



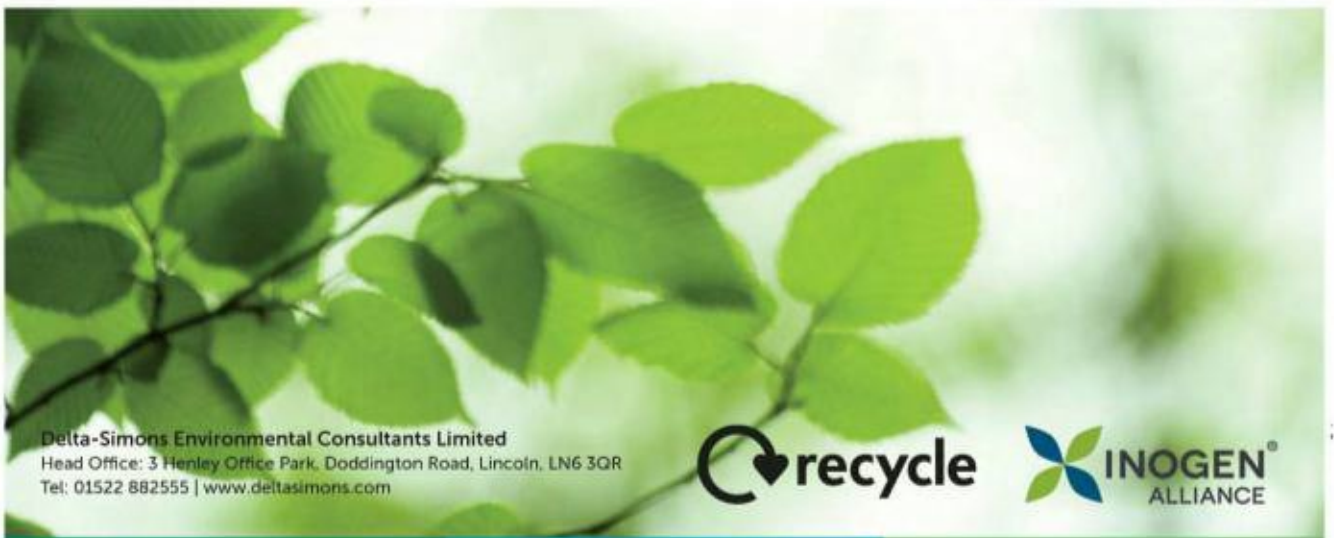
Preliminary Geo-Environmental Risk Assessment

Brockhampton West, Harts Farm Way, Havant, Hampshire

Presented to **Clowes Developments (UK) Ltd**

Issued: February 2021

Delta-Simons Project No. 19-2099.01



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Report Details

Client	Clowes Developments (UK) Ltd
Report Title	Preliminary Geo-Environmental Risk Assessment
Site Address	Brockhampton West, Harts Farm Way, Havant, Hampshire
Project No.	19-2099.01
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Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
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About us

Delta-Simons is a trusted, multidisciplinary environmental consultancy, focused on delivering the best possible project outcomes for customers.

Specialising in Environment, Health & Safety and Sustainability, Delta-Simons provide support and advice within the property development, asset management, corporate and industrial markets. Operating from ten locations - Lincoln, Birmingham, Bristol, Dublin, Leeds, London, Manchester, Newcastle, Norwich and Nottingham - we employ over 100 environmental professionals, bringing experience from across the private consultancy and public sector markets.

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Executive Summary

Brief	Delta-Simons Environmental Consultants Limited ("Delta-Simons") was instructed by Exton Estates on behalf of Clowes Developments (UK) Ltd (the "Client") to prepare a Preliminary (Geo-Environmental) Risk Assessment to support a planning application for a proposed B2/B8 development (the 'Proposed Development') at the site known as Brockhampton West, Harts Farm Way in Havant, Hampshire (the 'Site').
Site Use & Surrounding Area	The Site is currently an unoccupied parcel of grassland that previously was part of a wider landfill Site, with limited areas of hardstanding in the centre. The Site includes a small access road branching from Harts Farm Way along the southern Site boundary. Unoccupied fields and parks occupy much of the surrounding area with Storehouse Lake towards the south and Langstone Technology Park towards the west. The Havant Bypass (A27) trends along the northern boundary.
Environmental Setting	<p>The Site is likely underlain by a sequence of placed topsoil, re-engineered clay cover, significant thicknesses of Made Ground associated with historically landfilled waste, predominantly Raised Marine superficial deposits (classified as a Secondary – Undifferentiated Aquifer), and bedrock of the Lewes Nodular Chalk Formation (Principal Aquifer).</p> <p>The nearest surface water feature is Hermitage Stream that flows along the eastern boundary of the Site and flows into Storehouse Lake (Langstone Harbour). Langstone Harbour is a site of significant ecological importance including a Natura 2000 site, Ramsar Site, a Site of Special Scientific Interest (SSSI), a Special Area of Conservation (SAC) and a Special Protection Area (SPA). Sites designated as such are protected by UK law and will require further consideration as part of the assessment of risk associated with the former landfill and in context of the proposed development.</p>
Contamination Potential Sources	<p>Potential sources of contamination have been identified at the Site, specifically the historical landfill site. These areas encompass the majority of the Site as well as much of the immediate surrounding area towards the west and south. The landfill is known to be a domestic unlined tip with key risk drivers being production of leachate with elevated ammonium / metals and ground gas. There is also potential for unknown / localised sources of other contamination including asbestos within the waste mass.</p> <p>The landfill may be adversely impacting nearby ecological receptors, specifically Langstone Harbour , Hermitage Stream (adjacent) and the future Site users/buildings.</p>
Contaminated Land Risk Associated with Ownership	There is considered to be a Low to Moderate risk of enforcement action by the regulatory authorities under Part 2A of the Environmental Protection Act 1990, the Environmental Permitting (England and Wales) Regulations 2016 or the Environmental Damage Regulations 2015. The potential for legal action by surrounding landowners / Third Parties based on the potential for contamination to migrate off-Site (ongoing or historically) and result in private or statutory nuisance is considered to be Low to Moderate .
Development Considerations	<p>Widespread contamination is considered likely and the preliminary risk assessment has identified a Moderate to High risk of soil/groundwater contamination and hazardous ground gas at the Site. Asbestos is likely present within the landfill Made Ground deposits.</p> <p>Soils/materials associated with the existing cover will require physical and chemical characterisation prior to re-use. Landscaped areas in the development may require the import of clean cover.</p> <p>A key risk driver is the impact on the Site to controlled waters, specifically, Langstone Harbour, Hermitage Stream and to a lesser extent the underlying Chalk aquifer which is acknowledged by the Environment Agency (EA) to be acting as a pathway rather than a receptor. Whilst reduced infiltration rates into the landfill waste as a result of the</p>

	<p>development will likely occur, and dependant on the pending investigation/risk assessments, remedial work in this regard might be required.</p> <p>Whilst further detailed assessment work and potential mitigation measures are required, at this stage it is considered unlikely that there will be significant impacts to human health or the wider environment arising from the development proposals. Furthermore, it is considered that following development, in line with recommendations for mitigation and the significant reduction in overall permeability of the Site due to hardstanding, clean cover and a formal drainage system, that a likely reduction in the leachate generation potential of the Site will occur. Based on this it is considered that there will be an overall betterment in respect of existing groundwater risks to the aquifer and more importantly to the adjacent Hermitage Stream and Langstone Harbour beyond.</p> <p>Based on the historic landfill and likely significant ground gas generation potential the installation of ground gas protection measures is considered likely to be required within the proposed buildings to mitigate risks of explosion/asphyxiation.</p> <p>The underlying ground conditions at the Site, most notably the deep fill material, are likely to pose a risk to any shallow foundations of the proposed development due to differential and total settlement issues. As such it would be prudent to allow for the foundations to be piled into the Chalk bedrock. External areas may also require mitigation against settlement due to the waste.</p> <p>Based on prior consultation with the EA there is no specific current acceptable mechanism to disturb and reuse waste materials within the development using the Definition of Waste Code of Practice (DoWCoP) and Materials Management Plan (MMP). Whilst a potential route utilising an Environmental Permit might be an option moving forward to reuse waste materials, this is likely to involve significant programme and cost risks. It would be prudent therefore to allow for off-Site disposal for waste materials that are part of the anticipated cut to form the development platform.</p> <p>Shallow groundwater may also present difficulties with shallow excavations.</p>
<p>Recommendations</p>	<p>In relation to the Site, the following recommendations have been made:</p> <ul style="list-style-type: none"> ▲ An intrusive ground investigation be undertaken to investigate the nature and thickness of the Made Ground; the presence, concentrations and leachability of substances of concern in terms of risk to human health, controlled water and the ecological receptors; likelihood of significant ground gas and/or soil vapour intrusion into future buildings structures; and a geotechnical assessment to aid the design of foundations and engineering solutions. ▲ Additional sampling, laboratory analysis and waste classification may be required for any soils required to be disposed of off-Site; ▲ A Materials Management Plan (MMP) will be required, should non waste materials be proposed for reuse on-Site; ▲ A piling risk assessment will be required to ensure risks to controlled water are managed appropriately; and ▲ A Remedial Strategy is likely to be required to be prepared. <p>Consultation with the relevant regulatory authorities to agree the scope of the ground investigation is being undertaken at the present time and all other aspects of the project will require consultation and approval with these relevant bodies.</p>
<p>This is intended as a summary only. Further detail and the limitations of the assessment is provided within the main body of the Report.</p>	

Table of Contents

1.0 INTRODUCTION.....	1
1.1 Appointment.....	1
1.2 Context & Purpose	1
1.3 Scope of Works	1
1.4 Limitations.....	2
2.0 SITE CONTEXT & DATA REVIEW.....	3
2.1 Site information.....	3
2.2 Environmental Setting	5
2.3 Historical Use of the Site & Surrounding Area	6
2.4 Environmental Database Review	7
2.5 Planning Review/Regulatory Enquiries	8
2.6 Previous Reports/Information.....	8
3.0 CONCEPTUAL SITE MODEL.....	12
3.1 Introduction.....	12
3.2 Potential Contamination Sources	12
3.3 Potential Pathways.....	13
4.0 PRELIMINARY GROUND ENGINEERING APPRAISAL.....	17
4.1 Preliminary Ground Model.....	17
4.2 Plausible Geohazards	17
5.0 DEVELOPMENT CONSIDERATIONS.....	18
5.1 Potential Remediation Requirements & Solutions.....	18
5.2 Geotechnical Considerations.....	19
6.0 CONCLUSIONS & RECOMMENDATIONS.....	20
6.1 Land Contamination	20

Appendices

Appendix A	Limitations
Appendix B	Proposed Development Plans
Appendix C	Site Photographs
Appendix D	Selected Historical Maps
Appendix E	Landmark Envirocheck Report
Appendix F	Regulatory Authority Information
Appendix G	Previous Reports
Appendix H	Risk Definitions