment (PRA) for the site as defined by DEFRA and the EA Model Procedures for the Management of Land Contamination, CLR11 (2004).
- 5.2 The table in Paragraph 5.4 provides a Preliminary Conceptual Model (PCM) which defines the site in terms of a potential pollution linkage, that is, whether a pathway exists between a contamination source and a sensitive environmental receptor (Source-Pathway-Receptor relationship).
- 5.3 The table considers whether a pollution linkage is potentially present or not and provides a preliminary qualitative assessment of risk, based on the information currently available and in accordance with guidance provided in the CIRIA document C552 (2001) Contaminated Land Risk Assessment – A guide to good practice. The risk evaluation process is described further in Appendix 05.
- 5.4 Where a possible linkage is identified, it does not necessarily mean that a significant risk exists, but indicates that further information is required through appropriate site investigation to substantiate the conceptual model.

Source	Pathway	Receptor	Probability of Linkage	Comment
The likelihood of significant ground contamination sources being present at the site due to its past use is considered low. However, the presence of ACM within shallow made ground cannot be wholly discounted at this stage.	Direct contact, ingestion of soil, dermal contact, dust exposure pathways.	Current Site Users	Unlikely	Due to the transient nature of the site use, no significant long-term direct exposure scenario is considered likely. Therefore the risk to current site users is considered LOW .
		Site End Users	Unlikely	The provision of buildings and new hard cover will break any envisaged direct contact pollution linkage further, although residual risks of direct exposure will remain within soft landscaped areas. The preliminary risk to future site end users is however considered LOW .
		Construction Workers	Unlikely	Construction workers will be exposed to sub-soils during earthworks and foundation construction. However, any perceived contamination risks will be mitigated by adopting good site working practices including appropriate health and safety measures during the works, thus providing a LOW preliminary risk.
		Adjacent land users	Unlikely	Contact via wind-blown dust/debris, particularly during the development phase is possible although the exposure time would be relatively short. The current risk is considered LOW although this could increase during construction works. Appropriate health and safety measures adopted during site development, including dust suppression measures, will ensure that the risk remains low.

Source	Pathway	Receptor	Probability of Linkage	Comment
The likelihood of significant soluble and/or liquid and therefore mobile contaminants occurring at the site due to its past use is considered low.	Direct downward migration through leaching and/or mobile liquids.	Groundwater	Unlikely	In view of the relatively low sensitivity of the underlying aquifer across the majority of the site, lack of anticipated contamination sources together with the likely presence of intervening cohesive and therefore relatively impermeable glacial till, the risk to groundwater is considered LOW .
	Off-site migration in groundwater or surface water flow.	Surface water	Unlikely	There are no surface water features within influencing distance of the site. The preliminary risk to surface water is therefore considered VERY LOW .
		Groundwater and surface water abstractions	Unlikely	The site is not within an Environment Agency SPZ with no active groundwater / surface water abstraction licenses within 250m. The risks to groundwater/surface water abstractions are therefore considered VERY LOW .
		Adjacent Properties	Unlikely	The presence of significant mobile contaminants is considered unlikely. Therefore, the preliminary risk to adjacent properties is assessed as LOW .
		Ecology	No linkage anticipated	There are no designated environmentally sensitive sites within 250m of the study site. The risk to the surrounding ecology is therefore considered VERY LOW .
The likelihood of significant volatile contamination occurring at the site due to its past use is considered low.	Inhalation of harmful vapours (indoor and outdoor airspaces)	Current Site Users	No linkage anticipated	With site use being currently transient, no plausible long-term exposure scenario is anticipated. Therefore the preliminary risk to current site users is assessed as VERY LOW .
		Site End Users	Unlikely	Significant sources of volatile contaminants at the site are not anticipated. The preliminary risk from inhalation of indoor/outdoor air is therefore considered LOW .
		Construction Workers	Unlikely	In the unlikely event of construction workers coming into contact with volatile compounds, the exposure time would be relatively short. The chronic exposure risk to construction workers, assuming that appropriate health and safety measures will be adopted, is therefore considered LOW .
		Adjacent Properties	Unlikely	Significant sources of volatile contaminants at the site are not anticipated. Therefore the preliminary risk to adjacent properties and users is assessed as LOW .

Source	Pathway	Receptor	Probability of Linkage	Comment
Appreciable thicknesses of made ground with the potential to produce significant volumes of hazardous ground gas at the site are unlikely. Nevertheless, nearby historic in-filled field ponds and reservoirs could include degradable materials with the potential to generate hazardous landfill gases off-site. However in consideration of the time since in-filling, the potential to continue generating significant volumes of gas is low. The potential for hazardous gases to arise from shallow coal workings or seams is low.	Emissions from the ground beneath the site collecting in confined spaces and excavations	Construction/ services maintenance workers	Unlikely	The potential to generate significant volumes of toxic and/ or flammable/ explosive gas beneath the site is considered low. Also, vertical migration of any ground gas arising from shallow abandoned mine workings would be retarded to a degree by relatively impermeable glacial till. Assuming that appropriate health and safety measures will be adopted during construction, the preliminary risk is therefore considered LOW .
	Migration of gases on/off site and collecting in confined spaces on/off site.	Adjoining site users	Unlikely	Relatively impermeable glacial till will inhibit significant movement of any ground gas arising from the site to adjacent properties. Therefore, the preliminary risk to adjacent properties is considered LOW .
		Current/future site users	Unlikely	Intervening relatively impermeable Glacial Till will inhibit significant migration of hazardous gases from external sources towards the site. The potential risk to current and future site users is therefore considered LOW although this will need to be confirmed by an appropriate level of ground investigation and monitoring.
The site is not in an area which is affected by naturally occurring radon gas.	Natural emissions from the ground collecting in confined spaces within buildings	Site end users	No linkage envisaged	The site is not located in an area where radon protection measures are required. No further action is necessary regarding radon protection as the risk is VERY LOW .
Chemicals which could prove aggressive to construction materials are unlikely to be present on site.	Direct contact	Construction concrete, plastic water pipes.	Unlikely	Any risks to construction materials identified after site investigation and assessment will be mitigated as part of the structural design. The perceived risk is therefore considered LOW .

Preliminary Risk Assessment

- 5.5 Under the proposed development scenario, potential pollution linkages are on the whole unlikely with associated preliminary risks being assessed as low.
- 5.6 The approach at the Phase 1 Desk Study stage, however, must be precautionary until such time as uncertainties in the conceptual model can be verified by appropriate site investigation.

- 5.7 Such uncertainties relate, in the main, to the potential presence, albeit low, of ACM in shallow soils as a result of previous unrecorded demolition together with the potential for hazardous ground gas, albeit low, associated with surrounding in-filled field ponds and reservoirs.

6.0 PRELIMINARY GEOTECHNICAL AND OTHER CONSIDERATIONS

Geotechnical Considerations

Geotechnical	Summary
Ground obstructions	Foundations and former floor slabs associated with the previous structures may be encountered and will need to be broken out to suitable depths where they impact on the proposed development.
Foundations and Floor Slabs	Significant thicknesses of made ground are not envisaged with foundations on the whole likely to be of traditional spread type on firm or stronger natural glacial till. However, the presence of residual basement structures associated with historical residential structures, cannot be discounted with foundations possibly requiring to be extended to greater depths as a result. Foundation design will also need to take account of shrinkage/heave effects due to the presence of existing and/or removed trees. Foundation options will therefore be subject to detailed ground investigation and assessment.
Soakaways	In consideration of the potential cohesive nature of the natural soils, soakaways are not considered to be a feasible drainage option. However, this will need to be confirmed by ground investigation followed by possible large scale infiltration tests at drainage design stage if granular strata are encountered.

7.0 SUMMARY AND RECOMMENDATIONS

Development Considerations	Comments
Shallow Coal Mining	Low risk.
Flood Risk	Very low risk.
Ground Obstructions	Foundations and floor slab may be encountered associated with the previous structures.
Foundations	Foundations likely to be of traditional spread type on firm or stronger natural Glacial Till. The presence of residual basement structures associated with historical residential structures, cannot be discounted with foundations possibly requiring to be extended to greater depths as a result. Foundation design will also need to take account of shrinkage/heave effects due to the presence of existing and/or removed trees.
Ground Contamination	Low risk. This will need to be confirmed by ground investigation and chemical analysis.
Hazardous Ground Gas	None envisaged, but may be subject to confirmatory monitoring if natural organic / degradable materials are encountered during ground investigations.
Radon	No radon protection measures are required.
Soakaway Drainage	Soakaways are not considered to be a feasible drainage option at this stage.

Site Investigation

- 7.1 Site investigations will be necessary to provide information on the physical and chemical ground conditions. This will enable assumptions made in the preliminary site conceptual model to be confirmed or modified so as to assess the actual environmental risks posed by the site. Chemical analysis will also allow a classification of soil for re-use/disposal purposes, should this be required.
- 7.2 The investigation will also need to include the installation of ground gas monitoring standpipes with subsequent monitoring for hazardous ground gas concentrations and flow.
- 7.3 In addition, appropriate investigation will be required to establish geotechnical parameters for the design of foundations, floor slabs and pavement construction.
- 7.4 Site investigations should be undertaken in accordance with BS5930:2015, Code of Practice for Ground Investigations and BS 10175:2011, Investigation of Potentially Contaminated Sites, Code of Practice.

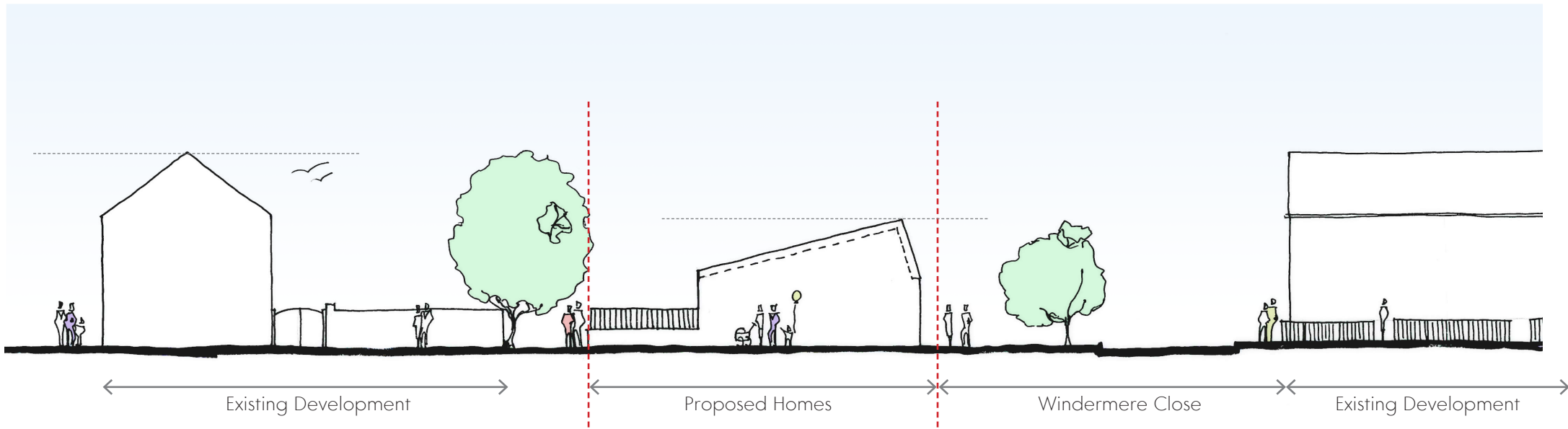
APPENDIX 01

Drawings

3.4 - Mix of Bungalow Types



3.6 - Perspectives



3.7 - Perspectives



APPENDIX 02

Site Photographs



Photograph 1
View south-east from the north-western corner of the site.



Photograph 2
View south across the western part of the site.



Photograph 3
View south-east across the central part of the site.



Photograph 4
View north across the northern part of the site.



Photograph 5
View north-west towards a single semi-mature deciduous tree located in the north-western corner of the site.



Photograph 6
View south-east across the southern part of the site.

APPENDIX 05

Qualitative Risk Assessment Guidance

Qualitative Risk Assessment Guidance

The Preliminary Contamination Risk Assessment methodology within the Phase 1 Desk Study Report is undertaken with reference to the following CIRIA guidance.

- Contaminated Land Risk Assessment - A Guide to Good Practice CIRIA C552:2001.

In practical terms, risk evaluation is undertaken in order to ascertain if potential risks are considered to be acceptable via classification following factors.

- The magnitude of the potential **consequences** (severity) of the risk occurring.
- The magnitude of the **probability** (likelihood) of the risks occurring.
- The potential consequences of contamination risks occurring at the Site should be classified in accordance with the following table which is adapted from Table 6.3 in the CIRIA guidance.

Table 1 Classification of Consequence

Classification	Definition
Severe	Short term (acute) risk to human health likely to result in 'significant harm' as defined by the <i>Environment Protection Act 1990</i> , Part IIA. Short term risk of (significant) pollution of sensitive water resource or ecosystem. Catastrophic damage to building/property. Short term risk to a particular ecosystem, or organism forming part of such an ecosystem.
Medium	Chronic damage to human health (significant harm). Pollution of sensitive water resources. A significant change in a particular ecosystem, or an organism forming part of such an ecosystem.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services. Damage to sensitive buildings/structures/services or the environment.
Minor	Harm, although not necessarily significant harm, which may results in a financial loss, or expenditure to resolve. Non-permanent, easily preventable effects to human health. Easily repairable damage to buildings, structures and services.

The probability or likelihood of a risk occurring is then classified in accordance with Table 6.4 in the CIRIA Guidance which is also reproduced in Table 2 below.

Table 2 Classification of Probability

Classification / Likelihood	Definition
High	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution.
Likely	There is a pollutant linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period that such an event would take place and is even less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

These classifications are then compared to indicate the risk to each pollution linkage. For each likelihood scenario, it will be assumed that a pollution linkage exists between the source and any potential receptors. The classification is not applied if no active pollution linkage is perceived to exist.

Upon classification of both the consequences and probability, the two can be compared in Table 6.5 within the guidance, in order to produce a risk category rating. The risk categories range from 'Very High Risk' to 'Very Low Risk' and should be determined for each potential pollutant linkage as oppose to each receptor or hazard as indicated above.

The matrix table is reproduced in Table 3 below.

Table 3 Consequence Vs Probability Matrix

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

The outcome of the Consequence vs Probability matrix should be compared to the risk definitions and likely actions required in Table 4 (Table 6.6 in CIRIA C552).

The outcome will then determine the overall risk category for the site and should form the basis for any proposed investigation work and remedial actions to be determined. The assessment is based on a qualitative approach at the initial Phase 1 Desk Study, and should be updated following the results of any subsequent ground investigation results.

Table 4 Definitions of Classified Risks and Likely Required Actions

Risk Category	Definition
Very High	There is a high probability that severe harm could arise to a designated receptor from an identified hazard OR, there is evidence that severe harm to a designated receptor is currently happening. This risk (if realised) is likely to result in a substantial liability. <u>Required Actions</u> <i>Urgent investigation (if not undertaken already) and remediation are likely to be required.</i>
High	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. <u>Required Actions</u> <i>Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.</i>
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, if it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is likely that the harm would be relatively mild. <i>Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.</i>
Low	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.