Appendix III

Phase 1 Assessment

PHASE I DESK STUDY AND CONTAMINATION ASSESSMENT

Tower House, Stopgate Lane, Simonswood Industrial Park, Simonswood.

Culzean W2E Limited

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Contents

DOCL	UMENT HISTORY:	1
CONT	TENTS	2
LIST (OF APPENDICES	3
1	INTRODUCTION	4
1.1 1.2 1.3	Background Site Location Proposed Development	5 5
1.4	Environmental Regulation	
2	SITE HISTORY	7
2.1	HISTORICAL MAP REVIEW	7
3	ENVIRONMENTAL SETTING	8
3.2	GEOLOGY	8
3.3	Hydrogeology	10
3.4	HYDROLOGY	11
3.5	FLOODING	12
3.6	LANDFILL, WASTE SITES AND POTENTIALLY INFILLED GROUND	12
3.7	Minerals/mining	13
3.8	Natural Hazards	13
3.9	RADON	13
3.10		
3.11	1 Historical Land Uses	15
4	SITE WALKOVER	16
5	CONCEPTUAL MODEL	17
5.1 5.2	Introduction	17
5.3	Pathways	
5.4	RECEPTORS	
5.5	Preliminary site conceptual model	20
6	RECOMMENDATIONS	22
6.1	GENERAL	22
7	CONCLUSION	23

List of Appendices

Appendix I - Drawings

Appendix II - Photographs

1 Introduction

1.1 Background

- 1.1.1 Oaktree have been commissioned by Culzean W2E Limited to prepare a Phase I Desk Study and Contamination Assessment for a site at Tower House, Stopgate Lane, Simonswood Industrial Park, Simonswood. This document is prepared with the intention of addressing the queries raised in the consultation response provided by United Utilities on 18 February 2022. The development proposals comprise the demolition of the existing building and erection of a purpose-built building (and ancillary structures) to house high temperature treatment facility for the management of medical waste at the site.
- 1.1.2 This report has been prepared in order to satisfy the requirements the National Planning Policy Framework in respect of the assessment of the risks posed by land contamination which pertain to the proposed development.
- 1.1.3 The site boundary is shown on the site location plan presented within Appendix I. The site is centred approximately at National Grid Reference (NGR) SD 43280 00701.
- 1.1.4 In line with current guidance, this Phase I desk study includes a review of site history, geology, hydrogeology, hydrology, minerals and landfill search as well as information taken from the Local Authority Planning Portal produce a conceptual model for the site. The conceptual model will allow for the identification and assessment of any pollutant linkages present at the site.
- 1.1.5 The purpose of this report is to provide a Phase I desk study and preliminary investigation risk assessment to determine whether there are any hazards present which represent a risk to the development and whether the development itself presents any risks to the surrounding land and any sensitive receptors. Should the report identify any risks that potentially require investigation a further intrusive site investigation may be necessary.

- 1.1.6 This report is based upon searches from independent reliable sources which is believed to be reasonably accurate. Oaktree cannot guarantee the authenticity or accuracy of the information relied upon by third parties and users of this report are advised to obtain their own searches should they wish to obtain a second opinion on the environmental conditions on or around the property detailed in the report.
- 1.1.7 This report has been prepared to reflect the regulatory regimes in force at the time of publication and should not be relied upon for anything other than the planning process described above. Should additional legislation arise which affects the content of this report, or the activities on site change after the production of this report Oaktree reserves the right to amend the affected sections accordingly.
- 1.1.8 Ecological searches for the presence of amphibians, bats, owls etc. are outside the scope of this report, as are the presence of tree preservation orders, hedgerow protection etc.

1.2 Site Location

1.2.1 The site is located off Stopgate Lane to the east of the A506. The site comprises a rectangular shaped plot measuring, the proposed building measures 28m by 40m in length and width and 10.635m in height to the ridge. The site is accessed from Stopgate Lane to the north. The applicant will have sole control only of the area within the footprint of the building and the surrounding surface as shown on Drawing No. 2776-008-04, which comprises less than 1 Ha.

1.3 Proposed Development

1.3.1 It is proposed that the site will demolish the existing dilapidated building and the land will be redeveloped into a purpose-built building (and ancillary structures which will house a high temperature treatment facility for the management of medical wastes. The existing access from Stopgate Lane will be retained.

<u>1.4</u> <u>Environmental Regulation</u>

1.4.1 The operations on site will also be regulated under the stipulations of an Environment Permit (EP) issued by the Local Authority in which controls in respect of potential emissions, including but not limited noise, dust and odour will be set out. In accordance with National Planning Policy Framework (NPPF), there should be no duplication of this regulation hence this report has been prepared to assess whether the development proposals are an acceptable use of the land at the site and can be carried out without an unacceptable risk of mobilising any existing contaminative substances. Reference is made in this report to controls that will be required to be in place under a suitable environmental permit. The control of potential emissions from the proposed operations is nevertheless outside the scope of this report and of the planning process.

2 Site History

2.1 Historical Map Review

2.1.1 In compiling the site history, publicly available historical mapping information has been reviewed which is summarised Table 3.1 below.

Table 3.1 – Historical Map Review

Date	Description
1845-1847	The site is comprised of open fields with a possibly excavation within the site area. The site to the south is bounded by the Lancashire and Yorkshire Railway. The lane above the site which will later be the access is called Kirkby Lane.
1890-1894	The site remains open fields with the possible excavation has been filled in. There are sand washing works located within the site field area. The railway has also changed to Liverpool, Bolton and the Bury Line. Kirkby Lane has changed to Stopgate Lane.
1907-1909	There are no onsite changes the site remains open fields. The sand washing works has disappeared off the map. The railway remains the same.
1925-1928	Onsite layout and surrounding area are largely as per the previous set of mapping.
1930-1955	The site has changed dramatically to Kirkby Inland sorting Depot. The railway and Stopgate land remain the same in the surrounding.
1985-2018	No significant changes at or in the vicinity of the site, apart from movements of containers from 1985-2018.
(aerial photography)	of containers from 1909-2010.
2019-2021 (aerial photography)	Containers have been removed from the vicinity of the site.

3 Environmental Setting

3.1.1 In compiling this Section, Oaktree obtained environmental information in the form of independent sources British Geological Survey (BGS) map viewer and BGS Sheet 269 1:50,000.

3.2 Geology

- 3.2.1 The site geology is provided by British Geological Survey (BGS) online map viewer, BGS Sheet 269 1:50,000.
- 3.2.2 The entirety of the site is recorded as underlain by the Wilmslow Sandstone formation comprising sandstone sedimentary bedrock which was formed approximately 247 to 252 million years ago during the Triassic period. The depositional environment in respect of the Wilmslow Sandstone Formation is recorded as being dominated by hot deserts. To the south-west of the site (1.4km) is the Chester Formation comprising sandstone. This is sedimentary bedrock formed approximately 247 to 250 million years ago in the Triassic period with the depositional environment being recorded as dominated by rivers.
- 3.2.3 The superficial deposits of the site consist of the Shirdley Hill Sand Formation. These deposits were formed up to 2 million years ago in the quaternary period. The depositional environment is recorded as wind-blown.
- 3.2.4 The sites recorded as comprising artificial ground. Based on the British Geological Survey trial pit log references SD40SW109 to SW40SW113 the made ground comprises ash, brick and rubble fill underlain by grey, brown clayey sand. The upper part of the access road is recorded as being underlain by glacial till or boulder clay.
- 3.2.5 There are no landslips recorded within 500m of the site.
- 3.2.6 There are no bedrock faults recorded at or within a 1km of the site.

3.2.7 There are no historic borehole records at the site, however there are 10 within the immediate vicinity of the site as shown from the British Geological Survey GeoIndex Onshore database which are summarised above.

3.3 Hydrogeology

- 3.3.1 The site is underlain by highly productive principal comprising the Wilmslow Formation aquifer the thickness of which is recorded as up to 600m. It is likely that the Wilmslow Formation comprises a high degree of homogeneity and isotropy within the upper 100m, below which groundwater flow is likely to be negligible. The direction of groundwater flow underlying the site is likely to be towards the southwest, towards and in the direction of flow of the Simonswood Brook and Mersey Estuary.
- 3.3.2 The site is recorded as having has a medium to high groundwater vulnerability risk to any pollutant discharge which may occur at the site. This classification is based on the superficial geology recorded at the site surface and does not take into account the presence of the existing concrete site surface. Based on the superficial geological mapping and trial pit logs, it is likely that the Shirdley Hill Sand Formation has a low thickness and that it is underlain by a layer of glacial till. It is therefore likely that the degree of infiltration from the site surface to the Shirdley Hill Sand Formation is restricted significantly by the presence of the concrete surface and, in turn, the vertical percolation of perched groundwater in the Shirdley Hill Sand is restricted significantly by the presence of the glacial till layer. It is therefore considered that the potential for the migration of substances on the existing site surface to the groundwater body within the Wilmslow Sandstone Formation is negligible.
- 3.3.3 The nearest source protection zone 1 designated area is Abrams Farm which is approximately 560m east north east of the site. There are no other groundwater protection zones within 2km of the site. The majority of the site is located within Source Protection Zone 3 and the eastern edge of the site is located within Source Protection Zone 2 comprising the outer catchment of the licensed abstraction at Abrams Farm. Due to the likely regional direction of groundwater flow, it is likely that notwithstanding the designation of the eastern edge of the site, it is likely that the hydraulic gradient beneath the site is away from the licensed abstraction at Abrams Farm.

3.4 Hydrology

- 3.4.1 The surface watercourse nearest to the site comprises an unnamed tributary of the Simonswood Brook approximately 220m north of the site. The Simonswood Brook flows generally east to west approximately 790m north east of the site at its closest point. The Simonswood Brook discharges to the Kirkby Brook which in turn discharges to the River Alt at a point approximately 4.2km south west of the site. Surface water in the general vicinity of the site drains towards south-west of the site, with the topography adjacent to the site access road draining locally to the north west and towards the unnamed tributary of the Simonswood Brook. The River Alt flows north east through Lancashire and Merseyside and discharges to the River Mersey between Crosby and Formby.
- 3.4.2 The chemical and biological water quality of the River Alt is recorded as. The water quality with respect to chemical status of the Simonswood Brook recorded as failed.
- 3.4.3 Based on information on the magic map website there is 1 abstraction with a designated source protection zone within 2km of the site. It is likely that the site is down hydraulic gradient from the site. The source protection zone has also been designated 50m from the abstraction and source protection 1 and another 500m from source protection 2. The site is in source protection zone 2 and 3. The closest abstractions down hydraulic gradient with source protection zones associated are several hundred meters to the west.
- 3.4.4 There are no records of licenced environmental permits to discharge to surface water within 2km of the site.
- 3.4.5 There have been no recorded pollution incidents within 500m of the site boundary. The nearest pollution incident recorded is approximately 1.16km south of the site boundary. The pollution incident was smoke related with a category 2 impact on air and category 4 on land and water.

3.5 Flooding

- 3.5.1 The site is not identified as being at risk from flooding from rivers and the sea. The site is recorded as situated within Flood Zone 1 which comprises land assessed as having less than a 1 in 1,000 annual probability of flooding from rivers or the sea.
- 3.5.2 There are no records of historical flooding events within 250m of the site. There are also no records of flood defences within 250m of the site.
- 3.5.3 There are also no areas within 250m of the site that would benefit from a flood defence in the event or a 1 in 100 (1%) chance of flooding each year or 1 in 200 (0.5%) of flooding each year by the sea. As well as this there are no flood storage areas within 250m of the site.
- 3.5.4 Based on the high degree of impermeable cover at and in the vicinity of the site and the thickness and laterally incontinuous nature of the Shirdley Hill Sand Formation, it is considered unlikely that groundwater flooding poses a significant risk to the site.

3.6 Landfill, waste sites and potentially infilled ground

- 3.6.1 There are two historic landfills sites identified from BGS records, Local authority and Historical Mapping Records or Environment Agency records within 500m of the site. the closest is Simonswood Industrial Estate historic landfill which is situated in the immediate vicinity of the site to the west (Ref: EAHLD06982). The other is Stopgate Lane North and South Historic Landfill (Ref: EAHLD06980).
- 3.6.2 There are no records of active or recent landfills within 500m of the site.
- 3.6.3 In addition to the above, the proposed development contains 8 licensed waste sites within 500m of the site boundary. These waste sites within 500m comprise of treatment of waste to produce soil, inert and excavation with treatment, metal recycling, ELV facility, use of waste to manufacture timber, HCI waste + treatment and household + commercial + industrial waste.

3.6.4 There are 16 no. records of waste exemptions within 1km of the site boundary, 7 of which are within the Simonswood Industrial Estate which the site is a part of.

3.7 Minerals/mining

- 3.7.1 The site and the surrounding area are not located within a coal field with no coal mining activities recorded at or in the immediate vicinity of the site. The base of the coal measures beneath the site is approximately 600m beneath the site. The site is not located within the Cheshire Brine Compensation District.
- 3.7.2 There are no recorded mines and quarries located onsite or within 500m of the site from information found on the British Geological Survey GeoIndex Onshore. However, based on the review of the historical maps, there appears to be a number of small borrow pits located onsite and the surrounding site areas all of which have been abandoned subsequently and none of which are operational.
- 3.7.3 There are no records of underground workings, surface ground mining works, historical mineral planning areas, non-coal mining, mining cavities, coal mining, brine areas, gypsum areas, tin mining or clay mining at or in the immediate vicinity of the site.

3.8 Natural Hazards

3.8.1 There are no recorded landslides at or in the immediate vicinity of the site. Based on the artificial, superficial and bedrock geological conditions outlined above, it is considered that there is no significant risk posed to the site due to shrink-swell clays, landslides, ground dissolution, running sand and compressible or collapsible deposits to be negligible at the site.

3.9 **Radon**

3.9.1 The site is not in a geological setting which would give rise to a significant risk due to the production of radon gas.

3.10 Designated Sites

- 3.10.1 There are no records of conserved wetland sites (Ramsar sites), Special Areas of Conservation (SAC), Special Protection Areas (SPA), National Nature Reserves (NNR), Local Nature Reserves (LNR), Biosphere Reserves, Forest Parks, Marine Conservation Zones, proposed Ramsar sites, possible Special Areas of Conservation (pSAC), potential Special Protection Areas (pSPA) zones within 2km of the site.
- 3.10.2 There are no records of nitrate sensitive areas within 2km of the site.
- 3.10.3 The site comprises a nitrate vulnerable zone (NVZ). (ALT NVZ). As discussed above, given the presence of the existing site concrete surface and the likely presence of the glacial till beneath the Shirdley Hill Sand Formation, it is unlikely that any substances on the potential for the migration of significant quantities of substances from the site surface to the groundwater in the Wilmslow Formation Aquifer which is the subject of the NVZ is negligible.
- 3.10.4 The Ancient Woodland closest to the site is approximately 140m south east of the site boundary and comprises Woodwards Plantation. Due to the presence of the existing concrete surface it is extremely unlikely that any substances in the ground may be mobilised to the Ancient Woodland. The proposed operations will be the subject of an environmental permit as part of which any emissions to air will be controlled. It is therefore unlikely that the site in its current condition or the proposed operations may have an unacceptable impact on the Ancient Woodland.
- 3.10.5 The site is not within a SSSI impact risk zone.
- 3.10.6 With regards to visual and cultural designations, there are no records of world heritage sites, Conservation Areas, Scheduled Ancient Monuments, Areas of Outstanding Natural Beauty (AONB), National Parks, Listed Buildings or Registered Parks & Gardens within 2km of the site boundary.

3.10.7 The site comprises an area of established industrial use hence there will be no loss of agricultural land as a result of the proposed development.

3.11 Historical Land Uses

- 3.11.1 It has been identified within the historic maps 1930-1955 that there could be a potentially contaminative land use with the existence of the rail depot. However, since the cease of rail depot activities the current industrial estate has been concreted hence it is unlikely that any residual contamination which may be present beneath the site may be mobilised to the site surface or downwards to the Wilmslow Sandstone Aquifer. It is therefore unlikely that the presence of any substance's residual from the use of the site as a railway depot may pose a significant risk to human health or controlled waters.
- 3.11.2 In addition, there is no evidence of any tanks shown on the historic maps at or in the immediate vicinity of the site.
- 3.11.3 There is no evidence of the presence of historic or existing petrol stations or garages at or in the immediate vicinity of the site.

4 <u>Site Walkover</u>

- 4.1.1 The site walkover survey was undertaken by Oaktree personnel on 8th December 2021. No visual or olfactory evidence of contamination was observed on the site surface. The site surface was observed to be supporting the presence of standing water which suggests as discussed above that the presence of the site surface limits significantly the infiltration of rainwater to the underlying ground.
- 4.1.2 No evidence of spillage of fluids or vegetation die back was observed and no evidence of ground disturbance or the recent placement of material was observed.
- 4.1.3 No hazing or evidence of differential settlement was observed at the site.
- 4.1.4 A photographic record of the site walkover survey captured using an unmanned aerial vehicle is presented at Appendix II.

5 <u>Conceptual Model</u>

5.1 Introduction

- 5.1.1 In order to provide initial assessment of the likelihood of a pollutant linkage for each potential contamination source, pathway and receptor, a conceptual model has been produced for each of the proposed developments across the site. Based on the proposed development, the site will follow a residential end use.
- 5.1.2 A conceptual model forms the basis on which further decisions can be made with regard to the contamination risks associated with the site and whether further site investigation work is required.

5.2 Sources

- 5.2.1 Based on the review of the available information discussed within previous sections, it is apparent that the site has not undergone an extensive history of development included as it has principally been open fields with small burrow pits until the old rail depot was built on the land. No visual or olfactory evidence of contamination was observed during the site walkover survey. The historic presence of gross contamination, and free-product hydrocarbons and associated contaminants is therefore unlikely. The likelihood of a substantial onsite contamination source which may be mobilised to the site surface or underlying groundwater is therefore very low.
- 5.2.2 The dilapidated building at the site has the potential to contain asbestos bound materials. Any such materials are likely to be contained within cement bound asbestos sheeting. The demolition works will be undertaken by a suitably competent contractor with the assistance as necessary of a suitably accredited asbestos removal contractor. All asbestos will be handled in accordance with the relevant legislation and guidance and shall be double bagged, transported from the site by a suitably authorised contractor and taken to a suitably authorised facility for disposal.

5.3 Pathways

- 5.3.1 As discussed above, it is considered that the likelihood of a substantial onsite contamination source is very low.
- 5.3.2 Nevertheless, substances in the ground have the potential to migrate to receptors via the following pathways, taking into account the proposed residential land use:
 - Direct contact with soil.
 - Inhalation of soil and fibres from windblown dust.
 - Ingestion of private water supply
 - Inhalation of vapours.
 - Ingestion of homegrown produce.
 - Migration of hazardous ground has through permeable strata and potential preferential pathways (drains/services etc.) and associated inhalation and explosion risks.
- 5.3.3 In addition, the following pathways are considered with regards to controlled waters:
 - Infiltration through ground.
 - Migration through permeable strata and preferential pathways (drains/services etc.).
 - Surface run-off to surface water receptors.
- 5.3.4 As discussed above, the site surface comprises concrete and there is no evidence of contamination on the site surface. It is therefore unlikely that any substances in the ground may migrate via the pathways outlined above to human health receptors.
- 5.3.5 As discussed above the infiltration of rainfall through the site surface is limited by the presence of the concrete surface. It is therefore unlikely that any substances in the ground beneath the surface may migrate vertically downwards in quantities which may pose an unacceptable risk to controlled waters.

5.4 Receptors

- 5.4.1 Notwithstanding the low likelihood that the ground at the site comprises a source of contamination, the main potential receptors comprise:
 - Human Health: future site occupants.
 - Controlled Waters: underlying Principal Aquifer.
 - Proposed Buildings and structures associated with the development.
- 5.4.2 In the absence of a viable source / pathway / receptor linkage, it is considered unlikely that the condition of the ground at the site may pose an unacceptable risk to human health or controlled waters.

5.5 Preliminary site conceptual model

5.5.1 The site conceptual models are displayed overleaf. Based on a review of the information available it was concluded that no further action is required in order to investigate the potential contamination linkages further.

Table 6.1 – Preliminary Conceptual Model

Source	Pathway	Receptor	Effects	Probability	Assessment outcome	Comment
Existing dilapidated building and existing site surface	Direct contact with soil, inhalation of dust and fibres	Current and future site users	Low – No visual or olfactory evidence of mobile contamination. All asbestos in bound form	Unlikely	Negligible	Negligible – provided any asbestos containing materials are handled in accordance with the relevant legislation and guidance, it is considered the demolition works can be undertaken without unacceptable risk to human health receptors
Residual contamination in made ground underlying the existing site surface	Upward migration through site surface through disturbance	Current and future site users	Low	Unlikely	Negligible	As discussed in previous sections the presence of the concrete surface will limit the potential for substances in the ground at the site to migrate upwards to the site surface

Source	Pathway	Receptor	Effects	Probability	Assessment outcome	Comment
Residual contamination in made ground underlying the existing site surface	Downward migration due to rainfall infiltrating the ground at the site to the underling Principal Aquifer	Groundwater in the Wilmslow Sandstone Formation	Low	Unlikely	Negligible	As discussed in previous sections the presence of the concrete surface will limit the potential for rainfall to infiltrate the site surface and to cause the downward migration of any residual soluble contaminative substances

6 Recommendations

<u>6.1</u> <u>General</u>

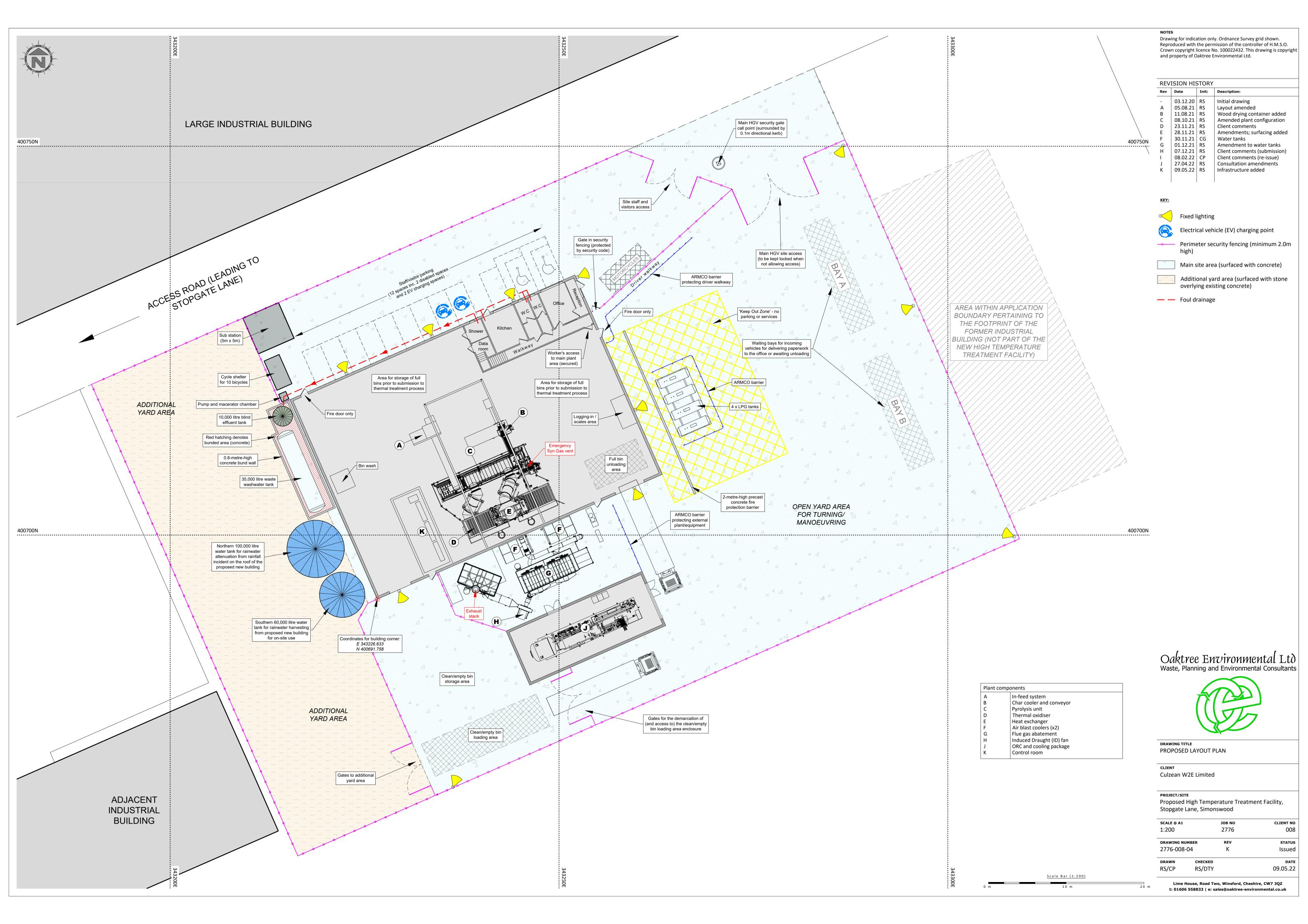
- 6.1.1 Based on the map review of the historic maps, environmental information and site walkover survey, it is considered unlikely that the site comprises a source of contamination which may pose a significant risk to human health or controlled waters.
- 6.1.2 All wastes associated with the demolition of the current structure onsite should be disposed of in accordance with the relevant legislation and guidance.
- 6.1.3 A watching brief should be kept on the quality of any ground disturbed as part of the demolition and construction works. Should any visual or olfactory evidence of contamination within disturbed ground be observed, it is recommended that any contaminated materials are excavated immediately, stored on a sealed surface, tested and removed as necessary to a suitably permitted facility for treatment or disposal.
- 6.1.4 The design of the proposed building foundations along with the specification of the installation methodology should be undertaken by a suitably qualified and experienced engineer. The design and installation methodology should take account of the artificial, superficial and bedrock geological conditions set out above. The design and installation methodology should minimise insofar as feasible any risk to groundwater quality in the underlying Wilmslow Sandstone Formation.

7 <u>Conclusion</u>

- 7.1.1 It is concluded based on the results of this phase 1 desk study that the ground at the site is unlikely to comprise a source of contamination which may cause a significant risk to human health or controlled waters.
- 7.1.2 It is concluded that no further assessment of the risks posed due to the development to human health or controlled waters is necessary.

Appendix I

Drawings



Appendix II

Photographs