



GEOTECHNICAL
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Desk Study Report

Richborough

Land off Station Road, Market Bosworth

October 2024

Ref: PJS24-0085-DOC-0003-C

Executive Summary

Instruction	In June 2024, PJS Geotechnical Engineers Limited (PJSG) were instructed by Richborough (the Client) to undertake a Geo-environmental Assessment at land off Station Road, Market Bosworth, Leicestershire (the site).
Proposed Development	Potential future development proposals for the site are understood to comprise a residential development with gardens and areas of soft landscaping used as Public Open Space (POS).
Site Description	The site forms part of a wider farm (Wharf Farm) and comprises grass covered fields separated by an access road running centrally through the site north to south. The western-most field was indicated to have previously been used for animal grazing due to the presence of a water trough and animal pen in the south-west; however, no livestock is currently present. The eastern-most field partially comprised a grass-covered runway (Wharf Farm Airstrip); however, no evidence of the runway was noted. Sporadic mature trees are present on site, particularly along the access road and southern boundary.
Site History	The majority of the site has remained undeveloped prior to 1885 with no discernible change in land use noted up to the present day. Two ponds were however historically located on-site, which have both since been in-filled (confirmed during reconnaissance). Infilled land could therefore present a localised source of ground gas and / or contamination depending on the type of fill used. A runway (Wharf Farm Airstrip) was historically located in the east of the site, present from prior to 1999 to at least 2022.
Geology	• Made Ground - None recorded on site or in the vicinity. Expected in any areas of in-filled ground and under the access road located on-site. • Superficial Lacustrine Deposits comprising clay, silt and sand mapped in the southwest corner and adjacent west. • Superficial Bosworth Clay Member deposits comprising clay & silt mapped under the majority of the site except the southeast corner. • Bedrock - Gunthorpe Member (mudstone) mapped under the entire site.
Hydrogeology	• Secondary Undifferentiated Aquifer - Superficial Deposits. • Secondary B Aquifer – Bedrock. • The site is not located in a groundwater SPZ. • No potable groundwater abstractions are present within 2km.
Hydrology	• The nearest off-site surface water feature relates to an inland river located ~120m NW with additional inland rivers located ~170m to ~220m NE, SE and W of the site. • A canal is located ~130m NW of the site. • A pond has been identified during reconnaissance on land located adjacent north. Ponds are also located on land adjacent east and to the west of the site.
Environmental Regulatory Records	There is an ESS located adjacent south-east of the site dated from ~1970 which remains present. The potential therefore exists for oils to have been used inside the ESS which may contain PCB's. However, any impact to the site associated with leaking oils is considered unlikely as any internal leaks would likely be localised to the source. The environmental records indicate that a potential risk to the site might be present related to numerous former / current industrial land uses identified in close proximity, particularly associated with the existing industrial estate located to the south. The potential exists for localised impact to the site / groundwater below the site associated with potential for spills and leaks of fuels / oils / chemicals occurring from the various industrial land uses identified. However, based on the local topography, groundwater is likely to flow to the west and is therefore considered likely to carry any potential contamination away from the site.

Unexploded Ordnance (UXO)	The risk of encountering UXO on site is considered to be low and therefore no further assessment is therefore considered to be warranted.
Railway Infrastructure & Projects	There is a singletrack preserved railway (Battlefield Line Railway) located adjacent west of the site. Any proposed development should therefore take into consideration the railway and potential impact to the function of the line. Potential future developers may be required to enter into Asset Protection Agreements (APAs) or Basic Asset Protection Agreements (BAPAs) with the owners of the railway.
Mining Risk	Negligible risk to site based on the available records.
Ground Constraints	The potential exists for compressible deposits with medium plasticity to be present across the site. The plasticity / compressibility of in-situ soils should therefore be determined by undertaking an intrusive site investigation across the site to confirm the site-specific ground conditions.
Potential Contamination Sources	The assessment has identified numerous potential on and off-site sources of contamination associated with the historical / current land use which may represent localised sources of heavy metals, hydrocarbons, PAHs, asbestos fibres & ACMs to have impacted the site.
Human Health Contamination Risk Assessment	Where localised on-site and off-site potential sources of contamination have been identified, the preliminary risk assessment has indicated that, in the absence of any mitigation measures, the site poses a LOW / MODERATE risk to human health in these areas until proven otherwise. The majority of the site is however currently in use as undeveloped agricultural grazing land. As such, there is considered to be a LOW risk to Human Health end users / construction workers based on redevelopment of much of the site for a residential end use.
Controlled Waters Risk Assessment	Based on the former historical / current land uses that have occurred at or in close proximity to the site, the preliminary risk assessment has indicated that the site poses a LOW risk to controlled water receptors.
Hazardous Ground Gas Risk	Generally LOW risk for the majority of the site with a localised LOW / MODERATE risk associated with hazardous ground gas arising from potential areas of in-filled ground.
Vapour Risk	The risk of encountering vapour's on-site is generally LOW . However, the potential exists for a localised LOW / MODERATE risk of vapours to impact site boundaries / groundwater under the site arising from leaks and spills of fuels / oils / chemicals from numerous potential sources identified.
Radon	The site is not in a radon area; radon protection measures not required.
Ecological Risk	LOW risk from potential impacts from identified contamination sources and proposed construction to ecological receptors.
Geotechnical Summary	Strip or trenchfill foundations may be appropriate for the majority of the site, subject to an assessment of loadings of the proposed structures and verification of the ground conditions by intrusive investigation. Localised deepening of foundations / alternative foundations may be required in some areas of the if compressible strata is encountered or within the south-west of the site coinciding with superficial Lacustrine Deposits.
Drainage	The underlying superficial geology would suggest that the ground is likely to be unsuitable for drainage. However, this preliminary assessment should be confirmed by undertaking infiltration testing on site in accordance with BRE365 guidance.
Recommendations	An intrusive site investigation should be undertaken to confirm ground conditions underlying proposed development, to confirm suitable foundation solutions and to confirm the contaminative status of the site. Investigation works should specifically target any identified potential sources of contamination and areas of potential in-filled ground. The requirement for gas monitoring should be confirmed once ground conditions have been established.

Documents Issue Record

Document Number					
PJS Reference			PJS24-0085-DOC-0003-C		
Status	Revision	Date of Issue	Author	Checked	Approved
Final	-	16/07/24	Nicholas Brown MSc AMIEnvSc	Adrian McVey BSc (Hons)	Adrian McVey BSc (Hons)
					
Final	A	11/10/24	Nicholas Brown MSc AMIEnvSc	Adrian McVey BSc (Hons)	Adrian McVey BSc (Hons)
					
Final	B	23/10/24	Nicholas Brown MSc AMIEnvSc	Adrian McVey BSc (Hons)	Adrian McVey BSc (Hons)
					
Final	C	11/11/24	Nicholas Brown MSc AMIEnvSc	Adrian McVey BSc (Hons)	Adrian McVey BSc (Hons)
					

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Appendix B:	Historical Maps
Appendix C:	Groundsure Insight Report
Appendix D:	Zetica UXO Risk Map
Appendix E:	Contamination Risk Assessment Methodology

Drawings

PJSG24-85-DR-0004A – Site Location Plan
PJSG24-0085-DR-0005A – Site Features Plan
P24-1644_DE_003_01I Development Framework Plan

1 Introduction

1.1 Instruction

In June 2024, PJS Geotechnical Engineers Limited (PJSG) were instructed by Richborough (the Client) to undertake a Geo-environmental Assessment at land off Station Road, Market Bosworth, Leicestershire (the site).

A site location plan (PJS24-85-DR-0004A) is included within the drawings section of this report.

1.2 Proposed Development

Development proposals for the site are understood to comprise a residential development with gardens and areas of soft landscaping used as Public Open Space (POS).

A Development Framework Plan (P24-1644_DE_003_01I Development Framework Plan) dated 19.07.24 is included within the drawings section. The plan details the entire application area and includes land adjacent to the east of the current study site as detailed in the previous investigation reports referenced in Section 1.4 overleaf.

1.3 Objectives

The purpose of the Geo-Environmental Desk Study is to collect information in order that an 'Initial Conceptual Site Model' (ICSM) can be developed. The ICSM considers potential contaminant sources, pathways and receptors, defined as a contaminant linkage.

The Desk Study and has been undertaken in accordance with the procedures described in Land Contamination Risk Management (LCRM) 2020, British Standard 'Code of Practice for Ground Investigations' (BS5930:2015+A1:2020) and BS 10175:2011+A2:2017 "Investigation of potentially contaminated sites".

The main objectives of this assessment are outlined below:

Table 1-1 Objectives

Objectives
Undertake a desk study to assess historical activities at the site and in the surrounding area with respect to their potential to impact on the site and surrounding environment.
To characterise the geological, hydrogeological and environmental setting of the site.
Undertake a review and provide a summary of previous investigation reports.
Undertake a Preliminary Risk Assessment (PRA) and develop and rationalise an ICSM which establishes whether there are any potentially unacceptable risks associated with potential land contamination.
Provide a preliminary assessment of potential foundation options and drainage characteristics.
Provide conclusions as to the perceived geo-environmental condition of the site with respect to ground related hazards.
Make recommendations for any investigation deemed necessary.

1.4 Previous Reports & Sources of Information

The table below provides details of the relevant information sources which have been made available to PJSG for review in preparation of this report:

Table 1-2 Previous Reports

Report Reference	Produced by	Report Name	Date	Comments
PJSG20-21-R01	PJS Geotechnical Engineers	Desk Study Report	10th June 2020	The report was carried out on the land located adjacent east of the current study site and recommended that intrusive works shall be required in order to identify ground conditions and provide foundation recommendations for the site.
PJSG20-21-RT-02	PJS Geotechnical Engineers	Geo-environmental Assessment	30th September 2021	The report comprised the findings of intrusive investigation works carried out on the land located adjacent east Based on the contamination testing that was carried out, the risk assessment generally indicated that the site poses a very low negligible risk to Human Health and Controlled Water receptors. A ground gas / vapour risk was not identified. Traditional strip / trenchfill foundations were generally considered appropriate for most of the proposed development. Soakaways were not considered to be feasible.

2 The Site

2.1 Site Description

A site walkover was undertaken by a PJS representative on 21st June 2024 to provide a general description of the site and to identify any significant constraints associated with development of the site. Detailed surveys such as structural, wildlife or tree surveys were outside the scope of this report.

A site features plan (PJSG24-0085-DR-0005A) is provided within the drawings section of this report. Photographs of the site are included as Appendix A.

A detailed description of the site and overview of the main features observed during the site walkover is presented in the table below. Reference has also been made to satellite imagery where available.

Table 2-1 Summary of Site Information

Specifics	Details
Location	Wharf Farm, land off Station Road, Market Bosworth, CV13 0PF
Site Centre Coordinates	439397E, 303317N
Approximate Site Area	~3.82 Hectares (Ha).
Current Site Use	The site forms part of a wider farm (Wharf Farm) and comprises grass covered fields separated by an access road running centrally though the site north to south. The western-most field was indicated to have previously been used for animal grazing due to the presence of a water trough and animal pen in the south-west; however, no livestock is currently present. The eastern-most field partially comprised a grass-covered runway (Wharf Farm Airstrip); however, no evidence of the runway was noted. Sporadic mature trees are present on site, particularly along the access road and southern boundary.
Topography	The site is lowest across the west boundary situated at ~94.54m AOD gently rising ~97.9m AOD along the east boundary.
Surface Conditions	- Long grass predominantly overlies the whole site. - The access track located centrally comprises two separate tracks constructed of concrete separated by a central strip of grass.
Ground Stability Hazards	None noted.
Existing Buildings / Structures	No buildings were observed on site. A desolate animal pen and water trough are located in the south-west of the site.
Services / Utilities	A water pipe is connected to the trough in the south-west of the site. There is a telegraph pole in the north-west of the site indicated to carry electricity. No above ground overhead cables were noted, but a cable was noted on the side of the telegraph pole arising from the ground. It is therefore suggested that underground electricity cables might be present in this area.

Specifics	Details
Access & Security	Vehicle and foot access can be gained via an open gate positioned centrally along the southern boundary, accessed from Station Road located adjacent south.
Fuel Tanks / Storage	None observed.
Energy Features	An electricity sub-station (ESS) is located adjacent to the south-east corner of the site. No indication was given whether the ESS contains PCBs.
Asbestos Containing Materials (ACMs)	None observed on site.
Evidence of surface staining & odours	None noted.
Vegetation / Invasive Plants	No assessment has been made for the presence of pernicious plant species e.g. Japanese Knotweed, Giant Hogweed, within the remit of this investigation. It is recommended a specialist arboriculture survey be undertaken prior to design works commencing.
Existing Boundaries	Hedgerows and mature trees along the southern, eastern, north-west and western boundaries. No definitive boundary is present in the north-east and comprises a continuation of the site.
Surrounding Land Use	• N – Residential house and pond with an additional landing strip present beyond the pond. • E – Undeveloped fields (neighbouring proposed development site) • S – Station Road and industrial / commercial premises beyond. • W – Railway line and residential development beyond.
Surface Water Features	• None noted on-site. • A pond is located on the land adjacent north.
Anecdotal Evidence	None obtained.
Potential Contamination Sources Identified from Reconnaissance	• Adjacent public highway to the south - potential for leaks / spills of fuels/oils/ chemicals to have occurred from vehicles. • Adjacent railway to the west- however this has been ruled out as the railway is at a lower level than the site. • Potential for herbicides / pesticides to have historically been used on-site. • Adjacent ESS to the south-east - Potential for PCBs.
Identified Receptors from Reconnaissance	Identified receptors observed include the pond and residential property located adjacent north of the site.

3 Historical Review

3.1 Ordnance Survey Map Review

Historical Ordnance Survey (OS) maps (presented in Appendix B) have been reviewed for the site and surrounding area, at various scales dating from 1885 – 2024. The pertinent historical features and changes in land use over time both on and off-site are summarised in the table below. All distances quoted are approximate.

Table 3-1 Summary of Site Development History

Mapping Dates & scale	Pertinent Features On-Site	Pertinent Features Off-Site
1885 -1886 [1:10,560 & 1:2,500]	The site comprises an undeveloped field. Ponds are located centrally and in the south-west of the site.	The surrounding area predominantly comprises agricultural land use, with woodland present adjacent north-west. Station Road is located adjacent south. A pond is located on land adjacent east. A gas works is located ~50m to 100m west of the site. A railway line runs north-south adjacent to the west of the site. An embankment is present either side of the railway positioned along Station Road adjacent south-west. Market Bosworth Station and, ancillary buildings and railway sidings are located on land adjacent south. Brickyard and ground workings are present ~150m southwest of the site. A canal and boathouse are present ~125m west of the site.
1901-1904 [1:10,560 & 1:2,500]	The pond located centrally is no longer present.	No significant change noted.
1955 [1:10,560]	An access road is located centrally running through the site north to south.	Residential buildings (identified during reconnaissance) have been constructed on land adjacent north. Numerous irregular shaped structures have been constructed on land adjacent west (west of the railway, for an unspecified purpose). The gas works and brickworks are no longer present to the west and south-west. However, ground workings associated with the brickworks remain alongside some buildings associated with the gas works. Minor unspecified development has occurred adjacent to station road ~ 100m south-east.

Mapping Dates & scale	Pertinent Features On-Site	Pertinent Features Off-Site
		Additional railway sidings are present at Market Bosworth Station adjacent south
1966 [1:10,560]	No significant change noted.	Buildings constructed on land adjacent west are denoted as a works. Buildings associated with the former gas works adjacent west have been removed and the land has been partially redeveloped for an unspecified use. A works is present on land adjacent south of Station Road.
1990 [1:10,000]	No significant change noted.	By 1990 the works adjacent west is annotated as a 'Timber Fireproofing Works' and the former brickworks to the south-west has been redeveloped for a possible residential land use. A depot is present on land adjacent south of Station Road. The railway sidings are no longer present to the south.
2001 [1:10,000]	The pond located in the south-west of the site is no longer present.	Additional unspecified buildings have been constructed on land adjacent south of Station Road now annotated as an Industrial Estate. The land adjacent north is indicated to comprise a farm and stables.
2003 [1:1,250]	A runway (identified as such from aerial photographs) is partially located in the north-east of the site extending off-site north.	An ESS is present adjacent south-east of the site. A runway extends off-site to the north (also on-site).
2010 [1:10,000]	No significant change noted.	The Timber Fireproofing Works and land occupying the former Brickworks to the south-west has been redeveloped for a residential land use.
2024 [1:10,000]	No significant change noted.	No significant change noted.

3.2 Historical Land Use Features

The GroundSure report includes specific pertinent historical industrial land use features that are potentially within an influencing distance of the site in relation to contamination risks. This is generally based on historical land use features located within 500m of the site boundary which have been digitised from historical OS mapping at various scales.

A summary of the historical land use features that could impact upon the site is given in the table below.

Table 3-2 Historical Potential Contaminative Land Use Features

Historical Land Uses (Digitised from OS Mapping)	Distance	Comments
Historical Tanks	Closest to site: Unspecified tank located ~85m W dated 1990.	The tank has the potential to have historically impacted the site given the close distance depending on the former use.
Historical Industrial Potential Contaminative Land Use Features	Records within 250m of the site essentially relates to unspecified works, railway buildings, good station / station and sidings, gasometer, boathouse, unspecified pit, cuttings, brickyard, and timber fireproofing works as identified during the historical map review.	Potential for localised impact to the site / groundwater below the site associated with potential for spills and leaks of fuels / oils / chemicals occurring from the various industrial land uses.
Historical Energy Features	Closest to site: Adjacent south-east (listed as on-site within the Groundsure Report).	Dated from 1970 to the present day. Potential for oils to have been used which may contain PCB's due to the age of installation. Considered unlikely to impact the majority of the site as any internal leaks would likely be localised to the source but potential for localised impact to the sites south-east boundary.
Historical Garages	Closest to site: ~15m S dated 1985.	Potential for localised impact to the site / groundwater below the site associated with potential for spills and leaks of fuels / oils at the garage.

The above historical land use records essentially confirm the findings of the historical mapping review presented in Table 3-1 above with the addition of records for an historical tank and garage historically located in the vicinity which is not apparent on historical maps.

3.3 Historical Aerial Photographs

Aerial photographs dated 1999 to 2022 are presented within the Groundsure Report which indicates the site to be unchanged from historical mapping and comprises undeveloped fields. However, the aerial photographs indicate a grass-covered runway to be present across the eastern-most field extending approximately north to south across the field extending off-site to the north.

Within the surrounding area, aerial photographs dated 1999 indicates vast industrial development adjacent west as identified on historical mapping. By 2011, the industrial land had been redeveloped for a residential land use and the surrounding land use remained predominantly unchanged thereafter.

The GroundSure Insight Report is contained in Appendix C.

3.4 Historical Summary

The key on-site and off-site historical land use features identified during the review with the potential to impact on the site are summarised in the table below:

Table 3-3 Historical Summary – Main Features

Historical Land Uses	Location / Distance	Historical Period
On-Site Land Uses		
Undeveloped fields	Majority of the site	1885 – Present
Infilled ponds	Central and southwest of the site.	• Infilled ~1901 - Pond located centrally. • Infilled 2001 – Pond located in the south-west.
Wharf Farm Airstrip	Eastern-most field	~1999 to at least 2022.
Off-Site Land Uses		
Gas Works	~50m to 100m west.	1885 - ~1966
Brickyard and ground workings	~150m southwest.	1885 - 1990
Railway Line	Adjacent west	1885 - present
Railway Sidings / Station	Land adjacent south of Station Road	1885 - 1990
Timber Fireproofing Works / Works.	Land adjacent west of the railway.	~1955 - 2010.
Industrial Land / Industrial Estate	Land adjacent south of Station Road	1966 - present (industrial estate by 2001)
ESS	Adjacent south-east.	2003 - present.
Farm	Adjacent north	2001 - present
Unspecified tank	~85m W	1990
Garage	~15m south.	1985.
Wharf Farm Airstrip	Adjacent north.	~1999 to at least 2022.

To summarise, the majority of the site has remained predominantly undeveloped prior to 1885 with no discernible change in land use noted up to the present day. Two ponds were however historically located on-site, which have both since been in-filled (confirmed during reconnaissance). Infilled land could therefore present a localised source of ground gas and / or contamination depending on the type of fil used. The eastern-

most field partially comprised a grass-covered runway (Wharf Farm Airstrip) which extended off-site north; however, no evidence of the runway was noted during reconnaissance.

A number of potentially contaminative land uses have been identified in the vicinity of the site as noted in the table above which will be considered within the ICSM.

4 Geology, Hydrogeology and Hydrology

4.1 Information Sources

Information regarding the geology, hydrogeology and hydrology in regard to the site's setting has been obtained via a GroundSure Report and the BGS Geology of Britain Viewer. Only the information considered pertinent to the site has been included in this report.

A copy of the GroundSure Report is included in Appendix C.

4.2 Geology

Geological information pertinent to the site is summarised in the table below reviewed at a scale of 1:10,000 and 1:50,000.

Table 4-1 Summary of Site Geology

Geological Type	Name & Description	*Location & Distance
Artificial Deposits	Made Ground	None recorded on site or in the vicinity. Expected an area's of in-filled ground or under the access located on-site
Superficial Geology	Lacustrine Deposits comprising clay, silt and sand.	Mapped in the southwest corner and adjacent west.
	Bosworth Clay Member deposits comprising clay & silt.	Mapped under the majority of the site except the southeast corner.
Bedrock Geology	Gunthorpe Member (Mudstone).	Mapped under the entire site.

**Up to 100m distance from the site boundary.*

4.3 Landslips

There are no landslip records for the site or within 500m of the site boundary.

4.4 Bedrock Faults & Linear Features

There are no faults or linear features mapped on site or within 500m of the site.

4.5 Historical Borehole Records

There are no pertinent historical BGS borehole records on or within 250m of the site boundary.

4.6 Estimated Soil Chemistry

The soil chemistry estimated at the site is detailed in the table below, based upon rural topsoil data collected at a sample density of approximately 1 No. sample per 2 km².

Table 4-2 Estimated Soil Chemistry

Arsenic (mg/kg)	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Nickel (mg/kg)
15	100	1.8	40 60	15-30

4.7 Hydrogeology

A summary of the hydrogeological setting of the site is presented below,

Table 4-3 Summary of Hydrogeological Conditions

Details	Location & Distance	Summary / Comments
*Superficial Aquifers		
Secondary Undifferentiated	On-site and mostly present within 250m of the boundary.	Relates to the superficial deposits mapped under the site / in the vicinity.
*Bedrock Aquifers		
Secondary B	On-site and adjacent.	Relates to the Gunthorpe Member deposits mapped under the entire site and surrounding area.
Groundwater Vulnerability & Flow		
Superficial Deposits	On-site	Medium vulnerability defined Intermediate between high and low vulnerability.
Bedrock Deposits	On-site	Medium vulnerability.
Groundwater Flow	-	Based on the local topography, groundwater is likely to flow to the west.
Abstractions, Source Protection Zones & WFD Groundwater Bodies.		
Groundwater Abstractions	One active record within 1km.	Listed as a borehole for Make-Up or Top Up Water located ~790m west.
Potable Groundwater Abstractions	No records within 2km.	-

Details	Location & Distance	Summary / Comments
Source Protection Zones (SPZ)	-	Not located in or within 500m of a SPZ.
Water Framework Directive (WFD) Groundwater Bodies	On site	Tame Anker Mease – Secondary Combined rated good chemical and overall rating in 2019.

**Definition of the aquifer terms are defined in the GroundSure report.*

Given the available information, groundwater below the site is not considered highly sensitive to any potential contamination sources on site. Protection of groundwater resources should however be taken into consideration during any proposed redevelopment works undertaken at this site.

4.8 Hydrology

The table below provides a summary of the hydrological conditions at the site.

Table 4-4 Summary of Hydrology

Details	Records, Location & Distance	Summary / Comments
Surface Water Features – OS Mapping and Reconnaissance.	No records on-site. -14 No. records within 250m.	The nearest off-site surface water feature relates to an inland river located ~120m NW with additional inland rivers located ~170m to ~220m NE, SE and W of the site. A canal is located ~130m NW of the site. A pond has been identified during reconnaissance on land located adjacent north. Ponds are also located on land adjacent east and to the west of the site.
Surface Water Flow	-	Based on the local topography, surface water in the vicinity of the site is likely to flow towards the west.
WFD Surface Water Bodies / Water Quality	1 No. record within 500m.	Located ~130m west related to Coventry and Ashby Canals – failed the chemical rating, good ecological rating and moderate overall rating in 2019.
Surface Water Abstractions	No active records.	-

KEY: N – North, S – South, E – East, W – West

Given the available information, surface water in the inland river located ~120m NW would be considered to be sensitive to any potential contamination sources on site. Protection of surface water resources should therefore be taken into consideration during any proposed redevelopment works undertaken at this site.

4.9 Flood Risk

The table below provides a summary of the preliminary flood risk as given in the GroundSure report.

Table 4-5 Preliminary Flood Risk

Flood Risk Summary	
Risk of Flooding from Rivers	No risk given
Historical Flooding	The Environment Agency (EA) Historical Flood Map indicates no previously recorded flooding events at or directly adjacent to the site.
Flood defences	None.
Flood Zones	Not located in a flood zone.
Surface Water Flooding	Highest risk on site: 1 in 1000 years, between 0.1m to 0.3m depth. Highest risk within 50m: 1 in 1000 years, between 0.1m to 0.3m depth.
Groundwater Flooding Susceptibility	Highest risk on site: Low Highest risk within 50m: Low

Given the above information, flooding of the site is considered unlikely but this preliminary assessment should be confirmed prior to construction.

5 Mining & Ground Related Constraints

The section below details any ground related constraints that could impact on future development of the site such as the historical mining legacy and subsidence risk detailed within the GroundSure Report. A copy of the GroundSure Report is included in Appendix C.

Only the information considered pertinent to the site has been included in this section.

5.1 Coal Mining

The Coal Authority interactive map (<https://mapapps2.bgs.ac.uk/coalauthority/home.html>) has been used in the below assessment.

The interactive map has identified that the site is not located within a Coal Mining Reporting Area, as defined by the Coal Authority and will therefore not be considered further.

5.2 Non-Coal Mining, Mineral Extraction, Ground Workings & Cavities

A review of the non-coal mining, quarrying and ground workings records potentially affecting the site has been undertaken. Records have been obtained from various sources such as the BGS, Coal Authority etc as detailed within the Groundsure Report.

This is generally based on features identified in the Groundsure report within 1km of the site boundary.

The table below provides a summary of the non-coal mining activities, quarrying and ground workings potentially affecting the site.

Table 5-1 Summary of Non-Coal Mining, Mineral Extraction, Ground Workings & Cavities

Details	Distance					Details / Comments
	On Site	0 - <50m	50 - <250m	250 - 500m	500 - 1km	
BritPits	-		1	-	-	Located ~170m SW related to workings at the former brick yard. The workings are however indicated to have been infilled with water and are therefore not considered a risk to site.
Surface Ground Workings	-	2	10	x	x	Off-site records relate to numerous entries for the former brickyard (~40m SW), canal (~115m W), an unspecified pit (~125m SW), ponds (~140m SW). Given the distance and type of working, none of these entries are considered to present a risk to site.

5.3 Natural Ground Subsidence Risk

Records of the natural ground subsidence risks identified for the site are summarised below.

Table 5-2 Natural Ground Subsidence Hazard Summary

Ground Stability Hazard	Hazard Rating	Comments
Shrink-Swell Clays	Low	Ground conditions expected to be predominantly medium plasticity.
Running Sands	Negligible to low.	Low risk relates to the Lacustrine Deposits mapped in the south-west corner of the site. Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water. Running sand conditions are unlikely elsewhere.
Compressible Deposits	Moderate	Present across the entire site. Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.
Collapseable Deposits	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present
Landslides	Very Low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.
Ground Dissolution of Soluble Rocks	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

The most significant ground stability hazard is related to the potential for compressible deposits with medium plasticity to be present across the site. The plasticity / compressibility of in-situ soils should therefore be determined by undertaking an intrusive site investigation across the site to confirm the site-specific ground conditions.

5.4 Potential for Unexploded Ordnance (UXO)

Regional Unexploded Bomb Risk maps from Zetica indicates that the site has a low risk in regard to UXO. Zetica state that low-risk regions are those with a bombing density of up to 15 bombs per 1000 acres or less. In general, a low risk means that there is no greater probability of encountering UXO than anywhere else in the UK.

In that regard, the risk of encountering UXO on site is considered to be low and therefore no further assessment is therefore considered to be warranted.

The Zetica unexploded bomb risk map is presented in Appendix D.

5.5 Potential for Radon

The Groundsure Report indicates that the property is in a lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). This indicates that no radon protective measures would be required in this area.

The dataset used within the Groundsure Report to derive the above is considered the highest resolution radon dataset available for the UK. The findings of this should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain.

5.6 Railway Infrastructure & Projects

There is a singletrack preserved railway (Battlefield Line Railway) located adjacent west of the site also identified during reconnaissance. Any proposed development in close proximity should therefore take into consideration the railway and potential impact to the function of the line. Potential future developers may be required to enter into Asset Protection Agreements (APAs) or Basic Asset Protection Agreements (BAPAs) with the owners of the railway.

There are numerous records relating to historical railway sidings located on land to the south and west of the site dated between 1955 and 1970/ However the sidings have since been dismantled and the land redeveloped and is therefore not considered a risk to site.

There are no further pertinent records of railways, tunnels and infrastructure have been recorded within 500m of the site boundary which could have an impact on future development of the site.

6 Environmental Review

6.1 Information Sources

Environmental data, including Environment Agency and Local Authority regulatory information, has been obtained via the Groundsure Report contained within Appendix C.

The Groundsure Report contains factual information, which has been obtained from various sources, including Ordnance Survey Mapping, Local Authorities, Environment Agency, National Radiological Protection Board, the National Archives and English Nature. The environmental records pertinent to the site have been reviewed in the sections below.

6.2 Environmental Records

The environmental records have been reviewed to identify any pertinent land use features or regulatory records that may have the potential to impact the site. This review is generally based on features identified in the Groundsure report within ~500m of the site boundary. Additional records at a distance >500m from the site boundary are however presented in the Groundsure Report and will be also considered below if relevant to the site;

6.2.1 Landfills and waste Disposal Sites

No records of active landfill sites are recorded within 500m of the site.

There is a record of a licenced waste site located ~65m south named specifically as 'Fying Spares' classed as a Metal Recycling Site (Vehicle Dismantler) handling 2500 tonnes of material per year effective from 2004. The recycling facility could therefore have the potential for localised impact to the groundwater below the site to have occurred associated with spills and leaks of fuels / oils / chemicals at the facility. However, as groundwater is considered likely to flow towards the west, and based on the anticipated underlying geology, this is considered unlikely.

6.2.2 Current Industrial Land Use

A summary of current industrial land uses sites that could impact the site are given below.

Table 6-1 Current Industrial Land Use

Current Industrial Land Use	Distance (m)				Summary	Comments
	On Site	0 - <50m	50 - <250m	250 - 500m		
Current Potentially Contaminative Land Uses	-	4	13	-	Closest to site: ESS located adjacent south-east.	Dated 1970 and remains present. Potential for oils to have been used which may contain PCB's due to the age of installation. Considered unlikely to impact the majority of the site as any internal leaks would likely be localised to the source but potential for localised impact to the sites south-east boundary.

Current Industrial Land Use	Distance (m)				Summary	Comments
	On Site	0 - <50m	50 - <250m	250 - 500m		
						Remaining pertinent entries within 250m of the site relates to a garage (50mSW), a tank (~70NW), precision engineers (~70m S and 225m S), works (~80m S), a scrap yard (Flying spares (~110m S), industrial estate (~120m S), Potential for localised impact to the site / groundwater below the site associated with potential for spills and leaks of fuels / oils / chemicals occurring from the various industrial land uses identified.
Gas Pipelines	-	-	-	1	-	Located 460m south – no risk to site.

KEY: N – North, S – South, E – East, W – West

6.2.3 Environmental Regulatory Records

A summary of the Environmental Regulatory Records that could impact the site are given below.

Table 6-2 Environmental Regulatory Records

Environmental Regulatory Records	Distance (m)				Summary	Comments
	On Site	0 - <50m	50 - <250m	250 - 500m		
Licensed pollutant release (Part A(2)/B)	-	-	1	-	This record relates to Timber Manufacture (Timber Fireproofing Works) located ~30m W. (Part B Permit).	No risk to site – any contamination concerns would have been addressed as part of the planning process for the subsequent residential development.
Licensed Discharges to controlled waters	-	-	2	1	The closest discharge was located ~125m listed as revoked. A discharge consent for sewage discharges is located 350m S effective from 1996.	No risk to site.

Environmental Regulatory Records	Distance (m)				Summary	Comments
	On Site	0 - <50m	50 - <250m	250 - 500m		
List 2 Dangerous Substances	-	-	1	2	This closest record relates to the Timber Fireproofing Works to the west.	No risk to site as stated previously.
Pollution Incidents (EA/NRW)	-	-	1	-	Major impact to water in 2003 involving sewage materials located ~105m N.	No risk to site given the age and location of the incident.

KEY: N – North, S – South, E – East, W – West

6.2.4 Environmental Designations

There are no environmental designations of considerable concern that could impact / affect redevelopment located on-site or within 500m of the site boundary.

6.3 Environmental Records Summary

There is a record of an ESS located adjacent south-east of the site dated from 1970 which remains present. The potential therefore exists for oils to have been used inside the ESS which may contain PCB's. However, any impact to the site associated with leaking oils is considered unlikely as any internal leaks would likely be localised to the source.

The environmental records indicate that there might also be a potential risk to the site related to numerous former / current industrial land uses identified in close proximity, particularly associated with the current industrial estate located to the south. The potential exists for localised impact to the site / groundwater below the site associated with potential for spills and leaks of fuels / oils / chemicals occurring from the various industrial land uses identified. However, based on the local topography, groundwater is likely to flow to the west and is therefore considered likely to carry any potential contamination away from the site.

6.4 Visual and Cultural Designations

Visual and cultural designations are only assessed in this desk study in relation to their potential to be environmental receptors for contamination at the site or which could be impacted by the development.

Within 250m of the site, there is one record for a conservation area relating to Ashby-de-la-Zouch Canal located ~120m south-west. Surface water in the canal is however considered to be of lower sensitivity as the canal is likely to be clay lined and is not considered likely to be in hydraulic connectivity with groundwater under the site / surrounding area.

No further visual and cultural designation records are present within 500m of the boundary and will therefore not be considered further.

7 Preliminary Contamination Risk Assessment

7.1 Introduction

This section provides a qualitative Preliminary Risk Assessment (PRA) of the risk posed from potential on and off-site contamination sources, identified by the information presented in the previous sections of this report and outlines the assessment process and procedures employed and the assessment findings.

A PRA is the first tier of risk assessment that develops the Initial Conceptual Site Model (ICSM) to establish whether there are any potentially unacceptable risks associated with the site.

The legislative framework for Land Contamination Risk Management (LCRM) guidance published by the EA on 8th October 2020 (updated July 23) and has been adhered to throughout this PRA. Details of the framework is provided on the following government website:

<https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>

The Environment Agency (EA) expects this guidance to be followed and referenced when managing the risks from land contamination.

7.2 Initial Conceptual Site Model

The first stage in the assessment of a site is the derivation of an ICSM. The information previously gathered during the review will be used to develop the ICSM which is representative of the characteristics of the site. This will be in a written or tabulated form, considering all potential sources of contamination, all potential receptors and whether there is a plausible pathway between the two.

The ICSM has been developed based on the commonly adopted Source-Pathway-Receptor (S-P-R) model as detailed within the LCRM guidance. In the context of LCRM, there are three essential risk elements. All three risk elements can exist independently, but without the three risk elements being linked there is no risk. Where all three elements are present or are likely to be present, they are described as potential contaminant linkages, which can then be subjected to the risk assessment and risk management process.

The three risk elements are detailed in the table below.

Table 7-1 Summary of Risk Elements

Risk Element	Definition
Source (S)	A contaminant or pollutant that is in, on or under the land and that has the potential to cause harm or pollution.
Pathway (P)	A route by which a receptor is or could be affected by a contamination.
Receptor (R)	Something that could be adversely affected by a contaminant, for example a person, controlled waters, an organism, an ecosystem, or Part 2A receptors such as buildings, crops or animals

If a contaminant linkage exists on site there is a risk, and if realised may result in:

- A potential liability under current environmental legislation including Part 2A of the Environmental Protection Act 1990 (if 'significant harm' or the 'possibility of significant harm' is occurring) or Groundwater Regulations 1998.
- Redevelopment of the site could lead to risks to new property, site personnel and, if no intervention, future occupiers from existing contamination. These risks would have to be mitigated under the planning regime.
- Liabilities associated with pollution of adjacent land & damage to adjacent property.

By considering the S-P-R (contaminant linkages), an assessment of the human health / environmental risks is made regarding the significance and degree of the risk. This assessment is based on consideration of whether the source of contamination can reach a receptor and hence whether it is of major or minor significance.

The risk assessment procedures to derive contaminant linkages and to develop an ICSM are described in Appendix E.

7.3 Contaminant Linkage Assessment

The qualitative contaminant linkage assessment has identified several potential contaminant linkages as discussed in further detail below.

7.4 Potential Sources of Contamination

Sources (S); These are potential or known sources of contamination that may relate to a former land use or present site feature or process (e.g., fuel storage tanks).

The potential on-site and off-site sources of contamination that have been identified during the desk study and reconnaissance are detailed in the table below.

Table 7-2 Potential Sources of Contamination

Location	Potential Sources (S)	Inorganic Contaminants	Organic Contaminants
On-Site	Possible areas of unrecorded Made Ground in infilled ponds.	Common contaminants may include: Cadmium, chromium, copper, lead, mercury, nickel, zinc, sulphate, sulphide, sulphur, pH, free cyanide, asbestos.	Depends on source of material; common contaminants may include: Poly-Aromatic Hydrocarbons (PAH), Petroleum Hydrocarbons (TPH) and Volatile Organic Compounds (VOCs).
On-Site	Grazing land at existing farm - Potential for localised spills of fuels / oils from farm machinery and contamination (pesticides / herbicides) present in existing agricultural Topsoil.	Naturally occurring metals and asbestos.	As above and pesticides / herbicides.

Location	Potential Sources (S)	Inorganic Contaminants	Organic Contaminants
On-site and Off-Site	Potential for localised spills of fuels / oils from aircraft landing on grass covered runway.		May include PAHs, TPH & BTEX.
Off-Site	Numerous historical industrial land uses located within ~250m of the site boundary. Potential for spills and leaks of fuels / oils / chemicals occurring.	Dissolved metals in groundwater.	Depends on source of contaminants may include PAHs, TPH & BTEX in groundwater.

7.5 Potential Sources of Hazardous Ground Gas and Vapours

The potential sources of hazardous ground gas / vapours identified on site and in the surrounding area, alongside the gas generation and migration potential are detailed in the table below.

Table 7-3 Potential Sources of Hazardous Ground Gas / Vapours

Location	Potential Sources (S)	Details	Gas Generation & Migration Potential (CIRIA C665)
On-site	Ground Gas: Areas of unrecorded Made Ground (In-filled ponds) and possible elsewhere.	Made Ground has the potential to generate elevated ground gas at the site, particularly if any putrescible material is present.	Generally, very low and localised to the source but would be dependent on nature of any materials identified.
On-site & Off-site	Organic Vapours: Spills / leaks of fuels / oils from the various sources identified in Table 6-1.	The potential exists for localised VOCs to be present within any soils / groundwater below the site associated with leaks or spills of fuels / oils / chemicals associated with the numerous sources identified in Table 7-2.	Generally low and localised to the source.

The organic content of any underlying ground, the available degradable material proportion, the nature of any fill materials (if present) and the general ground conditions across the site the site should be established by undertaking an intrusive investigation on site. This should assist with establishing if a hazardous ground gas risk is present.

7.6 Identified Potential Pathways (P)

Migration pathways are defined as the routes that chemicals take from a source to an exposed organism or receptor. Potential human exposure to contaminants is feasible through three principal pathways (ingestion, inhalation and dermal contact) as defined in the LCRM guidance which are summarised below. Other potential pathways potentially affecting the wider environment such as controlled waters, buried structures and ecological receptors have also been included and are summarised in the table below. This is based on a proposed residential end-use of the site.

All plausible pathways (P) between the potential contaminant sources (S) and the receptors (R), i.e., S-P-R contaminant linkages, that have been identified and are outlined below in Table 7-4.

Table 7-4 Potential Pathways

Pathway	Details
Ingestion of Soils / Dust / Groundwater	Eating and swallowing of contaminated soil and/or groundwater either by deliberate consumption, indirectly by eating or smoking with dirty hands or by ingestion of fugitive dust.
Dermal Contact with Soils / Dust / Groundwater	Direct contact with contaminated soil and groundwater, causing skin conditions such as dermatitis etc. Certain contaminants can be absorbed into the body through the skin or enter directly through open cuts or abrasions.
Inhalation (Outdoor / Indoor) of Dust and / or Vapour	Breathing dust and vapour from contaminated soil in outdoor air. Vapour can also migrate into buildings resulting in inhalation by the occupants, as can dusts which may be tracked back to the school buildings.
Leaching	Infiltration of water through soil can leach out soluble contaminants migrating laterally and/or vertically dependent on permeability, preferential pathways, man-made voids etc., resulting in groundwater pollution.
Migration of Contaminated Water	Contaminated groundwater can migrate laterally and/or vertically dependent on permeability, preferential pathways, within the aquifer and via man-made voids etc. Surface water run-off of contaminated water can also occur.
Aggressive Attack	Building materials can be damaged by direct contact with aggressive ground conditions, for example sulphate attack on concrete and hydrocarbon attack on plastics, causing embrittlement.
Direct Contact & Uptake by Plants	Plants on-site / surrounding area are susceptible to site-based contamination.
Migration and accumulation of Ground Gas / Vapour	Generated ground gas / vapour can migrate laterally and / or vertically dependent on permeability, preferential pathways, man-made voids etc.

7.7 Identified Potential Receptors

Receptors are defined as human (site occupiers, end users etc) or non-human (controlled waters, property and ecological) receptors that have the potential to experience adverse effects from direct or indirect exposure to contaminated material.

The receptors that are currently present on and off the site or likely to be present in the future as detailed in the table below and are based on the proposed residential end-use.

Table 7-5 Potential Receptors

Receptor Category		Present	Type of Receptor / Comment
Human Health	Future Site Occupants (End Users)	Y	A female child will be regarded as the critical receptor.
	Construction Workers	Y	A female adult office worker will be regarded as the critical receptor.
	Adjacent Site Users	Y	A female child will be regarded as the critical receptor
Controlled Waters	Groundwater	Y	Secondary (Undifferentiated) Aquifer (Superficial deposits) Secondary B Aquifer (Bedrock)
	Surface Water	Y	- Inland rivers located ~120m NW with additional inland rivers located ~170m to ~220m NE, SE and W of the site. - Canal located ~130m NW of the site. - Ponds located adjacent north, adjacent east and to the west of the site.
Property	Underground Structures	Y	Buried Services (Present & Future).
		Y	Buried concrete (Present & Future).
Ecological	Flora and fauna	Y	Grassed areas and plants on site and adjacent woodland / hedgerows located adjacent.

7.8 Potential Contaminant Linkages

The risk classification has been qualitatively derived in accordance with the legislative framework for LCRM and in accordance with CIRIA C552 (2001). The methodology is presented in Appendix E.

The PRA has identified the potential for localised contamination at the site resulting from past / present on-site and off-site land uses which may have potentially impacted the site. Plausible contaminant linkages have been identified and therefore a site investigation is recommended to establish current levels of contamination and risk.

Based on the information above, the ICSM and potential contaminant linkages considered applicable to the site are detailed in Table 7-6 overleaf. The ICSM is based on current site conditions and information reviewed to date and will need to be revised should any changes at the site take place or when additional data is available.

The ICSM has been designed in general accordance with BS EN ISO 21365:2020 – ‘Soil Quality Conceptual Site Models for Potentially Contaminated Sites’.

Table 7-6 ICSM & Potential Contaminant Linkages

Contaminant Linkage			Risk Assessment		
Source (S)	Pathway (P)	Receptor (R)	Probability	Consequence	Current Risk
Human Health					
Potential on-site contaminants as detailed in Table 7-2.	Ingestion of contaminated particulates.	Site end users.	Low	Medium	Low / Moderate
	Dermal contact.				
	Inhalation of contaminated dust / particles.	Construction workers / maintenance workers.	Low	Medium	Low / Moderate
Potential contaminants as detailed in Table 7-2.	Inhalation of contaminated dust / particles.	Members of the public / properties adjacent to the site during construction	Low	Mild	Low
Potential sources of hazardous ground gas as detailed in Table 7-3.	Migration of asphyxiant and explosive/ harmful gasses into confined spaces.	Site end users.	Unlikely	Severe	Low / moderate
		Construction workers / maintenance workers.	Unlikely	Severe	Low / moderate
Potential sources of vapours as detailed in Table 7-3.	Inhalation of vapours in indoor and outdoor air.	Site end users.	Unlikely	Severe	Low / moderate
		Construction workers / maintenance workers in trenches.	Unlikely	Severe	Low / moderate

Contaminant Linkage			Risk Assessment		
Source (S)	Pathway (P)	Receptor (R)	Probability	Consequence	Current Risk
Controlled Waters					
Potential contaminants as detailed in Table 7-2.	Leaching of contamination into groundwater.	Secondary Undifferentiated and Secondary B Aquifers.	Unlikely	Medium	Low
	Surface water run-off and / or migration of contaminated groundwater.	Inland rivers, ponds and canal located within ~250m of the site.	Unlikely	Medium	Low
Property and Infrastructure					
Potential contaminants as detailed in Table 7-2 & natural subsoils.	Leaching of contaminants & direct contact	Buried concrete & structures	Low	Mild	Low
Potential contaminants as detailed in Table 7-2.	Leaching of contaminants & direct contact	Buried services / water pipes.	Unlikely	Mild	Very Low
Ecology					
Potential contaminants as detailed in Table 7-2.	Uptake of available phytotoxic contaminants via direct contact with contaminants.	Ecological receptors Flora & Fauna on and off-site. Adjacent Woodland.	Low	Mild	Low

8 Conclusions and Recommendations

8.1 Conclusions

The Desk Study has produced the following key conclusions and recommendations.

8.1.1 Site Summary

Site Summary	
Proposed Development	Development proposals for the site are understood to comprise a residential development with gardens and areas of soft landscaping used as Public Open Space (POS).
Current Site Use	The site forms part of a wider farm (Wharf Farm) and comprises grass covered fields separated by an access road running centrally though the site north to south. The western-most field was indicated to have previously been used for animal grazing due to the presence of a water trough and animal pen in the south-west; however, no livestock is currently present. The eastern-most field partially comprised a grass-covered runway; however, no evidence of the runway was noted. Sporadic mature trees are present on site, particularly along the access road and southern boundary.
Surrounding Land Use	Surrounding land uses comprise agricultural and residential the east and north. A railway line is located adjacent west and an industrial estate is located on land adjacent Station Road to the south.
Brief Site History	The majority of the site has remained undeveloped prior to 1885 with no discernible change in land use noted up to the present day. Two ponds were however historically located on-site, which have both since been in-filled (confirmed during reconnaissance). Infilled land could therefore present a localised source of ground gas and / or contamination depending on the type of fil used. A runway was historically located in the east of the site, present from prior to 1999 to at least ~2022.

8.1.2 Environmental Risk Assessment Summary

Environmental Summary	
Human Health Risk Assessment	The assessment has identified numerous potential on and off-site sources of contamination associated with the historical / current land use which may represent localised sources of heavy metals, hydrocarbon fractions, PAHs, asbestos fibres & ACMs to have impacted the site. Where localised on-site and off-site potential sources of contamination have been identified, the preliminary risk assessment has indicated that, in the absence of any mitigation measures, the site poses a LOW / MODERATE risk to human health in these areas until proven otherwise. The majority of the site is however currently in use as undeveloped agricultural grazing land. As such, there is considered to be a LOW risk to Human Health end users / construction workers based on redevelopment of much of the site for a residential end use.

Environmental Summary	
Controlled Waters Risk Assessment	The preliminary risk assessment has indicated that the site poses a LOW risk to a Controlled Waters.
Hazardous Ground Gas Risk	Generally LOW risk for the majority of the site with a localised LOW / MODERATE risk associated with hazardous ground gas arising from potential areas of in-filled ground present on site.
Vapour Risk	The risk of encountering vapour's on-site is generally LOW . However, the potential exists for a localised LOW / MODERATE risk of vapours to impact site boundaries / groundwater under the site arising from leaks and spills of fuels / oils / chemicals from numerous potential sources identified.
Radon	The site is not in a radon area; radon protection measures not required.
Ecological Risk	LOW risk from potential Impacts from identified contamination sources and proposed construction to ecological receptors.

8.1.3 Geotechnical Summary and Constraints

Geotechnical Summary and Constraints	
Expected Ground Conditions	The underlying geology is expected to comprise superficial Lacustrine Deposits comprising clay, silt and sand in the south-west corner of the site and Superficial Bosworth Clay Member deposits comprising clay & silt elsewhere. Mudstone bedrock is likely to be encountered at depth below superficial strata.
Mining Risk	No risk identified.
Ground Constraints	The potential exists for compressible deposits with medium plasticity to be present across the site. The plasticity / compressibility of in-situ soils should therefore be determined by undertaking an intrusive site investigation across the site to confirm the site-specific ground conditions.
Preliminary Foundation Assessment	Strip or trenchfill foundations may be appropriate for the majority of the site, subject to an assessment of loadings of the proposed structures and verification of the ground conditions by intrusive investigation. Localised deepening of foundations / alternative foundations may be required in some areas of the if compressible strata is encountered or within the south-west of the site coinciding with superficial Lacustrine Deposits.
Preliminary Drainage Assessment	The underlying superficial geology mapped below the site would suggest that it is likely to be unsuitable for drainage. However, this preliminary assessment should be confirmed by undertaking infiltration testing on site in accordance with BRE365 guidance.

8.2 Recommendations

An intrusive site investigation should be undertaken to confirm ground conditions underlying proposed development, to confirm suitable foundation solutions and to confirm the contaminative status of the site. Investigation works should specifically target any identified potential sources of contamination and areas of potential in-filled ground.

The requirement for gas monitoring should be confirmed once ground conditions have been established.

9 References

The following documents are referenced in the report;

1. PJS20-21-R01 Desk Study Report dated June 2020.
2. PJS20-21-RT-02 Geo-environmental Assessment dated September 2021.
3. Land Contamination Risk Management (LCRM) 2020
<https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>
4. CIRIA C552, Contaminated land risk assessment - A guide to good practice, dated 2001.
5. British Standards Institution (BSI) BS10175:2011+A2:2017 Investigation of Potentially Contaminative Sites Code of Practice 2015.
6. BS 5930 'Code of Practice for Site Investigations' 2015+A1:2020.
7. Construction Industry Research and Information Association (CIRIA). 2008. Assessing the risk posed by hazardous gases to buildings. C665.
8. BS EN ISO 21365:2020 – Soil Quality. Conceptual Site Models for Potentially Contaminated Sites.



Drawings

PJSG24-0085-DR-0004A	Site Location Plan
PJSG24-0085-DR-0005A	Site Features Plan
P24-1644_DE_003_01I	Development Framework Plan





General Notes

1. Do not scale this drawing. If in doubt, ask.
2. This drawing is to be read in conjunction with all other relevant Engineers, Architects and specialist design drawings and details.
3. All dimensions are in metres unless noted otherwise. All levels are in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the Engineer immediately.



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Client

Richborough

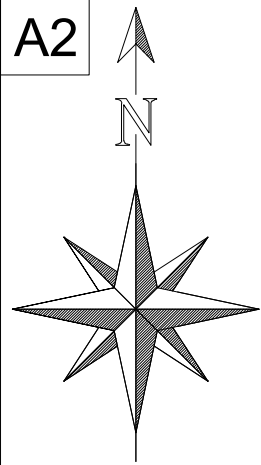
Project

Station Road, Market Bosworth

Drawing Title

Site Location Plan

	Drawn	Checked	Status	Scale	
Initial	NB	AM	INFORMATION	NTS	
Date	15/07/24	15/07/24			
Project	Drawing Number			Revision	
PJS24-0085	DR-0004			A	



by de la Zouch Canal

Residential property

Pond

Electricity Pole

Grass

Grass

Play Area

Pond

Canal

Residential Estate

Access track

PIPISTELLE DRIVE

HORSESHOE CLOSE

Grass

Field

Pond

Pond

Water Trough

Grass

SP

Animal Pen

Site Access

Railway line

Industrial Estate

Station Road

Electricity Sub-station (ESS)

General Notes

1. Do not scale this drawing. If in doubt, ask.
2. This drawing is to be read in conjunction with all other relevant Engineers, Architects and specialist design drawings and details.
3. All dimensions are in metres unless noted otherwise. All levels are in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the Engineer immediately.

A	11.10.24	Revised to reflect new site boundary.	NB	AM
Rev	Date	Amendments	By	Chk



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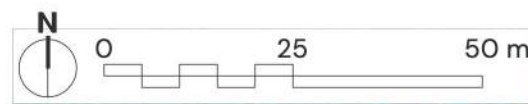
Project

Station Road, Market Bosworth

Drawing Title

Site Features Plan

Initial	Drawn	Checked	Status	Scale
NB	NB	AM		
Date	15/07/24	15/07/24	INFORMATION	1:1000
Project Number	Drawing Number		Revision	
PJS24-0085	DR-0005		A	



KEY

	APPLICATION BOUNDARY 7.964 HECTARES / 19.679 ACRES		PROPOSED NATIVE HEDGEROW PLANTING
	ACCESS VIA STATION ROAD		MIXED SCRUB / NEUTRAL GRASSLAND
	RESIDENTIAL DEVELOPMENT		WILDFLOWER PLANTING
	PUBLIC OPEN SPACE (INC. SUDS)		PRIORITY HABITAT POND
	PRIMARY TREE LINED MOVEMENT ROUTE INCORPORATING CYCLE AND PEDESTRIAN MOVEMENT		PROPOSED ORNAMENTAL PLANTING
	SECONDARY MOVEMENT ROUTE INCORPORATING RAINWTARE GARDENS		COMMUNITY ORCHARD PLANTING
	TERTIARY STREET		COMMUNITY KITCHEN GARDEN
	PRIVATE LANE		LOCALLY EQUIPPED AREA FOR PLAY (LEAP)
	RETAINED FARM TRACK ACCESS FOR WHARF AND GODSON'S HILL FARM		LOCAL AREA FOR PLAY (LAP)
	PRIMARY PEDESTRIAN / CYCLE MOVEMENT ROUTE		NATURAL PLAY TRAIL LOCATIONS
	PEDESTRIAN MOVEMENT ROUTE		AREA OF NATURALISED PLAY
	MOWN PATH MOVEMENT ROUTE		POTENTIAL CAR PARK
	EXISTING VEGETATION WITH ROOT PROTECTION AREA		ACCESS TO EXISTING WHARF FARM AND KYNGS GOLF AND COUNTRY CLUB
	PROPOSED STRUCTURAL WOODLAND PLANTING		PROPOSED PUMP STATION
	PROPOSED LOW-RISE NATIVE HEDGEROW / SHRUBBERY		SUSTAINABLE DRAINAGE SOLUTIONS WITH REEDBED PLANTING

KEY PRINCIPLES

1. PRIMARY ACCESS POINT VIA STATION ROAD;
2. PROPOSED PRIMARY KEY MOVEMENT ROUTE PROVIDING CYCLE AND PEDESTRIAN MOVEMENT THROUGHOUT THE DEVELOPMENT;
3. SECONDARY MOVEMENT ROUTES CREATING CONNECTED STREETS;
4. TERTIARY STREETS SERVING SMALL CLUSTERS OF DEVELOPMENT;
5. MAXIMISE OUTWARD FACING DEVELOPMENT FOR NATURAL SURVEILLANCE;
6. FULLY CIRCULATORY CYCLE / PEDESTRIAN ROUTES PROVIDING ACCESS TO ALL AREAS OF PUBLIC OPEN SPACE;
7. MAXIMUM RETENTION OF EXISTING VEGETATION;
8. PROPOSED TREE AND HEDGEROW PLANTING TO STRENGTHEN EXISTING VEGETATION;
9. AREA OF BIO-DIVERSITY ENHANCEMENTS INCORPORATING NATIVE HEDGEROW PLANTING, PRIORITY HABITAT PONDS, TREE PLANTING AND WILDFLOWER/NEUTRAL GRASSLAND PLANTING WITH LIMITED PUBLIC ACCESS;
10. RELOCATION OF PRIORITY HABITAT PONDS FOR THE GREAT CRESTED NEWT POPULATION;
11. KITCHEN GARDEN AND ORCHARD COMMUNITY SPACES;
12. AREAS OF EQUIPPED PLAY AND RECREATION FOR ALL AGES AT BOSWORTH COMMON, ASH GREEN AND BIRCH GREEN;
13. VIEWING CORRIDORS WITH LONG DISTANCE VIEWS TO WIDER COUNTRYSIDE; AND
14. VILLAGE GREEN PROVIDING SPACE TO MEET AND RELAX.

Rev 1: Amendment to play spaces (2012/12/14)
Rev 2: Update to landscaping, including tree and hedgerow (2013/01/14)
Rev 3: Update to landscaping, including tree and hedgerow (2013/01/14)
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Expertly Done.

DESIGN | ECONOMICS | ENVIRONMENT | HERITAGE | LAND & PROPERTY | PLANNING | TRANSPORT & INFRASTRUCTURE

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LAND NORTH OF STATION ROAD – DEVELOPMENT FRAMEWORK PLAN



| PEGASUSGROUP.CO.UK | TEAM/DRAWN BY: MC | APPROVED BY: JW | DATE: 19.07.24 | SCALE: 1:1000@A1 | DRWG: P24-1644_DE_003-01 | REV: I | CLIENT: RICHBOROUGH