



Geotechnical &
Environmental
Consultants

**Proposed Commercial Unit at
MIRA North Plot 8, MIRA Technology Park
Watling Street, Nuneaton**

**Combined Phase I Desk Study &
Phase II Exploratory Investigation Report
For
MTP 3 Limited**



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Contents

EXECUTIVE SUMMARY		
1.0	INTRODUCTION	1
2.0	SITE DESCRIPTION & HISTORY	3
3.0	GEOLOGY & ENVIRONMENTAL SETTING	10
4.0	PRELIMINARY CONCEPTUAL SITE MODEL	18
5.0	GROUND INVESTIGATION	24
6.0	LABORATORY TESTING & CONTAMINATION ASSESSMENT	29
7.0	REVISED CONCEPTUAL SITE MODEL	36
8.0	CONCLUSIONS & RECOMMENDATIONS	39

Appendices

I	Site Location Plan
II	Proposed Layout Plan
III	Annotated Site Plan
IV	Site Plans and General Views of Site
V	Historical Plans
VI	Landmark Geological Maps
VII	Landmark Envirocheck Reports
VIII	UXO Pre Desk Study Assessment
IX	Exploratory Hole Logs
X	Plates
XI	Exploratory Hole Location Plan and Depth of Made Ground Plan
XII	Soakaway Calculation Sheets
XIII	Laboratory Soil Test Results
XIV	Desiccation Assessment Sheets
XV	Conditions & Limitations

Project No: 45296		Date: 15 May 2026	
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Comments			

EXECUTIVE SUMMARY

Our Executive Summary should be read in conjunction with a full copy of our report and does not replace a detailed review of our report by the reader.

EXECUTIVE SUMMARY	
GEOTECHNICAL CONSIDERATIONS	
Ground Conditions	Made Ground was encountered to maximum depths ranging between 0.40m and 1.80m begl. Made Ground, was generally described as a red brown gravelly clay with gravel comprising quartzite, concrete, metal, tile, wood, limestone and plastic. A suspected backfilled pond was encountered at the location of TP3 and the material was initially described as a dark brown clayey topsoil to a depth of 0.55m. This was further underlain by possible reworked natural strata and was described as a red-brown silty clay to 1.80m begl. In the locations of TP4 and TP5 material considered visually representative of the Anker Sand and Gravel was tentatively identified at shallow depths and was described as an orange brown and mottled or yellow brown slightly sandy locally slightly gravelly CLAY. Strata considered visually representative of the weathered Mercia Mudstone was encountered across the majority of the site and was encountered to a maximum depth of 3.20m begl although was not fully penetrated. This material was generally initially described as a firm or firm to stiff locally stiff or very stiff red brown locally mottled green grey locally silty gravelly CLAY.
Foundation Design	The Natural Strata of the Mercia Mudstone is considered suitable to support a maximum nett allowable ground bearing pressure of 120kN/m² for a strip/pad foundation at a depth of 0.90m below existing or proposed ground level (whichever being the deeper). Where foundations are deepened to encounter more competent Mudstone strata at a depth of circa 2.00m below existing ground level, then an increased maximum nett allowable bearing pressure of 250kN/m² may be adopted. It should also be noted that the historical mapping has identified a former pond at the site. Therefore, deeper disturbed ground may be locally anticipated in the vicinity of any former ponds. Where disturbed ground is encountered, foundations should be deepened a suitable distance into the underlying undisturbed Natural Strata.
Building Near Trees	The shallow cohesive strata are considered as potentially shrinkable and of a medium volume change potential, foundations should be adjusted in accordance with suitable guidance (i.e. BRE Digest 240 'Low-rise buildings on shrinkable clay soils: Part 1' (1993) and BRE Digest 241 'Low-rise buildings on shrinkable clay soils: Part 1' (1990)) and NHBC Standards, when located in the vicinity of existing, proposed or recently removed trees.
Floor Slab Design	A ground bearing floor slab is considered the most appropriate given the size of the proposed commercial unit. However, this may require the alterations of levels and this will require the placement and compaction of the shallow soils to an end product specification to form a suitable platform. A suitable earthworks end product specification may be required for the site giving consideration to design proposals for a potential ground bearing floor slab and taking into account any design requirements for externals or hard paving etc.
Ground Gas Precautions	Ground gas precautions are not required for the proposed development.
Radon	No Radon precautions are considered necessary in the construction of new buildings.
Water	Water was not encountered within the majority of exploratory holes. Localised seepages were noted within Reworked Natural Strata. Based on the findings from the investigation works, significant dewatering of shallow excavations is unlikely to be required.
Excavations / Stability	Excavations above 3.00m depth should be achievable with conventional site plant without the need for breaking out of bedrock. Generally, the sides of the window sample boreholes and trial pits were noted to be stable for the short period of time they remained open.
Sulphate Classification	In accordance with BRE Special Digest 1:2005 the site falls into Design Sulfate Class DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1s, based on the assumption of a brownfield ground location and the presence of static groundwater conditions beneath the site.
CBRs	The laboratory testing revealed CBR values of between 3.2% and 8.0%. The maximum swelling amount across the samples during the test was 0.77mm.

EXECUTIVE SUMMARY	
CBRs	Based on the samples test, a value of 3.0% CBR for the undisturbed Natural Strata may be appropriate for initial design considerations. However, The Engineer should select a suitable equilibrium CBR value taking account of any in-situ testing together with the water content, plasticity / grading and frost susceptibility of the formation at the time of construction.
Surface Water Drainage	Based on the soakaway testing undertaken, soakaways will not be viable for surface water drainage, and therefore an alternative drainage solution should be explored.
ENVIRONMENTAL CONSIDERATIONS	
Contamination Assessment	<u>Human Health</u> The soils tested at the site revealed no elevated levels of concentrations of contaminants when compared to the Tier 1 GAC for a commercial end-use. The Made Ground and Natural Strata tested as part of the Phase II works are generally considered as chemically uncontaminated for the proposed end use. <u>Controlled Waters</u> The soil test results have revealed the general absence of any significant potentially mobile contamination beneath the subject site which could affect controlled waters.
Stockpiles	The majority of stockpile material observed on site generally comprised Made Ground topsoil or Made Ground (generally representative of the Natural Strata observed across the site with the inclusion of anthropogenic constituents). Based on the stockpiled soils encountered during the works and the chemical contamination assessment undertaken, the stockpiled material is generally considered as chemically uncontaminated for a commercial end use and may be reused on site.
Re-use of Soils	The Natural Strata and the majority of the Made Ground encountered at the site may be regarded as suitable for re-use to raise levels, as appropriate or for landscaping/capping on alternative developments.
GENERAL CONSIDERATIONS	
Off-site Disposal	The laboratory test results indicate that the Made Ground and Natural Strata may be regarded as suitable for retention on site. However, the materials contained within the brick lined chamber are not considered suitable for retention. For the purpose of off-site disposal, the results of the existing soils testing should be provided to landfill operators to determine disposal costs.
UXO	GeoDyne were provided with a UXO desk study report from a previous site investigation of the wider development which indicated the UXO precautions were not required for the proposed works. It is recommended that a separate UXO assessment is undertaken for construction works.
Construction Workers	It is recommended that construction personnel involved with direct contact with the soils at the site use appropriate PPE equipment (i.e. boots, gloves and overalls) together with hygiene facilities in accordance with general health and safety guidelines.
Utilities	Prior to development of the site, we would recommend that a copy of this report is supplied to utility companies, and that their recommendations relating to appropriate supply pipes are adhered to. It may be necessary to undertake an assessment along the proposed route of water supply pipes with the testing suite and spacing of tests to be agreed with the water supply company.
Unforeseen Circumstances	Should any areas of potentially contaminated soil be encountered during site construction works we would recommend consultation with GeoDyne Limited to ensure that our recommendations continue to apply.
Licenses, Permits, Registrations, Plans and Approvals	The Contractor/Developer is responsible for, and must ensure that, all necessary licenses, permits, registrations, plans and approvals are in place prior to commencing with the proposed works at the site.
Statutory Liaison	A copy of our report should be issued by the Client to the Local Authority (and warranty provider, if necessary) for review/comment and approval prior to commencing with the development of the site.

1.0 INTRODUCTION

1.1 Introduction

GeoDyne Ltd has been instructed by BCAL Consulting on behalf of the client MTP 3 Limited, to undertake a combined Phase I Desk Study and Phase II Exploratory Investigation at a parcel of land located within the existing Mira technology Park, Watling Street, Nuneaton, Warwickshire, CV10 0TU. A site location plan (Figure No. 45296/01) is included as Appendix I.

1.2 Project Understanding

It is understood that it is proposed to construct a commercial unit at the existing MIRA Technology Park within plot 8 along with areas of hardstanding and associated infrastructure. We further understand that a combined Phase I and Phase II Exploratory Investigation is required to support the proposed development. The proposed unit and development site is located in the northern portion of the wider MIRA Technology Park. A copy of the proposed layout plan is included in Appendix II.

This understanding has formed the basis of our report. Where our understanding is incorrect, it may be necessary to review our assessment to ensure that it continues to apply.

1.3 Objectives

The scope of works detailed herein have been designed to investigate the key geotechnical and environmental issues that may relate to the site with respect to the proposed development. This report may also be utilised to provide a baseline ground investigation to support the future development on site and assist with any future targeted site investigation works that may be required.

1.4 Scope of Works

Based on the defined objectives of the works (detailed in Section 1.3), the scope of the Phase I Desk Study included the following:

- A site walkover.
- Review of available historical and contemporary Ordnance Survey publications relating to the site.
- Review of the sites geology, hydrology, hydrogeology and groundwater vulnerability.
- Review of the sites coal mining status.
- Review of the sites radon status.
- Commission of a full detailed Landmark Envirocheck report relating to the site.
- Commission the use of Landmark Envirocheck Analysis tool (where available).
- Commission of a Pre-Desk Study Assessment (PDSA) relating to Unexploded Ordnance (UXO).
- Commission of Landmark geological mapping data.
- Production of a preliminary Conceptual Site Model (pCSM).

Phase II Exploratory Investigation works targeted to the eastern area comprised:

- A sub-contracted sub-surface utility scan.
- A series of window sampling boreholes across the proposed development area.
- A series of mechanically excavated trial pits.
- A series of preliminary soakaway tests.
- Geotechnical and environmental soils testing.
- Revision of the pCSM.

1.5 Limitations

The conclusions and recommendations made in this report are limited to those that can be made based on the findings of the investigation. Where comments are made based on information obtained from third parties, GeoDyne Ltd assumes that all third-party information is true and correct. No independent action has been undertaken to validate the findings of third parties.

This report has been prepared in accordance with our understanding of current good practice. However, changes to good practice, guidance or legislation may necessitate revision of this report after the date of issue.

GeoDyne Ltd has prepared this report for the sole use and reliance of the Client, MTP 3 Limited, in accordance with our Standard Conditions and Limitations (included in Appendix XV). This report may not be used or relied upon by any unauthorised third party without the explicit written agreement of GeoDyne Ltd. Reliance may not be placed on our report until all invoices associated with the project have been paid.

2.0 SITE DESCRIPTION & HISTORY

2.1 Site Description

The site is part of the MIRA Technology Park located off Watling Street, Nuneaton, Warwickshire, CV10 0TU. The wider site is in its early stages of development and comprises a small number of already built commercial units and the majority of the wider site is still to be developed. The Plot 8 proposed development site may be located around approximate Ordnance Survey National Grid Reference 436330E, 295660N. The area of the proposed development area extends to an approximate area of 5.9 hectares (Ha).

A site walkover was undertaken on 6th March 2026 by an Engineer from GeoDyne Ltd and the following description is based predominantly on observations made during our visit. The Engineer from GeoDyne Ltd was accompanied by a representative from MIRA Technology Park as part of the walkover.

The subject site (Plot 8) is situated within the western area of the wider MIRA Technology Park. The subject site was accessed via the main site entrance located to the east of the subject site and was further accessed along a newly installed access road which terminated to the northeast of the subject site. The subject site was not formally separated from the wider site but did have ecological barriers and a mixture of fencing types partially separating the site.

The subject site generally sloped down to the northwest and was locally undulating as a result of presumed former vehicle tracking. At the time of our site visit there were number of stockpiles/windrows situated within the main portion of the proposed development area. In the sites northwest were 2No. balancing ponds which also appeared to be connected to a number of manhole chambers which were situated across the site at various finished levels. The central main portion of the site was segregated from an airable field in the western extent by an ecological barrier. At the time of the walkover the airable with young plant growing. The main development area generally comprised a scrub covering or exposed soils.

Localised fly tipping was noted within the main development area of the site and generally comprised construction materials. Gas marker posts were also noted immediately to the sites south.

The wider MIRA site was not accessed however the immediate surroundings of the subject site comprised a commercial unit, airable fields and a nearby water course. The main development area of the site was also bound by an ecological barrier to the north, beyond which were mature trees which generally surrounded a watercourse. To the north of the sites western extent, were also mature trees generally surrounding the same water course. The southern boundary of the main site development area was defined by a post and wire fence which was generally in a state of disrepair, beyond which was a field. To the southwest of the site (south of the western portion) was the same airable field which occupied the western extent of the site. To the east of the main site development area was a recently constructed commercial unit and access road (which provided access to the subject site).

An aerial photograph of the site, obtained from the Landmark Analysis tool commissioned as part of our works, is included in Figure 1. We would note that the aerial photograph obtained from the landmark viewer appears to be older than freely available imagery elsewhere and is not representative of the site as observed during the walkover.

Figure 1: Aerial photograph of the site. Site boundary demarcated in red outline.



An annotated site plan, showing the main features of the site is included as Appendix III of this report (Figure No. 45296/02) and plans showing general views of the site are included in Appendix IV (Figure No's. 45296/03 to 45296/05 inclusive).

2.2 Site History

The historical and contemporary Ordnance Survey publications included within the Landmark Envirocheck Report have been reviewed by GeoDyne to establish the history of the site and its environmental setting. The historical Ordnance Survey maps are included as Appendix V of this report.

We would note that the boundary marked on the historical sheets within the Envirocheck Report appears to 'shift' on several of the maps due to scaling inaccuracies between maps of differing dates. This is a function of Envirocheck transposition algorithms.

It should also be noted that additional maps were available to view online as part of the Landmark Envirocheck Analysis tool and the findings also included in the table below.

The key findings of the historical search are summarised in Table 1.

TABLE 1 – SUMMARY OF HISTORICAL PUBLICATION DATA		
Date	Features on Site	Features off Site
1880s	- The site appears to partially occupy part of a number of fields with the field boundaries crossing the site. - A pond is indicated in the sites south measuring approximately 30m by 10m.	- A small woodland is mapped immediately north of the site. - A brook is mapped along the sites northeastern boundary and appears to be connected to a body of water located beyond the woodland, north of the site. The flow of the brook is shown in a westerly direction. - A pond is mapped approximately 65m southwest of the site. - A 'Chapel (remains of)' is mapped approximately 70m northeast of the site. - A 'Lodge' is mapped approximately 120m northwest of the site along with a pond. - A collection of buildings mapped as 'Lindley Grange' are mapped approximately 150m southeast of the site.

TABLE 1 – SUMMARY OF HISTORICAL PUBLICATION DATA

Date	Features on Site	Features off Site
		A number of ponds are mapped within the surrounds and within 100m of the site. 'Lindley Hall' is mapped approximately 230m northeast of the site.
1900s	The site appears broadly unchanged.	The sites environs appear broadly unchanged.
1910s	The site appears broadly unchanged.	The sites environs appear broadly unchanged.
1920s	The site appears broadly unchanged.	The sites environs appear broadly unchanged.
1930s	The site appears broadly unchanged.	The sites environs appear broadly unchanged.
1940s	No mapping available.	No mapping available.
1950 Aerial Photo	The site appears generally representative of the 1930s mapping. However, an approximately circular feature is noted within the central eastern portion of the site but it does not appear as dark as the surrounding nearby ponds.	The sites environs appear generally representative of the 1930s mapping.
1950s	The site appears broadly unchanged.	- The sites environs appear broadly unchanged. - The fields beyond 'Lindley Grange' to the sites east has either been redacted or is no longer mapped.
1960s	The fields boundaries are no longer mapped within the site.	- The surrounding field boundaries that were previously mapped are no longer identified. - The ponds surrounding 'Lindely Grange' located approximately 150m southeast of the site appear to have been infilled and additional buildings and a 'Tank' are mapped within its vicinity. - The area beyond 'Lindely Grange' and generally to the northeast of the site is mapped as 'Proving Ground' and appears visually representative of an airfield. - A 'Miniature Rifle Range' is mapped approximately 160m northeast of the site. - A 'Works' is mapped approximately 200m south of the site, along with a 'Sports Ground', 'Tennis Court' and 'Pavillion'.
1970s	The site appears broadly unchanged.	- The previously identified 'Works' located approximately 200m south of the site has undergone significant expansion and is now mapped as 'Motor Industries Research Association Works'. The previously identified 'Sports Ground' and 'Pavillion' are no longer mapped. - The previously identified 'Lodge' mapped approximately 120m northwest of the site is now identified as 'Rowden Lodge'.
1980s	The previously identified pond within the sites southern extent is no longer identified.	- The previously identified 'Miniature Rifle Range' mapped approximately 160m northeast of the site is now mapped as a 'Rifle Range (disused)'. - The large area to the north east of the site is now mapped as 'Motor Vehicle Proving Ground'. - The previously identified 'Motor Industries Research Association Works' located approximately 200m south of the site is now identified as 'Laboratories'.
1990s	The site appears broadly unchanged.	- Additional buildings are mapped approximately 170m east of the site and appear to be associated with 'Lindley Grange'. - The 'Laboratories' site located approximately 200m south of the site appears to have undergone further expansion.
1999 Aerial Photo	The site appears to occupy a portion of a wider agricultural field and appears generally consistent with the 1990s mapping.	The sites environs appear generally consistent with the 1990s mapping.

TABLE 1 – SUMMARY OF HISTORICAL PUBLICATION DATA		
Date	Features on Site	Features off Site
2000s	The site appears broadly unchanged.	The sites environs appear broadly unchanged.
2010s	The site appears broadly unchanged.	'Lindley Grange' appears to have undergone minor developments.
2020s	The site appears to have been subdivided and 2No. balancing ponds are indicated in the central and northern area of the site.	Some of the buildings associated with 'Lindley Grange' are no longer mapped.

2.3 Aerial Photography & Historical Map Overlays

As part of the commissioned Landmark Report, the use of the Landmark Envirocheck Analysis tool was purchased to provide site specific aerial photographic imagery, and to provide the ability to undertake limited historical map overlay manipulation.

Figure 2 shows a modern aerial photograph of the site overlain with the 1880s historical map, showing the site originally comprising a field with a pond present in the southern portion of the site.

Figure 2: Modern Aerial Photo Overlain with 1880s 1:2,500 Historical Map Data

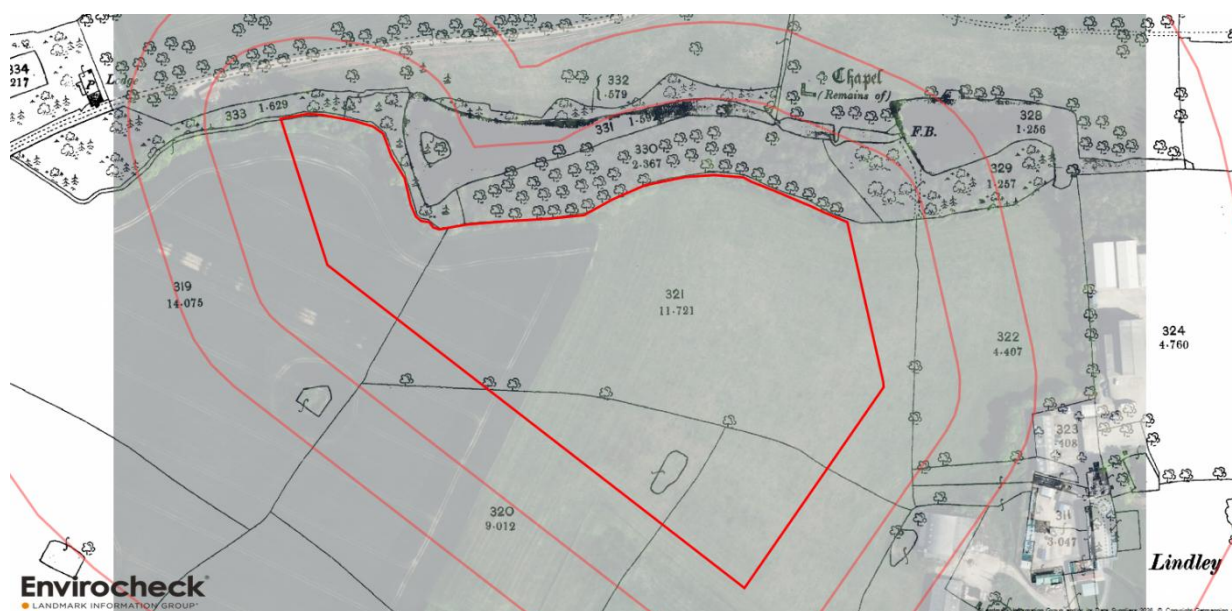


Figure 3 shows a modern aerial photograph of the site overlain with the 1963 historical map, showing the field boundaries no longer present, additional buildings to the southeast of the site and the pond to the southeast no longer mapped.

Figure 3: Modern Aerial Photo Overlain with 1963 1:2,500 Historical Map Data



Figure 4 shows a modern aerial photograph of the site overlain with the 1994 historical map, showing minimal changes to the site and only minor changes within its environs.

Figure 4: Modern Aerial Photo Overlain with 1994 1:2,500 Historical Map Data



2.4 Additional research

In addition to the historical maps, internet searches for the site and its environs have been undertaken, the planning portal records have also been accessed for the site and relevant nearby sites. Historical imagery from Historic England and Google Earth have been accessed in an attempt to view additional historic imagery.

2.4.1 Internet Searches

The historic mapping identified the site as being within the immediate environs of a former airfield. A brief internet search reveals that the nearby airfield was known as RAF Lindley and was built in 1940 and remained in service until 1946. Following this the airfield has been utilised by the Motor Industry Research Association (MIRA).

2.4.2 Planning Portal

Our review of the Nuneaton & Bedworth Borough Council planning portal has revealed a number of applications associated with the wider site that are available on the online viewer. These relate to a postcode search of CV10 0TU (additional applications may exist for the wider site). However, there appear to be no documents available for viewing relating to the planning applications.

2.4.3 Additional Historic Imagery

An aerial photograph viewed on Historic England dated 1945 shows the site generally comparable to the imagery included within the Envirocheck report. No imagery was available for viewing of the site or its immediate environs on Britain from Above.

Free to view Google Earth imagery was also viewed dating from 1945 which shows the site generally comparable with the 1945 aerial photo provided within the Landmark report. In both images the nearby airfield is not shown. However, internet searches and additional imagery from Historic England show it present by this date.

The Google Earth imagery dated from 1999 appears slightly different to that contained within the Landmark Report. The image shown within Google Earth appears to show contrasts in vegetation colour which correspond to a number of former ponds as identified within the historic mapping. There is another contrasting feature located within the central eastern portion of the site which appears to position approximately with what was viewed in the 1950 aerial photograph within the Envirocheck report and discussed in Table 1.

The remaining aerial photographs of the site included within Google Earth generally indicate limited change (although the suspected infilled ponds are variably visible throughout the photos) until approximately 2023 when construction of the balancing ponds had commenced. Wider earthworks or infrastructure works also appear to be taking place.

By 2024 a road was under construction within the sites northeastern corner giving access to the commercial unit located to the east and a number of stockpiles/windrows are present across the site. The 2025 aerial photograph shows the road complete along with the commercial unit to the east and a number of stockpiles still present across the site.

2.5 Previous Works

A report was provided to GeoDyne which was carried out GEO Integrity in April 2025 entitled '*Preliminary Phase I and Phase II Geotechnical and Ge-Environmental Report – Mira North, MIRA Technology Park, Nuneaton, CV10 0TU*', Ref: 25-01-18. The preliminary site investigation appears to investigate the wider proposed MIRA Technology Development and was undertaken as a initial appraisal.

An initial review of the report has been undertaken and the following information relates to approximate area relating to the Plot 8 area.

4No. window sample boreholes were advanced within the footprint of Plot 8 comprising WS13, WS14, WS16 and WS17. WS13 encountered reworked ground to a depth of 1.70m below existing ground level (begl) overlaying Mercia Mudstone which was generally described as a stiff gravelly Clay or a very weak weathered Siltstone to a maximum depth of 3.50m begl. WS14, WS16 and WS17 generally encountered Made Ground or a Topsoil to a maximum depth of 0.60m begl overlaying Mercia Mudstone which was generally described as a stiff silty, locally sandy, gravelly Clay, dense clayey, locally gravelly Silt or a very weak weathered Siltstone to a maximum depth of 4.00m begl.

15No. soil samples of the were screened as part of the investigation (1No. of which was located within Plot 8) and recorded no significantly elevated levels of contaminants when compared to as a commercial end-use scenario.

3.0 GEOLOGY & ENVIRONMENTAL SETTING

3.1 Geological References

The following geological publications were referred to:

- BGS Sheet 169, 'Coventry' Solid and Drift, Scale 1:50,000 (1994).
- BGS Sheet SP39NE, Solid and Drift, Scale 1:10,000 (1992).
- BGS County Series 'Leicestershire 42 NW' Solid and Drift, Scale 1:10,560 (1916)
- Landmark geological map sheets (included in Appendix VI).
- www.bgs.ac.uk.
- The Coal Authority Interactive Map Viewer.

3.2 Geology

Superficial Deposits

The site is indicated to be immediately partially underlain within the central portion of the site by superficial deposits of Anker Sand and Gravel - Sand and gravel. The depositional setting of the Anker Sand and Gravel deposits are described by the BGS interactive viewer as '*These sedimentary deposits are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting)*'. The BGS Lexicon also gives the following description:

'Sand and gravel, with possible lenses of silt, clay or peat.'

The site is indicated to be immediately partially underlain within the northwestern corner of the site by superficial deposits of Alluvium-Clay, silt, sand and gravel. The depositional setting of the River Terrace deposits are described by the BGS interactive viewer as '*These sedimentary deposits are fluvial in origin. They are detrital, ranging from coarse- to fine-grained and form beds and lenses of deposits reflecting the channels, floodplains and levees of a river or estuary (if in a coastal setting)*'. The BGS Lexicon also gives the following description:

'Alluvium is a general term for clay, silt, sand and gravel. It is the unconsolidated detrital material deposited by a river, stream or other body of running water as a sorted or semi-sorted sediment in the bed of the stream or on its floodplain or delta, or as a cone or fan at the base of a mountain slope. Synonym: alluvial deposits. Normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. A stronger, desiccated surface zone may be present.'

The Alluvium may be further underlain by the Anker Sand and Gravel deposits in the northwestern area.

Bedrock Strata

The site is indicated to be further underlain by the solid bedrock geology of the Mercia Mudstone Group – Mudstone. The depositional setting of the Mercia Mudstone Group is described by the BGS interactive viewer as '*These sedimentary rocks are fluvial, lacustrine and marine in origin. They are detrital, deposited in lagoons or shallow seas; where a hot, arid climate also leads to the precipitation of beds of evaporites*'. The BGS Lexicon also gives the following description:

'Dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thin beds of gypsum/anhydrite are widespread; thin sandstones are also present. Mid Triassic (Anisian) to latest Triassic (Rhaetian).'

The Mercia Mudstone Group is also indicated to have bands of Gunthorpe Member – Dolomitic siltstone within which pass through the site. The depositional setting of the Gunthorpe Member-Dolomitic siltstone is described by the BGS interactive viewer as *‘These sedimentary rocks are fluvial, lacustrine and marine in origin. They are detrital, deposited in lagoons or shallow seas; where a hot, arid climate also leads to the precipitation of beds of evaporites.’* The BGS Lexicon also gives the following description:

‘Mudstone, red-brown, with subordinate dolomitic siltstone and fine-grained sandstone, greenish grey, common gypsum veins and nodules.’

3.3 Faults

There are no faults recorded at or within a 250m radius of the site.

3.4 Man-Made Deposits

Based on the information in the Landmark report and a review of the published geological mapping there is no indication of Man-Made Deposits at the site. Based on a review of the historic mapping and historic aerial photographs, there may be Made Ground associated with the earthworks, former ponds and any previous stockpiled material that may be still present.

The BGS County Series *‘Leicestershire 42 NW’* map describes the ponds within the vicinity of the site as *‘Old Pits In Red Marl’* indicating that they may be man-made excavations.

3.5 Coal Mining

The site does not lie within a Coal Mining Reporting Area in accordance with The Mining Remediation Authority (formerly the Coal Authority) Interactive Map.

Therefore, no specific investigation or mitigation in relation to historical coal mining issues are considered to be necessary at the site.

3.6 Landmark Envirocheck Report

A Landmark Envirocheck report was commissioned to assist in ascertaining the environmental setting of the site. The full Envirocheck report is presented in Appendix VII and has revealed the following relevant information (details are only listed where they are within potential influencing distance, i.e. <250m, of the site). A Landmark Mining and Ground Stability report was commissioned to expand on the data included within the Envirocheck report and is also presented within Appendix VII.

3.6.1 Agency and Hydrological

Discharge Consents

There are 5No. discharge consents recorded within a 250m radius of the site. The closest two discharge consents relate to the same site (Motor Industry Research) located 138m south of the site. The first discharge consent is dated 1965 and the status is not given. The second discharge consent is dated from 1993 with a revocation date of 1998. The discharge type is listed as *‘Trade Effluent Discharge Site Drainage’* with the receiving water listed as *‘Trib of River Anker’*.

The remaining 3No. discharge consents are located 151m east, 180m south and 226m east, they list the receiving waters as *‘Higham Brook’*, *‘Caldecote Brook’* and *‘Trib Of Fenny Drayton Brook’* respectively. They are all listed as revoked.

Local Authority Pollution Prevention and Controls

There are no local authority pollution prevention and controls recorded within a 250m radius of the site.

Integrated Pollution Prevention and Controls

There are no integrated pollution prevention and controls recorded within a 250m radius of the site.

Local Authority Pollution Prevention Controls

There is 1No. local authority pollution prevention control located within a 250m radius of the site. Located 153m southwest of the site it relates to '*Horiba Mira Ltd*' and relates to a petrol filling station. The status is listed as authorised with a permit reference '*PPCA – 39*'.

Pollution Incidents to Controlled Waters

There are no pollution incidents to controlled waters recorded within a 250m radius of the site.

Historical Prosecutions

There are no historical prosecutions recorded within a 250m radius of the site.

Registered Radioactive Substances

There are 2No. registered radioactive substances recorded within a 250m radius of the site. Located 218m south of the site they both relate to '*Mira Limited*' and are both listed as having the status listed as '*Transferred*'. There is limited other information supplied apart from the permit references which are listed as '*CC5517*' and '*CD3935*'.

Substantiated Pollution Incident Register

There are no substantiated pollution incidents recorded within a 250m radius of the site.

Water Abstractions

There are no water abstraction recorded within a 250m radius of the site.

Aquifer Status

The aquifer designation maps are presented in Appendix VII and are based on geological mapping provided to Landmark by the British Geological Survey. Different aquifer classifications may be applied to superficial (drift) deposits (typically forming shallow perched groundwater units where present) and bedrock aquifers (which may contain regional groundwater units). Possible aquifer designations comprise Principal Aquifers, Secondary (A, B or Undifferentiated) Aquifers and Unproductive Strata.

The Landmark report indicates that the site has a superficial aquifer designation of Secondary Aquifer – A relating to the Alluvium and the Anker Sand and Gravel deposits.

A Secondary Aquifer – A is described by the Environment Agency as '*... 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. These are generally aquifers formerly classified as minor aquifers.*'

The Landmark report indicates that the site has a bedrock aquifer designation of Secondary Aquifer - B relating to the Mercia Mudstone Group and a Secondary Aquifer – Undifferentiated relating to the Gunthorpe Member.

A Secondary Aquifer - B is described by the Environment Agency as '*... predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.*'

Secondary Undifferentiated aquifers are described by the Environment Agency as ‘...aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value.’

Groundwater Vulnerability

The Groundwater Vulnerability map is presented in Appendix VII and is based on data supplied by the Environment Agency.

The Groundwater Vulnerability Map indicates that the site has a combined classification of Secondary Bedrock Aquifer - High Vulnerability, with a combined aquifer of Productive Bedrock Aquifer, Productive Superficial Aquifer. With bedrock flow through ‘*Well Connected Fractures*’ and pollutant speed indicated to be ‘*Intermediate*’. The superficial thickness is indicated to be <3m in thickness.

Soluble Rock Risk

There is no soluble rock risk recorded at or within a 250m radius of the site.

Source Protection Zone Status

Source Protection Zones (SPZs) relate to a zone placed around a well or borehole for the protection of groundwater resources principally for public drinking water supply. The groundwater source catchments can be divided into three main zones – Inner (Zone I), Outer (Zone II) and Total Catchment (Zone III).

The Landmark report reveals that the site is not located within a Source Protection Zone (SPZ).

Flood Risk Status

The site is not located within an area at risk from flooding or extreme flooding from rivers or seas without defences.

The site is not in an area benefiting from flood defences and there are no flood defences on or located within a 250m radius of the site.

Small areas along and within the sites northwestern boundary are indicated to be within an area at risk from surface water flooding (1 in 30 year, 1 in 100 and 1 in 1000 year flood extent).

The central area of the site is indicated to be within an area with the potential for groundwater flooding of property situated below ground level. This appears to generally correspond to the location of the Anker Sand and Gravel deposits. Small areas in the sites north and northwest are indicated to be within an area with the potential for groundwater flooding to occur at surface and appear to correspond to location of the Alluvium.

This report does not constitute a flood risk assessment. Where further consideration of the flood risk status of the site is required, we would recommend the advice of a suitably qualified Flood Risk or Drainage Consultant be sought.

Surface Waters

The nearest surface water feature is indicated to be on the site. This likely relates to the brook and or surface water feature locate immediately north of the site and is a function of the Envirocheck boundary.

3.6.2 Waste

BGS Recorded/Historical Landfill Sites

There are no BGS recorded or historical landfill sites recorded within a 250m radius of the site.

Licensed Waste Management Facility

There are no licensed waste management facilities located within a 250m radius of the site.

Registered Waste Transfer Sites

There are registered waste transfer sites located within a 250m radius of the site.

Potentially Infilled Land (Water)

There are 3No. records of potentially infilled land (water) located within a 250m radius of the site, all of which are recorded as '*Unknown Filled Ground (Pond, marsh, river, stream, dock etc)*'. The records are located, 69m east, 148m southeast and 249m east and appear to the identified ponds within the historic mapping. Information from the scanned BGS County Series '*Leicestershire 42 NW*' map sheet describes the ponds within the vicinity of the site as '*Old Pits In Red Marl*'.

Therefore there is the potential for backfilled ponds to be present at the site. This is also evidenced within the Landmark Mining and Ground Stability report discussed in section 3.6.4

Potentially Infilled Land (Non-Water)

There are no records of potentially infilled land (Non-Water) within a 250m radius of the site.

3.6.3 Hazardous Substances

There are no records of hazardous substances located within a 250m radius of the site.

3.6.4 Geological Issues, Mining and Ground Stability

BGS Soil Chemistry

The BGS has prepared estimated soil concentration maps for several metals (including Arsenic, Lead, Nickel, Chromium and Cadmium), which are extrapolated from records available for use within their assessments. Whilst potentially useful for the inference of Natural Metal Enrichment (NME) of the natural soils in a general locale, the data should not be used to inform any detailed decisions with regards to the chemistry of a particular site as it does not allow for anthropogenic affects.

Estimates of the soil chemistry at the site indicate anticipated concentrations of Arsenic of <15mg/kg, Cadmium of <1.8mg/kg, Chromium of 60-90mg/kg, Lead of <100mg/kg and Nickel of 15-30mg/kg. Copies of the datasheets are included in Appendix VII.

Based on the information supplied within the Envirocheck report, the site is not shown to be located within an area where significant Natural Metal Enrichment of the underlying natural soils is likely to be present.

Ground Stability Hazards

The Landmark report has identified a hazard of '*Moderate*' relating to potential for compressible ground.

No other significant ground stability hazards have (above low risk) been identified by the Landmark Envirocheck report that relate to the site from collapsible ground, ground dissolution, landslide, running sand and shrinking or swelling clay ground stability hazards.

BGS Recorded Mineral Sites

There are no BGS recorded mineral sites within a 250m radius of the site.

Mining Instability

There is no evidence for mining instability at the site based on the Envirocheck report.

Extractive Industries or Potential Excavations

There are 4No. records associated with Extractive Industries or Potential Excavations within a 250m radius of the site, 1No. of which is satiated on site. The entries relate to “*Pond*” or “*Ponds*”

Radon

The Landmark report identifies 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). On this basis, no radon protective measures are considered necessary in the construction of new buildings or extensions at the site as of the date of this report.

BGS Borehole Records

As part of our works, we have reviewed available online BGS borehole records, which indicate that there are no borehole records within a 250m radius of the site.

3.6.5 Industrial Land Use

Contemporary Trade Directory Entries

There are 2No. contemporary trade directory entries located within a 250m radius of the site. The closest entry relates to ‘*G K N Drive Line Ltd*’ and is located 154m east of the site. It is listed as a ‘*Prop Shaft Manufacturers*’ it is listed as active.

The remaining entry, located 206m south of the site, relates to ‘*Warwick Acoustics*’ and is listed as a ‘*Hi-Fi Equipment Manufacturers & Distributors*’ and is listed as active.

Points of Interest

There are 6No. entries which relate to public infrastructure with a 250m radius of the site. The 6No. entries are recorded as ‘*Sluice*’ and all appear to be associated with the body of water located to the immediate north of the site.

3.6.6 Sensitive Land Uses

The majority of the site and the surrounding area are identified as being within a Nitrate Vulnerable Zone, associated with surface water.

3.7 UXO Pre-Desk Study Assessment (PDSA)

GeoDyne have commissioned a Zetica Pre-Desk Study Assessment (PDSA) for the site and is included in Appendix VIII.

The PDSA concludes that ‘*A detailed desk study is recommended to assess, and potentially zone, the Unexploded Ordnance (UXO) hazard level on the site.*’

GeoDyne were later provided with a UXO assessment that was undertaken for the previous investigation works which indicated that UXO precautions were not required for the proposed works.

3.8 Land Use Assessment

As part of the land use assessment, reference has been made to the '*Desk Reference Guide to potentially Contaminative Land Uses*' produced by Mr P Syms and published jointly by the ISVA (The Professional Society for Valuers and Auctioneers) in association with The Royal Institution of Chartered Surveyors (RICS) and the Chartered Institute of Environmental Health (CIEH).

We have also made reference to the Department for Environment, Food and Rural Affairs and the Environment Agency Contaminated Land Report CLR8 '*Potential Contaminants for the Assessment of Land*' (March 2002). Although now formally withdrawn, this document identifies key contaminants which may potentially be present at a site as a result of a given historical land use and is considered useful as a ready reference.

3.8.1 On Site Assessment

Historically, from the earliest available mapping dating from the 1880s, the site partially occupied part of a number of fields with field boundaries crossing the site. A pond was located within the sites south measuring approximately 30m by 10m. The 1950 aerial photograph appeared to indicate a circular feature potentially as a contrast in vegetation colour within the central portion of the site. The site remained largely unchanged until 1980s where it appears the previously identified pond in the sites south had been infilled. By approximately 2023, aerial imagery identified that groundworks or enabling works were underway as part of the presumed wider MIRA technology Park development. As part of the wider development, it appears that 2No. balancing ponds have been constructed within Plot 8.

During the site walkover and undertaking of the site works, the main development area of the site was predominantly being utilised for material storage with a number of stockpiles/windrows occupying the main proposed development area. The sites western extent comprised airable fields with young plant growing. The site was segregated by an ecological barrier during the walkover and at the time of the investigation works.

The site is not indicated to be immediately underlain by Made Ground by the geological mapping. Small areas of Made Ground may be present associated with any backfilled ponds that may be present on site. There is also the potentially for locally disturbed ground or Made Ground, based on the recent aerial photography indicating the enabling works/construction works and the construction of the balancing ponds. Although Made Ground may be present, the majority of the Made Ground is not anticipated to be significant in depth (excluding the backfilled ponds).

Recent aerial imagery also appears to indicate that there are a number of stockpiles/windrows present across the site. Based on the aerial photography, these appeared at a similar time to the construction of the balancing ponds and enabling works/earthworks.

The site is indicated to be immediately underlain (below any potential Made Ground) by superficial deposits of the Anker Sand and Gravel deposits within the central portion of the site and Alluvium within the northwestern corner of the site.

The site is indicated to be further underlain by the solid bedrock geology of the Mercia Mudstone – Mudstone with bands of the Gunthorpe Member – Dolomitic siltstone within. The superficial deposits at the site are classed as a Secondary Aquifer – A, the Mercia Mudstone Group and Gunthorpe Member are classed as Secondary Aquifer – B and Secondary Aquifer – Undifferentiated respectively. The site is not located within a Source Protection Zone (SPZ).

The site is located in an area where radon protective measures are not required in the construction of new dwellings/buildings or extensions at the site.

Based on the information obtained from our desk study enquiries, our walkover of the site and our experience of similar sites, potential contamination that may be present could include (but may not be limited to):

- Metals and metalloids associated with Made Ground or Natural Metal Enrichment (NME) in Natural Strata.
- Asbestos from any Made Ground.
- Acid/Sulphate contaminated soils associated with the Made Ground and or Natural Strata.
- Polycyclic Aromatic Hydrocarbons (PAHs) derived from any carbonaceous or ashy inclusions within the Made Ground.

The presence of backfilled ponds are not considered to be a significant source of ground gas risk and this is discussed further within the preliminary Conceptual Site Model within section 4.9.

3.8.2 Off-Site Assessment

The Phase I Desk Study information has revealed the site is located within an area predominantly utilised for presumed agricultural use prior to the 1940's. The site is located within surrounding area of the former RAF Linfield airfield base. Although the RAF base (and the subsequent vehicle testing facility) is not considered to be within influencing distance of the site, particularly given the anticipated presence of predominantly relatively impermeable soils at the site.

A number of manufacturing facilities have historically been recorded within a 250m radius of the site. These were recorded as a '*Works*' and '*Laboratory*' within the historic mapping. The Landmark report has also identified contemporary trade directories relating to vehicle manufacturing and sound equipment manufacturing.

The Phase I Desk Study as identified the absence of any significant sources of contamination that may have the potential to migrate onto the subject site. The Phase I Desk Study has identified the absence any historical landfill sites or significant sources of off-site sources of ground gas that may have potentially migrate onto the site.

4.0 PRELIMINARY CONCEPTUAL SITE MODEL

4.1 General

The DEFRA publication '*Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance*' (dated April 2012) states the following with regards to the production of a Conceptual Site Model (CSM) for a site:

'The process of risk assessment involves understanding the risks presented by land, and the associated uncertainties. In practice, this understanding is usually developed and communicated in the form of a "conceptual model"'. The development of a CSM is typically undertaken in an iterative process, reflecting the changes in understanding as more detailed site information becomes available.

In developing a CSM, and specifically in the context of land contamination, consideration needs to be given to three essential elements; which form the basis of any risk present. The statutory guidance sections 3.8 and 3.9 (April 2012) states the following:

- (a) *'A "contaminant" is a substance which is in, on or under the land and which has the potential to cause significant harm to a relevant receptor, or to cause significant pollution of controlled waters.*
- (b) *'A "receptor" is something that could be adversely affected by a contaminant, for example a person, an organism, and ecosystem, property, or controlled waters...*
- (c) *'A "pathway" is a route by which a receptor is or might be affected by a contaminant.*

The term "contaminant linkage" means the relationship between a contaminant, a pathway and a receptor.' For a contaminant linkage to be plausible, all three elements need to be present.

In undertaking a risk assessment and deriving a CSM for the purposes of the redevelopment of a site (i.e. planning and development control) reference has been made to both the Model Procedures for the Management of Land Contamination, as well as the National Planning Policy Framework (NPPF).

The preliminary CSM should identify the hazards (source of potential contamination) and should set out the potential pollutant linkages with a view to identifying the nature and magnitude of the potential risks to receptors.

In order to undertake the foregoing assessment, consideration is required with respect to the probability or likelihood of the linkage occurring and the severity and significance of the potential consequences; taking account the nature of the pollutant linkage and the potential severity of the hazard and the sensitivity of the receptor within the context of the proposed land use (in consideration of the planning regime).

Consideration of consequence/severity, probability/likelihood and risk has been based on the following guidance documentation:

- CIRIA C552 'Contaminated Land Risk Assessment, A Guide to Good Practice', 2001.
- EA R&D publication 66 'Guidance for the Safe Development of Housing on Land Affected by Contamination', 2008.
- EA Land Contamination Risk Management (LCRM), 2020.

4.2 Classification of Consequences

In order to apply a consequence classification to a particular potential pollutant linkage, it is first necessary to define the terminology used within the classification system. The following terminology and definitions detailed in Table 2 have been adopted within our assessment, based on the guidance referenced in Section 4.1.

TABLE 2 – CLASSIFICATION OF CONSEQUENCES	
Classification	Definition
Severe	- Acute risks to human health. - Short-term risk of pollution of controlled waters or significant impact on controlled waters; e.g. large-scale pollution or very high levels of contamination. - Catastrophic damage to buildings or property (such as building explosion causing collapse). - Ecological system effects – immediate risks of major damage which is likely to result in irreversible substantial adverse changes in the functioning of the ecosystem or harm to a species of special interest that endangers the long-term maintenance of the population.
Medium	- Chronic risks to human health. - Pollution of sensitive water resources (such as leaching of contaminants into controlled waters) causing a significant effect on water quality. - Ecological system effects – Immediate risks of significant damage which may result in substantial adverse changes to the ecosystems functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. - Significant damage to buildings, structures and services (for example foundation damage or rendering the building unsuitable for habitation).
Mild	- Non-permanent health effects to human health (i.e. exposure is unlikely to lead to 'significant harm' in the context of Part 2A of the Environmental Protection Act 1990). - Pollution of controlled waters or non-sensitive water resources (for example non-classified groundwater) that results in a short-lived effect to water quality or a marginal effect on amenity value, agriculture or commerce. - Minor damage to buildings, structures and services. - Ecological system effects – Minor or short-term damage which is unlikely to result in substantial adverse changes to the ecosystems functioning or harm to a species of special interest. - Substantial damage to non-sensitive environments (such as arable farmland for example).
Minor	- No measurable effects on human health including non-permanent health effects to human health that are easily preventable by appropriate use of PPE/RPE. - Minor pollution of controlled waters including non-sensitive water resources with no discernible effects on water quality or ecosystems. - Minor damage to non-sensitive environments (including arable farmland for example). - Easily repairable effects of damage to buildings, structures, services or the environment (for example discolouration of concrete, loss of plants in a landscaping scheme etc.).

4.3 Classification of Probability

Once the possibility of a pollutant linkage has been established (noting that probability classification does not apply when there is no possibility of a linkage being present), the probability should be classified in accordance with Table 3.

TABLE 3 – CLASSIFICATION OF PROBABILITY		
Classification	Definition	Likelihood
High Likelihood	There is a pollutant linkage and an event is highly likely to occur in the short-term, and is almost inevitable over the long-term OR there is evidence at the receptor of harm or pollution occurring.	>95% likelihood of Consequence Occurring
Likely	There is a pollutant linkage and it is probable that an event will occur. It is not inevitable, but possible in the short-term and likely over the long-term.	50 – 95% likelihood of Consequence Occurring
Low Likelihood	There is a pollutant linkage and circumstances are possible under which an event could occur. It is by no means certain that even over a longer period such an event would take place, and less likely in the short-term.	5 – 49% Likelihood of Consequence Occurring
Unlikely	There is a pollutant linkage and it is improbable that an event would occur even in the very long-term.	<5% likelihood of Consequence Occurring

4.4 Classification of Risk

In order to establish the relevant risk term applicable to the identified pollutant linkage, one of the risk phrases identified within Table 4 must be adopted, with the definitions of each risk term detailed within Table 5.

TABLE 4 – RISK CLASSIFICATION MATRIX (BASED ON C552 CIRIA, 2001)					
		Consequence of Risk			
		Severe	Medium	Mild	Minor
Probability (Likelihood)	High Likelihood	Very High	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/Low	Low
	Low Likelihood	Moderate	Moderate/Low	Low	Negligible
	Unlikely	Moderate/Low	Low	Negligible	Negligible or No Potential Risk

TABLE 5 – RISK CLASSIFICATION DEFINITIONS (BASED ON C552 CIRIA, 2001; MODIFIED BY GEODYNE)	
Very High	There is a high probability that severe harm will 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. Urgent investigation (if not undertaken already) and remediation are likely to be required.
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. 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.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, there is a low likelihood that such harm would be severe, or if any harm were to occur it is more likely that the harm would be mild. 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.
Moderate/Low	It is possible that harm could arise to a receptor. However, a combination of likelihood and consequence results in a risk that is above low but is not of sufficient concern to be classified as moderate. It can be driven by cases where there is an acute risk which carries a severe consequence, but where the exposure is unlikely. Such harm would at worst normally be mild. The risk is unlikely to present a substantial liability. Some limited further investigation may be required to clarify the risk and any associated liability. If subsequent remediation works are necessary, they are likely to be limited in extent.
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.
Negligible	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is unlikely to be any worse than mild. No liability would be associated with such risks.
No Potential Risk	There is no potential risk or liability where no pollutant linkage has been established.

4.5 Contaminant [C] - Pathway [P] - Receptor [R] Considerations

The following CPR assessment has been undertaken based on the assumption that the site will be used for a commercial end use with the sites development proposals comprising an industrial unit, areas of hardstanding and limited soft landscaping. Our assessment has therefore been undertaken adopting a commercial end use, the most appropriate given the existing generic land uses available at Tier 1 level.

4.6 Consideration of Potential Sources of Contamination [C]

Based on the findings of our works, the potential key sources of contamination at the site that would require consideration for the derivation of an initial CSM are summaries in Table 6 below.

TABLE 6 – SUMMARY OF POTENTIAL CONTAMINANT SOURCES	
Areas of Potential Concern (APC)	Associated Contaminants
Made Ground/Natural Strata	• Metals and metalloids • Asbestos • Polycyclic Aromatic Hydrocarbons (PAHs). • Acid/sulphate contaminated soils • Ground Gas

4.7 Consideration of Potential Pathways [P]

The potential pathways at the site are primarily:

- Direct ingestion of soil.
- Inhalation of fugitive dust.
- Direct skin contact with the ground.
- Direct contact with construction materials (including supply pipes).
- Vertical and lateral migration of contamination.
- Vertical and lateral migration of potentially hazardous ground gas.

4.8 Consideration of Potential Receptors [R]

The potential receptors at the site are:

- The final end users (staff - typically long term (chronic) exposure and site visitors – typically short term (acute) exposure).
- Neighbouring properties (i.e. off-site receptors).
- Controlled waters (i.e. underlying groundwater) or nearby surface waters.
- Buildings and construction materials.

In preparing this CSM, it has been assumed that construction personnel involved with the development of the site (typically short term (acute) exposure) will adopt all necessary personal protective equipment (PPE and RPE etc.) and conform to health and safety requirements of their site-specific Risk Assessments and Method Statements (RAMS). Groundworkers have therefore not been included within the following table.

4.9 Preliminary Risk Assessment / Conceptual Site Model

Our preliminary conceptual model of possible pollutant linkages, applicable to the proposed site usage and based on our current understanding, is summarised in Table 7.

TABLE 7 – PRELIMINARY RISK ASSESSMENT SUMMARY TABLE DESK STUDY						
Potential Contaminant Source [C]	Potential Pathway(s) [P]	Potential Receptor [R]	Probability of CPR Linkage	Consequence of CPR Linkage	Risk Level	Comments / Justification
Made Ground/Natural Strata	Direct contact, ingestion or inhalation of fugitive dust	Final end users, site staff and visitors	Low Likelihood	Medium	Moderate/Low	Historically, from the earliest available mapping, the site partially occupied part of a number of fields with field boundaries crossing the site. A pond was located within the sites south. The site remained largely unchanged until 1980s where it appears the previously identified pond in the sites south had been infilled. By approximately 2023, aerial imagery identified that groundworks or enabling works were underway. As part of the wider development, it appears that 2No. balancing ponds have been constructed within Plot 8. Therefore, there is the potential for limited Made Ground at the site, albeit it is not anticipated to be of significant thickness and is likely to be localised where it is deeper. The weathered bedrock Natural Strata beneath the site is anticipated to be relatively impermeable. The site is currently proposed for a continued commercial end-use with proposals including the construction of a commercial unit. Further consideration of this potential linkage should be provided during the course of the Phase II Exploratory Investigation works.
	Leaching of Contaminants through unsaturated zone	Controlled Waters	Low Likelihood	Medium	Moderate/Low	There is the potential for limited Made Ground at the site, albeit it is not anticipated to be of significant thickness and is likely to be localised where it is deeper. The weathered bedrock Natural Strata beneath the site is anticipated to be relatively impermeable. The superficial deposits beneath the site are classified as Secondary Aquifer – A and the bedrock soils beneath the site are classified as a Secondary Aquifer – B and Secondary Aquifer - Undifferentiated. The site is not located within a groundwater Source Protection Zone. This risk should be refined as part of Phase II Exploratory Investigation works and associated laboratory testing.
	Surface run-off or base flow from contaminated groundwater	Neighbouring watercourse	Low Likelihood	Mild	Low	The close proximity of the brook and body of water immediately to the north of the site means there is the potential for lateral migration of contamination. However, given the sites history comprising fields during the majority of its history the risk is considered to be low.
	Inhalation of fugitive dust	Neighbouring users	Low Likelihood	Mild	Low	The site will have a commercial end use with the site being covered by the building footprint or hardstanding with limited areas of soft landscaping. Dust generation from the underlying Made Ground or Natural Strata on a chronic basis is considered a low risk at this stage.

**TABLE 7 – PRELIMINARY RISK ASSESSMENT SUMMARY TABLE
DESK STUDY**

Potential Contaminant Source [C]	Potential Pathway(s) [P]	Potential Receptor [R]	Probability of CPR Linkage	Consequence of CPR Linkage	Risk Level	Comments / Justification
	Direct contact	Plastic buildings products (e.g. water supply pipes) and	Low Likelihood	Mild	Low	Any organic contamination has the potential to impact services. Based on the desk study review there is the potential for limited Made Ground at the site, albeit it is not anticipated to be of significant thickness and is likely to be localised where it is deeper.
		Construction Materials (e.g. buried concrete)	Likely	Medium	Moderate	The indicated bedrock Natural Strata (Mercia Mudstone and Gunthorpe Member) are both recorded as containing Gypsum as described by the BGS lexicon and therefore has the potential to be aggressive towards construction materials. This should be confirmed as part of any Phase II Investigation works.
	Vertical and lateral migration of potentially hazardous ground gases	End users of new buildings (asphyxiation or explosion)	Unlikely	Severe	Moderate/low	The site historically had a pond within its central southern area. A backfilled pond on this scale is not considered to be a significant source of ground gas with respect to the proposed development. A backfilled pond is likely to vent ground gas vertically to the surface. In addition, the weathered bedrock Natural Strata beneath the site is anticipated to be relatively impermeable. Should significant putrescible material within any backfilled features be identified at during the Phase II Investigation Works then it may be necessary to review our assessment. However, where a backfilled feature is located beneath the building footprint this will require excavation and backfilling of suitable engineered material to reduce the geotechnical risks this may pose to any floor slabs/foundations.
		Buildings (damage via explosion)	Unlikely	Severe	Moderate/low	

The foregoing preliminary conceptual model highlights the potential plausible pollutant linkages that may relate to the site and would therefore require addressing by appropriate Phase II Exploratory Works. The information contained within the conceptual model should be confirmed and revised upon completion of an appropriate intrusive investigation, as detailed in the following sections.

5.0 GROUND INVESTIGATION

5.1 Introduction

Sub-Surface Utility Scan

Prior to the commencement of our intrusive works at the site a sub-contracted sub-surface utility scan of proposed exploratory hole locations was undertaken to attempt to avoid buried services. Based on the results of the service scan, the exploratory holes were positioned in accessible areas of the site in order to maximise the amount of information obtained during our site works, whilst avoiding known utilities.

Based on the plans provided, a number of drainage runs had already been installed which connected into the adjacent development, the wider site and extended to the northwest. A number of the drainage runs also connected into the recently constructed balancing ponds.

In conjunction with the sub-surface utility scan a representative from Cadent were also in attendance to mark out their high-pressure asset and an appropriate easement was set up to help ensure that their asset was not affected by the proposed investigation works.

Exploratory Hole Locations

Table 8 summarises the reasoning behind the exploratory hole positions.

TABLE 8– REASONING FOR EXPLORATORY HOLE LOCATIONS	
Exploratory Hole Ref.	Reasoning Behind Location
WS1 to WS5, TP2 and TP7	Targeted to the proposed building footprint.
TP1 and TP3	To provide general site coverage and targeted to possible former pond features.
TP 4 to TP6 and WS6	To provide general site coverage.
CBR1, CBR2 and CBR3	Targeted to the proposed road layout.
Key WS – Window Sample Borehole TP – Trial Pit CBR – Trial Pit to obtain CBR sample	

Window Sampling Borehole Works

Window sampling borehole works were undertaken on 30th March 2026 and comprised the advancement of 6No. window sampling boreholes (designated WS1 to WS6 inclusive). The boreholes were advanced to depths ranging between 1.00m and 3.00m below existing ground level (begl). Standard Penetration Tests (SPTs) were undertaken at nominal 1m centres in the boreholes in order to provide initial strength data for the near surface soils. Window sample borehole WS3 terminated at 1.00m begl due to an SPT refusal (i.e. ≥50 blows). Window sample boreholes WS1, WS2 and WS4 terminated at 2.00m begl due to an SPT refusal with WS5 and WS6 both terminating at 3.00m begl due to an SPT refusal. Following completion, the window sample boreholes were backfilled with the arisings.

Trial Pitting Works

Trial pitting works were undertaken on 30th and 31st March 2026 and comprised the advancement of 10No. mechanically excavated trial pits (designated TP1 to TP7 inclusive and CBR1 to CBR3 inclusive). The mechanically excavated trial pits were advanced to depths ranging between 0.50m and 3.20m begl. 3No. trial pits (designated CBR1 to CBR3 inclusive) were advanced in the location of the proposed road (as provided by the engineer). These locations were advanced to a depth of 0.50m begl to specifically obtain bulk samples for CBR testing. Following completion, the trial pits were backfilled with arisings being replaced generally in reverse order and compacted with the excavator bucket.

Trial Pits TP4 and TP5 were advanced to 1.60m and 0.80m begl respectively to facilitate soakaway testing. Following the monitoring within the time available, the soakaway test pits were bailed of water and backfilled with arisings being replaced generally in reverse order and compacted with the excavator bucket.

A further 8No. trial pits were advanced above ground level in existing mounds situated across the development area (designated Mound 1 to Mound 8 inclusive). The mechanically excavated trial pits within the mounds were advanced to depths ranging between 1.00m and 2.80m. Following completion, the trial pits were backfilled with arisings being replaced generally in reverse order and compacted with the excavator bucket.

Exploratory Hole Logs and Plates

The exploratory hole logs are presented in Appendix IX of this report. Plates (P1 to P22) showing the exploratory hole arisings are included as Appendix X.

5.2 Ground Conditions

Detailed descriptions of the ground conditions encountered in the exploratory holes are presented on the logs included in Appendix IX.

The general ground conditions across the site (not including the mounds) may be summarised as follows:

Made Ground

Made Ground was encountered to maximum depths ranging between 0.40m (TP2) and 1.80m begl (TP3). At the location of TP2, Made Ground was identified as a possible buried topsoil and was generally described as a red brown, brown or mottled red brown gravelly clay with rare roots. Made Ground, however was generally described as a red brown gravelly clay with gravel comprising quartzite, concrete, metal, tile, wood, limestone and plastic.

At the location of TP3 (targeted to a suspected former pond) Made Ground was initially encountered as a Made Ground Topsoil and was described as a dark brown clayey topsoil with occasional roots and rare cobbles of brick and plastic fragments to a depth of 0.55m. This was further underlain by possible reworked natural strata and was described as a red-brown silty clay with rare mudstone lithorelics and roots and quartzite gravel to a 1.80m begl. The reworked natural strata was also noted to be locally water bearing.

Reworked Natural Strata was also encountered in the location of WS2 to a depth of 0.75m begl and was described as a red brown slightly gravelly clay.

The approximate locations of the exploratory holes and the depth (m begl) of Made Ground are shown on the plans presented in Appendix XI (Figure No. 45296/06 and 45296/07).

Natural Strata

In the majority of the exploratory holes Topsoil was initially encountered to depths ranging between 0.08m and 0.40m begl. Topsoil was generally described as at dark brown slightly silty gravelly clayey topsoil or slightly clayey gravelly silty topsoil.

The site is indicated to be partially underlain by superficial deposits of the Anker Sand and Gravel and partially underlain Alluvium according to the BGS mapping. The site is indicated to be further underlain by the solid bedrock geology of the Mercia Mudstone – Mudstone and localised bands of Gunthorpe Member-Dolomitic siltstone based on the BGS mapping.

In the locations of TP4 and TP5 material considered visually representative of the Anker Sand and Gravel was tentatively identified at shallow depths and was described as an orange brown and mottled or yellow brown slightly sandy locally slightly gravelly CLAY with clayey gravelly fine to coarse grained sand pockets and gravel comprising quartzite and coal. Strata considered visually representative of the Anker Sand and Gravel was encountered to depths of 0.70m and 1.45m begl in TP5 and TP4 respectively.

Strata considered visually representative of the weathered Mercia Mudstone was encountered across the majority of the site and was encountered to a maximum depth of 3.20m begl although was not fully penetrated. Strata considered visually representative of the weathered Mercia Mudstone was generally initially described as a firm or firm to stiff locally stiff or very stiff red brown locally mottled green grey locally silty gravelly CLAY with gravelly comprising siltstone or mudstone. Localised bands of lightly grey silty siltstone gravel and mudstone lithorelics.

5.3 Stockpiles (Mounds)

Mechanically excavated trial pits were advanced into the majority of the mounds located within the site boundary. We would note a number of the mounds do not appear to have full separation and may have been 'overtipped' causing them to merge together. A total of 8No. mechanically excavated trial pits were advanced into separate mounds and the materials identified are summarised in Table 9 below.

TABLE 9– STOCKPILE (MOUND) SUMMARY DESCRIPTION TABLE	
Mound No.	Material Encountered/Strata Description
1	Dark brown clayey slightly gravelly topsoil with roots and gravel of quartzite
2	Dark brown clayey slightly gravelly topsoil with roots and gravel of quartzite, brick and wood fragments
3	Dark brown clayey slightly gravelly topsoil with roots and gravel of quartzite and rare brick fragments
4	Dark brown clayey gravelly topsoil with roots locally mixed with red-brown and brown clay with gravel of quartzite, brick, concrete, plastic, wood and with limestone cobbles fragments
5	Dark brown clayey gravelly topsoil with roots locally mixed with red-brown and brown clay with gravel of quartzite, brick, concrete, plastic, wood, glass and with limestone cobbles fragments
6	Dark brown clayey slightly gravelly topsoil and gravel of quartzite
7	Dark brown and red-brown gravelly clay with gravel of quartzite, concrete, brick and plastic with cobbles of brick and concrete with rare boulders of concrete
8	Red-brown gravelly clay with gravel of mudstone, siltstone, quartzite, concrete, plastic, glass and tile

The approximate locations of the exploratory holes the accompanying mound (taken from the provided survey) are shown on the plan presented in Appendix XI (Figure No. 45296/06).

Base on a visual assessment of the materials encountered, the stockpiles appear to predominantly comprise topsoil together with variable inclusions of construction materials and anthropogenic constituents. Stockpile 8 appeared visually representative of Natural Strata arisings with the inclusion of anthropogenic constituents. It is anticipated that these stockpiles were formed predominantly from soils excavated during the construction of the adjacent site.

5.4 Visual and Olfactory Observations

No significant visual or olfactory evidence was found during the Phase II Investigation works.

5.5 Water

Water was not encountered within the majority of the exploratory holes advanced as part of the Phase II investigation works. Localised perched water was encountered with TP3 within the possible reworked natural strata, albeit this was only minor seepages from discrete locations within the trial pit.

5.6 Stability / Excavation

Generally, the sides of the window sample boreholes and trial pits were noted to be stable (excluding the mounds) during their advancement and for the short period of time they remained open.

5.7 Soakaway Testing

During the course of the site works 2No. initial soakaway test pits were excavated (designated TP4 and TP5) to investigate the initial permeability properties of the shallow soils at the site.

Testing comprised filling the open pit with water and measuring the rate of water infiltration into Natural Strata during a single day. One test was undertaken in each location during the works. The soakaway calculation sheets are included in Appendix XII.

A summary of the soakaway testing carried out is shown below in Table 10.

TABLE 10 – INITIAL SOAKAWAY TESTING RESULTS					
Trial Pit Reference	Strata Tested	Test Number	Testing Time (mins)	Drop in Water Level (m)	Derived Infiltration Rate (m/s)
TP4	Slightly sandy CLAY	1	200	0.00	N/A
TP5	Slightly sandy slightly gravelly CLAY	1	191	0.01	N/A

Based on the testing in these two locations the rate of fall in water was negligible and therefore unsuitable for a reliable long term soil infiltration rate to be calculated. Based on the drop in water level during the testing time soakaways will not be viable, and therefore an alternative drainage solution should be explored.

Following the monitoring, within the time available, the soakaway test pits were bailed of water and backfilled with arisings being replaced generally in reverse order and compacted with the excavator bucket.

5.8 Standard Penetration Test (SPT) Data

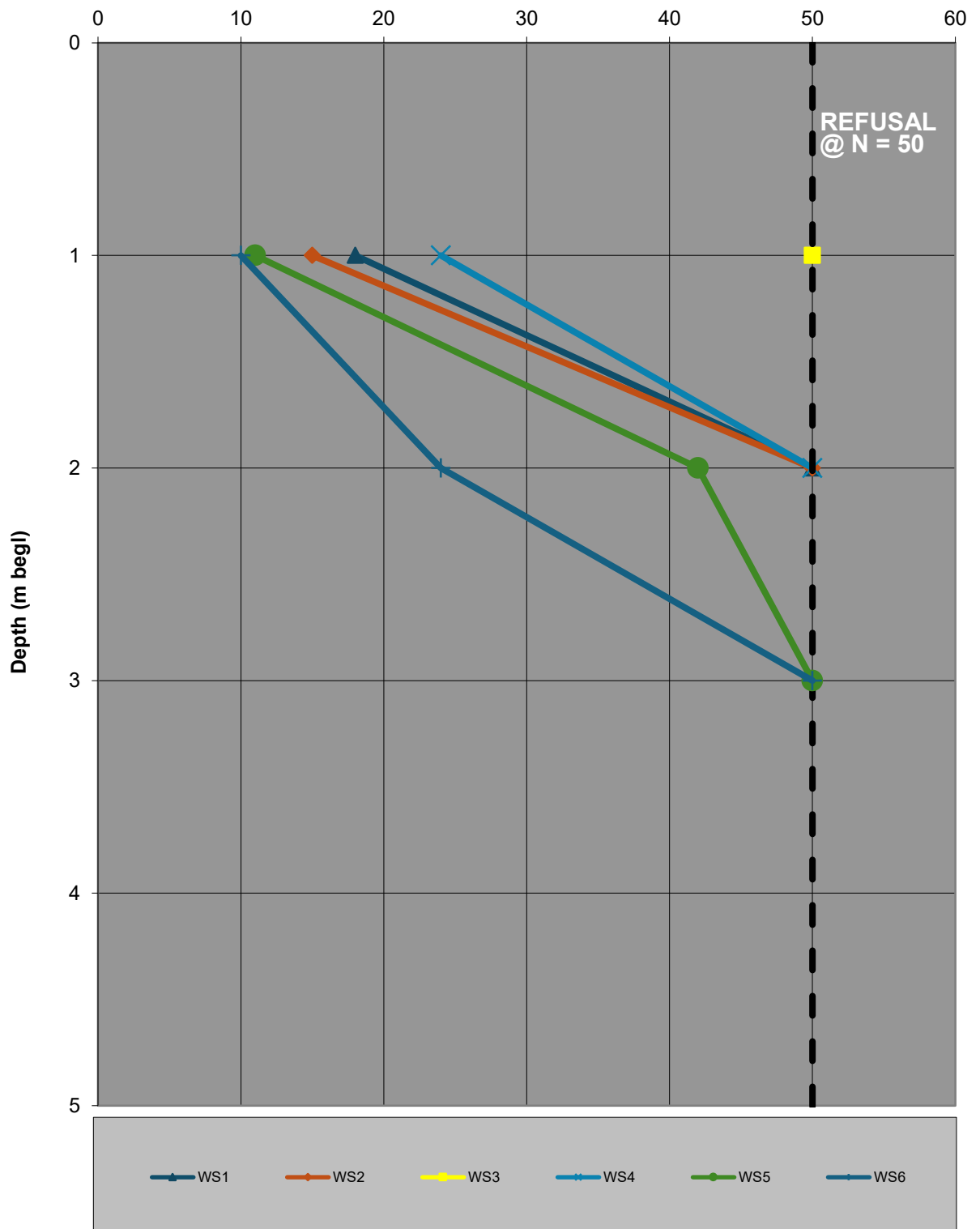
In order to establish a strength/depth profile of the soils beneath the site, in-situ Standard Penetration Testing (SPT) was undertaken at one-metre nominal centres in the boreholes.

The testing revealed SPT 'N' Values as follows:

- At 1.00m begl SPT 'N' Values ranged between 11 and >50 (SPT refusal in WS3).
- At 2.00m begl SPT 'N' Values ranged between 24 and >50 (SPT refusal in WS1, WS2 and WS4).
- At 3.00m begl an SPT 'N' Value of >50 was recorded in WS5 and WS6.

Chart 45296/01 (included overleaf) shows the SPT results plotted against depth. The SPT results for each of the boreholes are also provided on the logs included in Appendix IX.

Chart 45296/01
MIRA North Plot 8,
MIRA Technology Park
 SPT N Values Vs Depth (m begl)
 SPT N (Uncorrected)



6.0 LABORATORY TESTING & CONTAMINATION ASSESSMENT

6.1 Introduction

As part of our works a suite of geotechnical laboratory soils testing has been undertaken, which comprised the following:

- 4No. Recompacted soaked CBR tests.
- 4No. Plasticity index tests.
- 32No. pH tests.
- 4No. Water soluble BRE SD1 sulphate tests.

In addition, a suite environmental soil testing was carried out on visually representative samples recovered from the exploratory holes. The testing strategy was based on the land use assessment and preliminary CSM derived by the desk study works, and was considered sufficient to enable an initial assessment of the chemical status of the soils and water at the site. The following testing has been undertaken as part of our works:

- 15No. Contamination suites (including metals, speciated PAH and TOC).
- 12No. Asbestos Screens.
- 1No. OCP+OPP Combined Pesticide Suite.

The majority of the soil testing was undertaken within the proposed development area. A small number of tests were also undertaken within wider site to the northwest of the proposed development area. For an initial assessment the soil test results have been combined into one table for assessment purposes.

The soil test results are included in Appendix XIII.

6.2 Geotechnical Soil Test Results

BRE SD1 Suite

Four samples were subjected to testing for a BRE suite, including Water Soluble Sulphate, pH and Total Sulphur (TS), due to the potential for encountering potentially pyritic soils as indicated by Box C6 of BRE Special Digest 1 (SD1). The soil test results were assessed in accordance with Table C1 in BRE SD1.

The testing revealed water soluble sulphate concentrations ranging between <10mg/l SO₄ and 13mg/l SO₄ within the four samples analysed.

Total sulphur testing was undertaken on the 4No. selected samples obtained from the site, which revealed concentrations ranging between <0.01% w/w and 0.01% w/w.

Utilising the stoichiometric equation detailed within BRE Special Digest 1, the total sulphur content can be amended to provide the total potential sulphate content (TPS value), which may be used within the derivation of the appropriate Design Sulphate Class.

The total potential sulphate (TPS) content can be derived using the result of the total sulphur testing using the following equation:

$$\text{Total Potential Sulphate (\% SO}_4\text{)} = 3.0 \times \text{Total Sulphur}$$

Based on the results of the testing and the above equation, the total potential sulphate ranged from <0.03% to 0.03%. The guidance notes that the use of the stoichiometric equation provides a conservative estimate of TPS, as any sulphur within organic matter and minerals such as barite are included.

The oxidizable sulphides (OS) can be derived using the following equation:

$$\text{Oxidizable Sulphides (OS \% SO}_4\text{)} = \text{Total Potential Sulphate} - \text{Total Acid Soluble Sulphate}$$

On the basis of the calculations for oxidizable sulphides, the strata encountered does not appear to contain an appreciable quantity of oxidisable sulphides (given that the oxidisable sulphides content is between <0.01% and 0.01% in the samples tested). The results of the sulphate testing is summarised in Table 11 below.

TABLE 11 – SUMMARY OF SULPHATE TESTING					
Sample Ref. & Depth (m begl)	Strata	Water Soluble Sulphate (2:1 mg/l)	Sulphur (BRE Total) (% w/w)	Total Potential Sulphate (% SO ₄)	Oxidisable Sulphides (% SO ₄)
WS1, 0.70 – 0.80	Clay (Mercia Mudstone)	<10	<0.01	0.03	0.01
WS3, 0.30 – 0.40	Clay (Mercia Mudstone)	<10	<0.01	0.03	0.01
WS5, 2.50 – 2.80	Clay (Mercia Mudstone)	13	0.05	0.03	0.01
TP7, 3.00	Clay (Mercia Mudstone)	<10	0.01	0.03	-0.02

In accordance with the Building Research Establishment publication Special Digest 1 '*Concrete in Aggressive Ground*' (2005) the mean of the highest 20% of the sulphate concentrations should be taken as the characteristic value, together with the mean of the lowest 20% of the pH values based on the number of samples tested.

For water soluble sulphate, a characteristic value of 13mg/l SO₄ and 10.09 for pH which indicates an initial Design Sulphate Class of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1s (assuming a brownfield site with static water).

To classify site locations where ground materials (natural ground or clean fill derived from natural ground) may contain sulfides (e.g. pyrite), BRE Special Digest 1 states that the total potential sulfate content of the soils (which might result from oxidation following ground disturbance) should also be taken into account.

For total potential sulphate (TPS) the maximum value of 0.03% SO₄ with 10.09 for pH indicates a Design Sulphate Class of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1s. None of the samples tested indicated oxidisable sulfides greater than 0.3% SO₄.

The following classification has been made based on the assumption of a brownfield ground location and the presence of static groundwater conditions beneath the site.

Based on the results of the laboratory testing carried out to date, the site indicates to be in classifications of Design Sulfate Class DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1s.

Plasticity Index (PI) Analysis

A total of 4No. Plasticity Index (PI) tests were undertaken on selected samples from the near surface cohesive Natural Strata during the site works.

In accordance with NHBC standards Chapter 4.2 '*Building Near Trees*' and BRE Digest 240 '*Low-rise buildings on shrinkable clay soils: Part 1*' (1993) the reported PI values may be modified based on the portion of the sample passing the 425µm sieve.

The result of the PI analysis is summarised in Table 12.

TABLE 12 – SUMMARY OF PARTICLE PLASTICITY INDEX (PI) DATA

Sample Reference & Depth (m begl)	Strata	Moisture Content (%)	Reported PI Value (%)	Portion Passing 425µm Sieve (%)	Modified PI Value (%)	Volume Change Potential
TP1, 2.00	MUDSTONE	16.0	18	93	17	Low
TP2, 1.40	MUDSTONE	19.1	22	75	17	Low
TP6, 1.00	CLAY	20.4	20	98	20	Medium
TP7, 0.50	CLAY	28.4	27	96	26	Medium
NR – Not Reported. NP – Non-Plastic.						

The results of the PI testing has revealed that the samples obtained during the site works are classified as having a volume change potential of low to medium. Therefore a medium volume change potential should be adopted for design purposes.

Initial Desiccation Assessment

An initial assessment to the potential desiccation of soils has been undertaken using the plasticity index test results and guidance provided in BRE 412.

The Building Research Establishment (BRE) Digest 412 '*Desiccation in clay soils*' (1996) provides guidance on the assessment of desiccation in clay soils. Whilst there is no single method for the assessment of desiccation of clay soils, a number of possible techniques are provided in the BRE guidance. Two such approaches have been adopted herein.

1) Comparisons of Soil Water Contents with Soil Index Properties

BRE 412 notes the following:

'The basis of these methods is that there is a water content at which a soil can be considered to be desiccated and that this water content can be related to the soil's index properties (for example its Liquid Limit (WL), and plastic Limit (Wp). The most commonly used criterion is that the onset of significant desiccation occurs when the soil's water content is at 0.4 times the Liquid Limit. If therefore W<0.4WL then the soil is significantly desiccated. The W<0.4WL criterion was intended as a crude estimate of the onset of significant desiccation...'

However, the above does not consider the general decrease in soil water content with depth encountered in most over consolidated clays. It does not also consider the potential for weathering differences between Clays and Mudstones.

The water content of the 4No. samples tested ranged between 16.0% and 28.4%.

The Ratio of W to WL was found to range between 0.56 (highest) and 0.41 (lowest). The ratio of W to WL was found not to be below 0.40 in the samples tested.

2) Liquidity Index

With respect to the Liquidity Index (LI) the guidance notes that the Liquidity Index may be calculated as follows:

$$LI = (W - Wp) / Ip$$

Where:

LI = Liquidity Index

W = Moisture Content

Wp = Plastic Limit

Ip = Plasticity Index

A value of $II = 0$ means that the soil's water content is at the Plastic Limit, while negative values indicate that the soil is drier than the Plastic Limit and may therefore be desiccated.

The Liquidity Index was calculated for the 4No. samples and was found to range between 0.16 (highest) and -0.28. (lowest). The liquidity index was found to be negative in 3No. of the 4No. samples tested.

Based on the foregoing and plotting the desiccation assessment with depth, it appears to show the soils may be desiccated with depth. However as mentioned above, the initial assessment does not consider the general decrease in soil water content with depth encountered in most over consolidated clays or the potential for weathering differences between Clays and Mudstones.

The initial assessment of desiccation in consideration of plasticity index analysis appears to suggest the strata encountered at the time of our investigation does appear to show signs desiccation with depth. However, we would consider this to be more representative of a reducing moisture content with depth as the material becoming more representative of a Mudstone.

We would note that the shallowest sample (TP7 at 0.50m begl) does not indicate the potential for the onset of desiccation with respect to Ratio of W/WI or Liquidity Index.

A copy of the Desiccation Assessment Sheets are included in Appendix XIV.

CBR Testing

Recompacted soaked California Bearing Ratio (CBR) testing was undertaken on 4No. samples of Natural Strata obtained during the investigation works. 3No. were obtained from the proposed roadway as requested by the engineer (noting that a further 2No. locations were inaccessible due to existing balancing ponds). Another sample was also obtained within an area of proposed hardstanding.

The results of the recompacted soaked CBR testing are summarised on Table 13 below. CBR values for the top and bottom of the remoulded soaked sample are recorded.

TABLE 13 – SUMMARY OF CALIFORNIA BEARING RATIO DATA				
Sample Reference and depth (m begl)	Strata Type	Initial Moisture Content (%)	CBR Test Result (%)	
			Sample Top	Sample Bottom
CBR1, 0.50	Silty gravelly CLAY	18.9	3.2	4.4
CBR2, 0.50	Slightly silty CLAY	18.0	3.6	5.5
CBR3, 0.50	Slightly silty CLAY	17.2	4.9	7.0
TP7, 0.80	Slightly silty CLAY	17.2	5.2	8.0

The laboratory testing revealed CBR values of between 3.2% and 8.0%. A maximum swelling of 0.77mm was recorded across the recompacted soaked CBR tests. Based on the samples tested, the Engineer should select a suitable equilibrium CBR value taking account of any in-situ testing together with the water content, plasticity / grading and frost susceptibility of the formation at the time of construction.

It should be noted that laboratory recompacted soaked CBR values represent a CBR value that could be achieved where soils are compacted in optimum conditions and are unlikely to be replicated in the field unless proven by suitable earthworks validation. The soaked CBR value represents a long-term design equilibrium should the material become wet within its design lifetime. This will be discussed further in our Conclusions and Recommendations.

6.3 Contamination Assessment Rationale

We understand that it is proposed to build an additional commercial unit at the site. The site will therefore continue its use as a commercial end use. Our assessment has therefore been undertaken adopting a commercial end use given the existing generic land uses available at Tier 1 level.

6.3.1 Assessment Methodology

In order to undertake a Generic Quantitative Risk Assessment (GQRA) we have adopted the Suitable for Use Levels (S4ULs) published by LQM/CIEH in their publication referenced: Nathanail, C.P., McCaffrey, C. Gillett, A.G., Ogden, R.C. and Nathanail, J.F, 2015. *'The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham. All rights reserved.'* In the absence of an S4UL screening value, we have made reference to the Category 4 Screening Levels (C4SLs) published by DEFRA.

In consideration of the available generic land uses utilised in the derivation of the adopted screening criteria, we have adopted a commercial end use for the purposes of our assessments as outlined in Section 6.3 above.

For assessment purposes, we have adopted a policy whereby determinants within the dataset are individually compared to the relevant screening value (i.e. individual S4ULs or C4SLs). Where determinants within the dataset are less than the appropriate screening value, the determinant is considered to be present at an acceptable concentration and no further assessment is required. Additional comment, statistical assessment or further Detailed Quantitative Risk Assessment (DQRA) may be provided where elevated values are revealed.

6.3.2 Selection of Soil Organic Matter (SOM) Content

The SOM content and soil type are used to provide an assessment of the applicability of the screening values adopted (the S4UL values are typically based upon SOM of 1%, 2.5% and 6%, as applicable).

Determinants have in the first instance, been compared to screening values adopting a conservative SOM of 1% (where applicable).

Where the determinant exceeds the relevant screening value at 1% SOM, a site-specific SOM may be adopted as appropriate to derive more site-specific screening values and the dataset reassessed.

6.4 Sampling Strategy

The sampling strategy for the site was primarily to retrieve visually representative soil samples from a selection of locations that provide a good coverage across the proposed development area as well as providing an additional assessment of the mounds situated across the site. The assessment and sampling location was based on a review of the historical, geological and environmental information obtained from the desk study enquiries.

The ground conditions encountered during our Phase II works revealed the presence of three distinct types of material, i) Made Ground ii) Made Ground (Topsoil) iii) the underlying Natural Strata.

Representative samples were obtained during our Phase II works. Samples were subjected to chemical analysis for a suite of contaminants deemed appropriate based on the findings of the Desk Study or the ground conditions encountered during the intrusive investigation.

6.5 Contamination Analysis

For initial assessment purposes, the laboratory test results have been combined into a single dataset, for individual comparison against appropriate GACs.

6.6 Contamination Soil Test Results

The contamination assessment for site is summarised in Table 14.

Please note that screening values have only been used for determinants where they are present at concentrations in excess of the Limit of Detection (LOD) of the method of analysis employed by the laboratory on at least one occasion.

In the first instance we have combined all the samples into one dataset from including those taken from areas proposed for regrading and or the potential for a site compound.

TABLE 14 – SUMMARY OF TIER 1 GAC ASSESSMENT COMMERCIAL END-USE				
Contaminants – Potentially Harmful to Human Health	No. of Samples Tested	Concentration Range (mg/kg)	Tier 1 GAC (mg/kg)	Tier 1 GAC Exceeded (Yes/No)
Metals				
Arsenic	15	<1 – 7	640 S4UL	No
Cadmium	15	<1 – 2.2	190 S4UL	No
Copper	15	7 – 373	68000 S4UL	No
Chromium III	15	14 – 38	8600 S4UL	No
Lead	15	2 – 73	2300 C4SL	No
Nickel	15	15 – 46	980 S4UL	No
Zinc	15	25 – 408	730000 S4UL	No
PAH				
Benzo(a)anthracene	15	<0.1 – 0.11	170 S4UL	No
Benzo(a)pyrene	15	<0.1 – 0.18	35 S4UL	No
Benzo(b)fluoranthene	15	<0.1 – 0.21	44 S4UL	No
Benzo(ghi)perylene	15	<0.1 – 0.16	3900 S4UL	No
Benzo(k)fluoranthene	15	<0.1 – 0.13	1200 S4UL	No
Chrysene	15	<0.1 – 0.19	350 S4UL	No
Fluoranthene	15	<0.1 – 0.31	23000 S4UL	No
Indeno(123-cd)pyrene	15	<0.1 – 0.16	500 S4UL	No
Phenanthrene	15	<0.1 – 0.13	22000 S4UL	No
Pyrene	15	<0.1 – 0.27	54000 S4UL	No
Key S4UL – CIEH/LQM Suitable 4 Use Levels (2015). Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3026. All rights reserved. C4SL –value for Lead taken from DEFRA publication SP1010 and based on a commercial end-use.				

All of the determinants assessed were present at individual concentrations below the Limit of Detection of the method of analysis adopted by the laboratory or below the appropriate Tier 1 GAC based on a commercial end-use.

No OCP+OPP Combined Pesticides were identified above the limit of detection adopted by the laboratory.

6.7 Asbestos

Asbestos Screening was undertaken on 12No. soil samples from the site.

We would note that no visual evidence of any suspected Asbestos Containing Materials (ACMs) was noted during the site works within the exploratory holes.

No asbestos fibres were detected by the laboratory within the 12No. samples screened.

6.8 Contamination Assessment Summary

Human Health

Contamination testing was carried out on selected samples of the Made Ground and Natural Strata (including the material sampled within the mounds) which revealed no elevated levels of concentrations of contaminants when compared to the Tier 1 GAC for a proposed commercial end-use.

Therefore, based on the chemical contaminations assessment undertaken, the Made Ground and Natural Strata are considered as chemically uncontaminated for the ongoing commercial end use.

Controlled Waters

The soil test results have revealed the general absence of any significant potentially widespread mobile contaminants beneath the subject site.

The concentrations of determinants detected are therefore considered not to present a potentially significant risk to Controlled Waters.

7.0 REVISED CONCEPTUAL SITE MODEL

7.1 Introduction

In accordance with the approach detailed within Section 4.0, the Conceptual Site Model (CSM) for the site should be refined following acquisition and collection of additional data following completion of the site investigation works.

As a result of the site investigation, no potential sources, pathways or receptors have been excluded from the pCSM. However, the potential contaminant linkages have been re-assessed to reflect the findings of the investigations and risk assessments completed.

Our revised assessment following the acquisition and collection of information from the site investigation works is provided in Table 15.

**TABLE 15 – REVISED RISK ASSESSMENT SUMMARY TABLE
PHASE II EXPLORATORY INVESTIGATION**

Potential Contaminant Source [C]	Potential Pathway(s) [P]	Potential Receptor [R]	Probability of CPR Linkage	Consequence of CPR Linkage	Risk Level	Comments / Justification
Made Ground/Natural Strata	Direct contact, ingestion or inhalation of fugitive dust	Final end users, site staff and visitors	Low Likelihood	Mild	Low	The site is currently proposed for a continued commercial end-use with proposals including the construction of a commercial unit. Made Ground was generally encountered to depths ranging between 0.40m and 1.80m begl. At the location of TP3 (targeted to a suspected former pond) Made Ground was noted to be locally water bearing and was encountered to 1.80m begl. Contamination testing carried out on selected samples of Made Ground and Natural Strata revealed no elevated levels of concentrations of contaminants when compared to the Tier 1 GAC for a commercial end-use.
	Leaching of Contaminants through unsaturated zone	Controlled Waters	Low Likelihood	Mild	Low	The soil test results have revealed the general absence of any significant potentially mobile contamination beneath the subject site. The concentrations of determinants detected are considered to be unlikely to present a potentially significant risk to Controlled Waters. The superficial deposits beneath the site are classified as Secondary Aquifer – A and the bedrock soils beneath the site are classified as a Secondary Aquifer – B and Secondary Aquifer – Undifferentiated. The site is not located within a groundwater Source Protection Zone.
	Surface run-off or base flow from contaminated groundwater	Neighbouring watercourse	Low Likelihood	Mild	Low	The close proximity of the brook and body of water immediately to the north of the site means there is the potential for lateral migration of contamination. However, the soil test results have revealed the general absence of any significant potentially mobile contamination beneath the subject site. The concentrations of determinants detected are considered to be unlikely to present a potentially significant risk to Surface Waters.
	Inhalation of fugitive dust	Neighbouring users	Low Likelihood	Mild	Low	The soil test results have revealed the general absence of any significant contamination beneath the subject site and no asbestos was detected within the samples tested. The site is proposed to have a commercial end use with the site understood to be covered by the building footprint, hardstanding or soft landscaping (which will generally bind the soil together). Dust generation from the underlying Made Ground or Natural Strata on a chronic basis is considered a low risk at this stage.
	Direct contact	Plastic buildings products (e.g. water supply pipes)	Likely	Minor	Low	Contamination testing carried out on selected samples of Made Ground and Natural Strata revealed no elevated levels of concentrations of contaminants. It may be necessary to undertake an assessment along the proposed route of water supply pipes with the testing suite and spacing of tests to be agreed with the water supply company.
		Construction Materials (e.g. buried concrete)	Likely	Minor	Low	BRE SD1 testing carried out as part of the Phase II Investigation works has classified the soils Design Sulfate Class DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1s based on a brownfield site and static water conditions.

**TABLE 15 – REVISED RISK ASSESSMENT SUMMARY TABLE
PHASE II EXPLORATORY INVESTIGATION**

Potential Contaminant Source [C]	Potential Pathway(s) [P]	Potential Receptor [R]	Probability of CPR Linkage	Consequence of CPR Linkage	Risk Level	Comments / Justification
	Vertical and lateral migration of potentially hazardous ground gases	End users of new buildings (asphyxiation or explosion)	Unlikely	Medium	Low	No significant putrescible material was identified during the investigation works within the suspected backfilled pond feature in the location of TP3. Therefore, given the absence of organic material and the isolated occurrence the risk from ground gas is considered low. Where backfilled features are identified as part of enabling works or constructions works, these will require excavation and backfilling of suitable engineered material to reduce the geotechnical risks this may pose to any floor slabs/foundations.
		Buildings (damage via explosion)	Unlikely	Medium	low	

8.0 CONCLUSIONS & RECOMMENDATIONS

8.1 Site Summary

Historically, from the earliest available mapping dating from the 1880s, the site partially occupied part of a number of fields with field boundaries crossing the site. A pond was located within the sites south measuring approximately 30m by 10m. The 1950 aerial photograph appeared to indicate a circular feature potentially as a contrast in vegetation colour within the central portion of the site. The site remained largely unchanged until 1980s where it appears the previously identified pond in the sites south had been infilled. By approximately 2023, aerial imagery identified that groundworks or enabling works were underway as part of the presumed wider MIRA technology Park development. As part of the wider development, it appears that 2No. balancing ponds have been constructed within Plot 8.

The site is not indicated to be immediately underlain by Made Ground on the geological mapping. Small areas of Made Ground may be present associated with any backfilled ponds that may be present on site. There is also the potentially for locally disturbed ground or Made Ground, based on the recent aerial photography indicating the enabling works/construction works and the construction of the balancing ponds. Although Made Ground may be present, the majority of the Made Ground is not anticipated to be significant in depth.

The BGS mapping indicates the site to be underlain by superficial deposits of the Anker Sand and Gravel deposits within the central portion of the site and Alluvium within the northwestern corner of the site. The site is indicated to be further underlain by solid bedrock geology of the Mercia Mudstone – Mudstone with bands of the Gunthorpe Member – Dolomitic siltstone within. The superficial deposits at the site are classed as a Secondary Aquifer – A, the Mercia Mudstone Group and Gunthorpe Member are classed as Secondary Aquifer – B and Secondary Aquifer – Undifferentiated respectively. The site is not located within a Source Protection Zone (SPZ).

The site is located in an area where radon protective measures are not required in the construction of new dwellings/buildings or extensions at the site.

8.2 Geotechnical Information

8.2.1 Ground Conditions

Made Ground was encountered to maximum depths ranging between 0.40m (TP2) and 1.80m begl (TP3). At the location of TP2, Made Ground was identified as a possible buried topsoil and was generally described as a red brown, brown or mottled red brown gravelly clay with rare roots. Made Ground, however was generally described as a red brown gravelly clay with gravel comprising quartzite, concrete, metal, tile, wood, limestone and plastic.

At the location of TP3 (targeted to a suspected former pond) Made Ground was initially encountered as a Made Ground Topsoil and was described as a dark brown clayey topsoil with occasional roots and rare cobbles of brick and plastic fragments to a depth of 0.55m. This was further underlain by possible reworked natural strata and was described as a red-brown silty clay with rare mudstone lithorelics and roots and quartzite gravel to a 1.80m begl. The reworked natural strata was also noted to be locally water bearing.

Reworked Natural Strata was also encountered in the location of WS2 to a depth of 0.75m begl and was described as a red brown slightly gravelly clay.

In the majority of the exploratory holes Topsoil was initially encountered to depths ranging between 0.08m and 0.40m begl. Topsoil was generally described as at dark brown slightly silty gravelly clayey topsoil or slightly clayey gravelly silty topsoil.

In the locations of TP4 and TP5 material considered visually representative of the Anker Sand and Gravel was tentatively identified at shallow depths and was described as an orange brown and mottled or yellow brown slightly sandy locally slightly gravelly CLAY with clayey gravelly fine to coarse grained sand pockets and gravel comprising quartzite and coal. Strata considered visually representative of the Anker Sand and Gravel was encountered to depths of 0.70m and 1.45m begl in TP5 and TP4 respectively.

Strata considered visually representative of the weathered Mercia Mudstone was encountered across the majority of the site and was encountered to a maximum depth of 3.20m begl although was not fully penetrated. Strata considered visually representative of the weathered Mercia Mudstone was generally initially described as a firm or firm to stiff locally stiff or very stiff red brown locally mottled green grey locally silty gravelly CLAY with gravelly comprising siltstone or mudstone. Localised bands of lightly grey silty siltstone gravel and mudstone lithorelics.

8.2.2 Foundation Design

We understand under current proposals, the site is proposed for a continued commercial end use with the development of an additional large commercial unit.

The natural cohesive CLAY strata (considered visually representative of the weathered Mercia Mudstone) was initially encountered as firm to stiff but often became stiff and friable with depth. SPT 'N' Values (within Natural Strata) at a depth of 1.00m begl ranged between 10 and 24 (locally 50 in WS3). Therefore, the Natural Strata is considered suitable to support a maximum nett allowable ground bearing pressure of 120kN/m² for a strip/pad foundation at a depth of 0.90m below existing or proposed ground level (whichever being the deeper). Where foundations are deepened to encounter more competent Mudstone strata at a depth of circa 2.00m below existing ground level, then an increased maximum nett allowable bearing pressure of 250kN/m² may be adopted.

All foundations should be deepened to a minimum depth of 0.90m below existing or proposed ground level (which ever being the deeper) due to the presence of predominantly cohesive soils with a medium volume change potential. The shallow ground conditions may vary between and beyond exploratory hole locations.

It should also be noted that the historical mapping has identified a former pond at the site. Therefore, deeper disturbed ground may be locally anticipated in the vicinity of any former ponds. Where disturbed ground is encountered, foundations should be deepened a suitable distance into the underlying undisturbed Natural Strata.

If during construction works, variable superficial deposits (i.e. granular and cohesive) are identified or foundations straddle across cohesive and granular strata, a suitable mesh reinforcement should be included within foundations to mitigate against differential settlement. However, based on the ground conditions encountered this is considered unlikely to be necessary.

Given the existing levels at the site and the scale of the development there is the potential for earthworks to be required to facilitate the proposed development. We have not been provided with cut and fill drawings prior to the issue of this report. Should earthworks be proposed in the first instance foundations should be advanced through any engineered fill and be placed a suitable distance into the underlying Natural Strata.

An earthworks specification may be required in due course to satisfy the engineering requirements of any floor slab, pavement or external requirements etc.

8.2.3 Building Near Trees

The shallow soils at the site generally initially comprised a Made Ground overlying the weathered Natural Strata. The shallow cohesive strata are considered as potentially shrinkable and of a medium volume change potential, foundations should be adjusted in accordance with suitable guidance (i.e. BRE Digest 240 *'Low-rise buildings on shrinkable clay soils: Part 1'* (1993) and BRE Digest 241 *'Low-rise buildings on shrinkable clay soils: Part 1'* (1990)) and NHBC Standards, when located in the vicinity of existing, proposed or recently removed trees.

8.2.4 Floor Slab Design

A ground bearing floor slab is considered the most appropriate given the size of the proposed commercial unit. However, this may require the alterations of levels and this will require the placement and compaction of the shallow soils to an end product specification to form a suitable platform. Where earthworks are proposed, ground bearing floor slabs should not be cast across differential areas (i.e. partial fill and partial Natural Strata). Floor slabs should ideally be cast across a uniform stratum, either entirely on engineered fill or entirely on natural strata to minimise the risk of differential settlement.

Consideration should also be given to the potential onset of desiccation near existing, proposed or recently removed trees as well as the potential for materials to be compacted dry of optimum as part of any earthworks specification.

A suitable earthworks end product specification may be required for the site giving consideration to design proposals for a potential ground bearing floor slab and taking into account any design requirements for externals or hard paving etc.

8.2.5 Water

In the majority of the exploratory holes, water was not encountered during the investigation works.

Within the Made Ground at the location TP3, water was noted as minor localised seepage within the Made Ground (suspected backfilled pond feature).

Based on the findings from the investigation works, significant dewatering of shallow excavations is unlikely to be required. However, water levels may vary due to seasonal or other effects and the generally cohesive nature of the weathered Natural Strata may allow water to collect during periods of wet weather.

8.2.6 Excavations / Stability

Generally, the sides of the window sample boreholes and trial pits were noted to be stable for the short period of time they remained open.

Shallow excavations are unlikely to require sidewall support in the short term. However, larger excavations may behave differently, and the assessment of excavations and provision of support will be the responsibility of the contractor on site.

Natural soils may be subject to deterioration if excavations are left open and exposed to wet weather. Any softened or deteriorated soils should be removed from excavations prior to the pouring of concrete and foundation construction.

Excavations above 3.00m depth should be achievable with conventional site plant without the need for breaking out of bedrock.

8.2.7 California Bearing Ratios (CBRs)

The laboratory testing revealed CBR values of between 3.2% and 8.0%. The maximum swelling amount across the samples during the test was 0.77mm.

The preparation of an earthworks end product specification may set CBR target values for any end product design. Any design value adopted should consider the potential for water ingress throughout the construction lifetime and the potential to revert back to the indicated long term soaked CBR results on saturation as a result of rising groundwater levels or drainage failure.

Based on the samples test, a value of 3.0% CBR for the undisturbed Natural Strata may be appropriate for initial design considerations. However, The Engineer should select a suitable equilibrium CBR value taking account of any in-situ testing together with the water content, plasticity / grading and frost susceptibility of the formation at the time of construction.

8.2.8 Sulphate Classification

In accordance with BRE Special Digest 1:2005 the site falls into Design Sulfate Class DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1s, based on the assumption of a brownfield ground location and the presence of static groundwater conditions beneath the site.

Therefore, an appropriate concrete mix should be adopted in accordance with BRE Special Digest 1 for all buried concrete in contact with the ground.

8.2.9 Surface Water Drainage

2No. initial soakaway tests were undertaken as part of the Phase II works. TP4 recorded no measurable drop in water level over the 200-minute testing period and TP5 only recorded a nominal drop of 1cm in 191 minutes. This, in conjunction with the observed cohesive nature of the soils indicates that soakaways will not be viable for surface water drainage, and therefore an alternative drainage solution should be explored.

8.3 Environmental Considerations

8.3.1 Soil Contamination Assessment

Human Health

Contamination testing was carried out on selected samples of the Made Ground and Natural Strata which revealed no elevated levels of concentrations of contaminants when compared to the Tier 1 GAC for a commercial end-use.

Based on the findings of the Phase II investigation works and the soils encountered during the works. Based on the chemical contamination assessment undertaken, the Made Ground and Natural Strata are generally considered as chemically uncontaminated for the proposed end use.

Controlled Waters

The soil test results have revealed the general absence of any significant potentially mobile contamination beneath the subject site which could affect controlled waters.

8.3.2 Ground Gas and Radon Precautions

Ground Gas

The desk study identified the absence of any significant sources of ground gas within the sites environs. A former pond was identified on site as part of the historic mapping. The Phase II Site Investigation did not identify the presence of any significant Made Ground that contained putrescible material or potential sources of ground gas. Based on the foregoing it is considered that ground gas precautions are not required for the proposed development.

Radon

The Landmark report identifies 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). On this basis, no radon protective measures would be considered necessary in the construction of new buildings or extensions at the site as of the date of this report.

8.3.3 Flood Risk

The site is not located within an area at risk from flooding or extreme flooding from rivers or seas without defences.

The site is not in an area benefiting from flood defences and there are no flood defences on or located within a 250m radius of the site.

Small areas along and within the sites northwestern boundary are indicated to be within an area at risk from surface water flooding (1 in 30 year, 1 in 100 and 1 in 1000 year flood extent).

The central area of the site is indicated to be within an area with the potential for groundwater flooding of property situated below ground level. This appears to generally correspond to the location of the Anker Sand and Gravel deposits. Small areas in the sites north and northwest are indicated to be within an area with the potential for groundwater flooding to occur at surface and appear to correspond to location of the Alluvium.

This report does not constitute a flood risk assessment. Where further consideration of the flood risk status of the site is required, we would recommend the advice of a suitably qualified Flood Risk or Drainage Consultant be sought.

8.3.4 Re-use of Soils

Excess uncontaminated soils (for example underlying Natural Strata) should be segregated once excavated and it may be regarded as a potential asset.

The Natural Strata and the majority of the Made Ground encountered at the site may be regarded as suitable for re-use to raise levels, as appropriate or for landscaping/capping on alternative developments.

8.3.5 Stockpiles

The majority of stockpile material observed on site generally comprised Made Ground topsoil or Made Ground (generally representative of the Natural Strata observed across the site with the inclusion of anthropogenic constituents).

Based on the stockpiled soils encountered during the works and the chemical contamination assessment undertaken, the stockpiled material is generally considered as chemically uncontaminated for a commercial end use and may be reused on site.

8.4 General Considerations

8.4.1 Off-site Disposal

The laboratory test results indicate that the Made Ground (including the stockpiled material) and Natural Strata may be regarded as suitable for retention on site. For the purpose of off-site disposal, the results of the existing soils testing should be provided to landfill operators to determine disposal costs in the first instance. Further testing such as Waste Acceptance Criteria (WAC) testing may be required to determine disposal costs.

8.4.2 Construction Workers

It is recommended that construction personnel involved with direct contact with the soils at the site use appropriate PPE equipment (i.e. boots, gloves and overalls) together with hygiene facilities in accordance with general health and safety guidelines.

8.4.3 Unexploded Ordnance (UXO)

GeoDyne were provided with a UXO desk study report from a previous site investigation of the wider development which indicated the UXO precautions were not required for the proposed works. It is recommended that a separate UXO assessment is undertaken for construction works.

8.4.4 Utilities

Prior to development of the site, we would recommend that a copy of this report is supplied to utility companies, and that their recommendations relating to appropriate supply pipes are adhered to.

It may be necessary to undertake an assessment along the proposed route of water supply pipes with the testing suite and spacing of tests to be agreed with the water supply company.

8.4.5 Unforeseen Circumstances

Should any areas of potentially contaminated soil be encountered during site construction works we would recommend consultation with GeoDyne Limited to ensure that our recommendations continue to apply.

Any potentially contaminated soils should be left in-situ and subjected to further assessment, to potentially include further chemical testing and risk assessment.

The following procedure should be adhered to if any areas of previously unidentified suspected contamination are encountered during the development of the site:

- i. Suspected contaminated material will remain in-situ.
- ii. GeoDyne Limited to be notified and will undertake a visual assessment of the possible contamination, followed by appropriate sampling/testing.
- iii. If necessary, contamination will then be treated or removed from site. All necessary remediation works should be validated by testing in accordance with an approved strategy.

8.4.6 Licenses, Permits, Registrations, Plans and Approvals

The Contractor/Developer is responsible for, and must ensure that, all necessary licenses, permits, registrations, plans and approvals are in place prior to commencing with the proposed works at the site.

These may include any Materials Management Plans (MMPs), Site Waste Management Plans (SWMPs) and/or Environmental Permits/Exemptions as necessary to enable the completion of the proposed works.

Any MMP for the site will require a Qualified Persons Declaration (QPD) and subsequent verification in due course.

8.4.7 Statutory Consultation

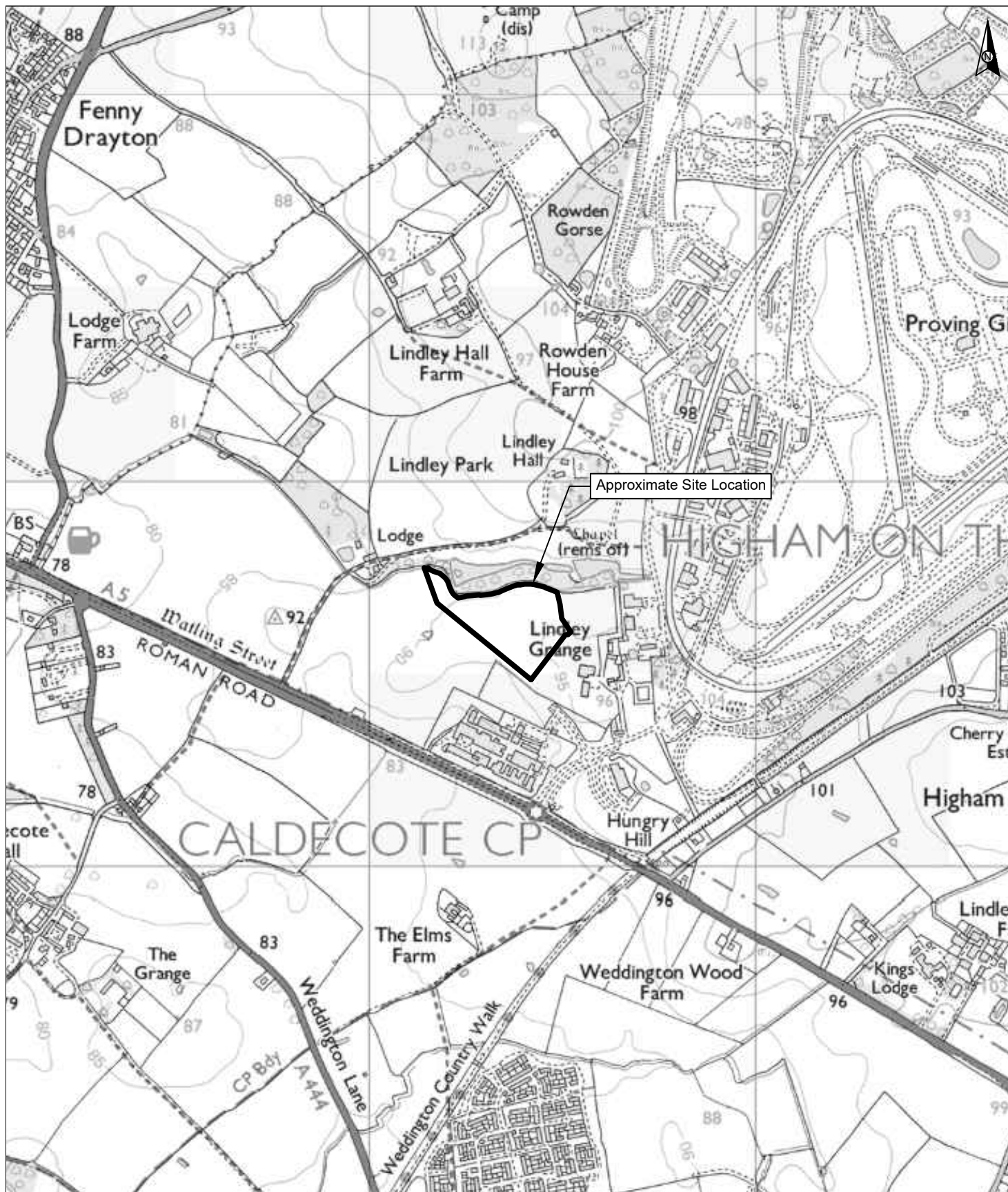
We would recommend that a copy of our report should be issued (by the Client) to the Local Planning Authority and relevant consultee/regulator for review/comment and approval at the earliest opportunity.

8.5 Further Works

The following works may be required to facilitate the future site development:

- Preparation of an Earthworks Specification to facilitate the development of a suitable development platform to support any proposed ground bearing floor slabs and surrounding infrastructure.

Appendix I
Site Location Plan



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Project No.	45296	Drawn By	ACH	 Nottingham 0115 962 0101 Derby 01332 290 798 info@geodyne.co.uk www.geodyne.co.uk
Client	MTP3 Limited	Checked By	RS	
		Approved By	RS	
Project	Mira North Plot 8	Scale	NTS	
		Date Drawn	01/04/2026	
Title	Site Location Plan	Revision		45296/01
		Figure No.		

Appendix II
Proposed Layout Plan



SGP

Architects + Masterplanners

Waterfront House
2a Smith Way
Grove Park
Enderby
Leicester LE19 1SX
t: +44 (0)116 247 0557
www.stephengeorge.co.uk

MIRA North

Drawing Name:
Indicative Masterplan

Drawing Stage: PRELIMINARY

Suitability: SD - Work in Progress

SGP File Ref: 21-092-01/17E.dwg

21-092-01 30/09/24 LA LA 1:1000 @ A1 E

SGP Project No. Date Drawn Team Scale Rev

Drawing Number:
2109201 - SGP-XX-00 - DR-A - F017

Project Code Designer Volume Level Type Revision

Existing

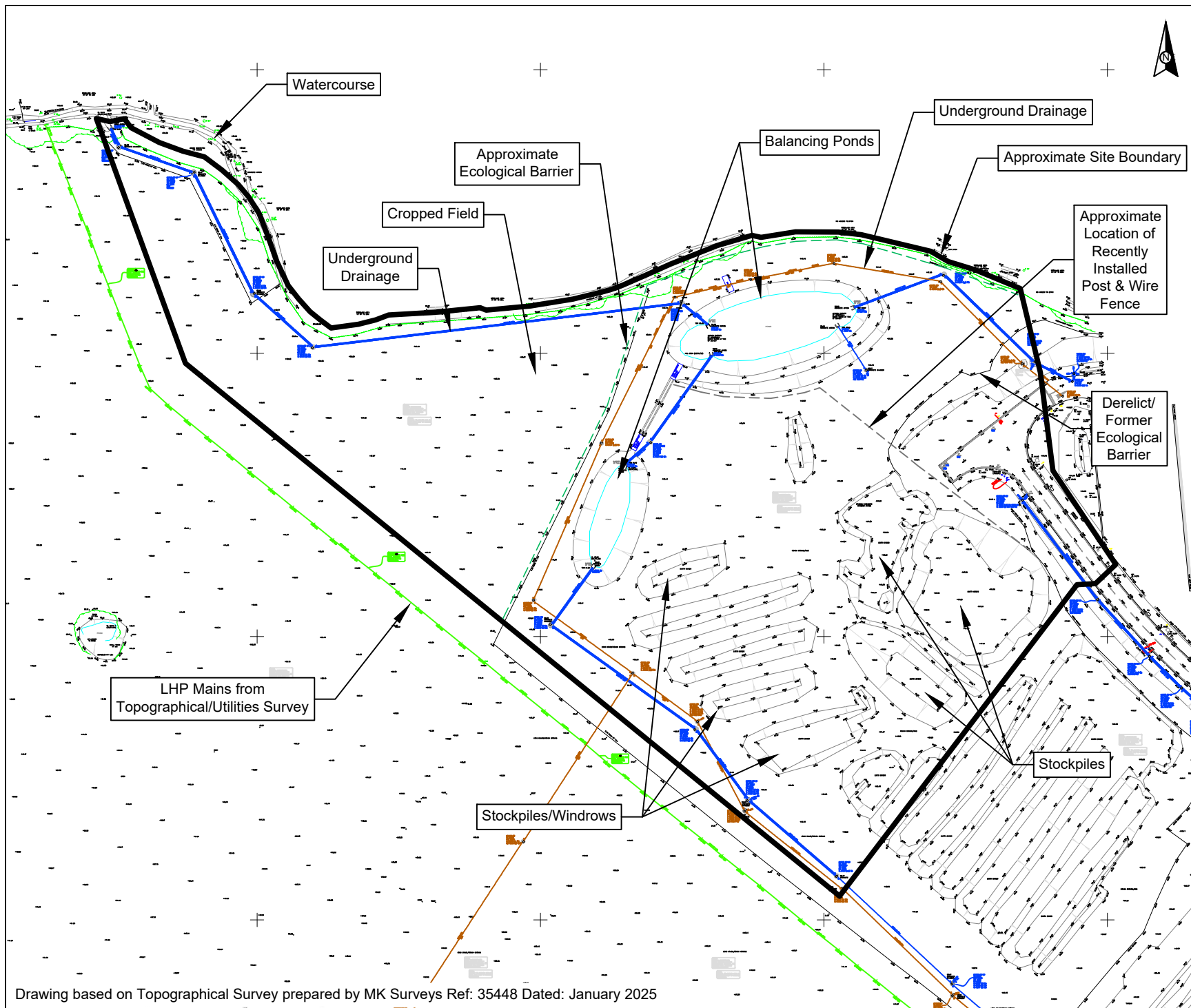
Consented

Indicative

Gross Site Boundary = 92.7 Acres

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Appendix III
Annotated Site Plan



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Project No.	45296
Client	MTP3 Limited
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Date Drawn	01/04/2026
Revision	
Figure No.	45296/02



Nottingham 0115 962 0101
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Drawing based on Topographical Survey prepared by MK Surveys Ref: 35448 Dated: January 2025

Appendix IV

Site Plans and General Views of Site