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Phase 1 Desktop Study Report

Wells Farm

Northaw Road East

Cuffley,

Potters Bar EN6 4RD

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1.0 Introduction

- 1.1 Jonsyn Ltd has been instructed by King & Co to conduct a Phase 1 Desktop Study in support of a planning application for the proposed development at Wells Farm, Northaw Road East, Cuffley, Potters Bar.
- 1.2 This report is a study of the historical maps, geological information and a review of the regulatory information. The report has examined the sources of potential contamination in terms of historical land uses, where known. The report also includes a review of the Utilities which may be present across the site.
- 1.3 Jonsyn Ltd obtained an Envirocheck Report on the 13 October 2020. This report contains information derived from a database containing public record information from the Environment Agency, Local Authority and other bodies, details of which are attached in **Appendix D**.
- 1.4 This report is for the private and confidential use of King & Co and their agents and may not be copied in whole or in part without the written permission of Jonsyn Ltd.

2.0 Site Description and Environmental Setting

2.1 Site Description

The development site is located to the north of Northaw Road East, west of the village centre in Cuffley. The M25, London Orbital Motorway, lies to the south of the site. The nearest over ground station is Cuffley (Great Northern) which lies approximately 1.03 km to the north east of the site. Access to the site is via Northaw Road East. The site is bounded by Northaw Road East along the southern boundary. The northern, western and eastern boundaries are open to arable fields and grazing pastures. The National Grid reference is 529981E and 201958N. A location map is given in **Appendix A**.

The site presents itself as a farmyard with a number of existing barn buildings and hard standing. The agricultural use has substantially decreased over time and the site currently includes some employment uses and residential use in the farmhouse and cottage, which is currently leased. Residual use is hay cropping and storage which does not represent a sustainable economic use of the land. The site is situated in Greenbelt but benefits from a positive draft allocation, so it has been concluded to be an appropriate site for release to contribute towards Plan-led housing requirements.

The site covers an area of approximately 0.49 hectares. Refer to existing site plan attached in **Appendix B**.

2.2 Site Geology

The BGS Geology Map indicates that the site may be underlain with bedrock geology consisting of the Lambeth Group – Clay, Silt and Sand. No superficial deposits are known to overlay the Bedrock soils. The geology maps are attached in **Appendix D** of this report.

2.3 Site Hydrogeology

The Water and Hydrology Map provided by Envirocheck indicates that the site is not located above a Superficial Aquifer.

The Bedrock Aquifer map indicates that the site is located over "Secondary A" bedrock aquifer. These are 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. Refer to **Appendix D** for



the Groundwater Vulnerability Maps.

The Groundwater Source Protection Map provided by Envirocheck indicates that the site is not located above a Source Protection Zone (SPZ). Refer to **Appendix D** for SPZ map.

2.4 Site Hydrology

The Environment Agency (EA) flood map for planning (Refer to **Appendix D**) indicates that the site is located principally within Flood Zone 1 and therefore represents very low flood risk. Areas of higher flood risk (flood zones 2 and 3) are present on the western boundary close to Hempshill Brook.

The Envirocheck Map for flooding from surface water (refer to **Appendix D**) indicates that the site falls generally within a no risk zone along its eastern extents.

The Envirocheck Map for groundwater flooding (refer to **Appendix D**) indicates that the site is in an area which has potential for groundwater flooding to occur at the surface.

2.5 Proposed Development

The project involves the demolition of the existing buildings supporting the current land use and develop circa 17 dwelling units on the previously developed part of the land. Refer to the proposed plan attached in **Appendix C**.

3.0 Historical Review

3.1 The following Ordnance Survey maps have been viewed for Historical Land Use information:

Mapping Type	Scale	Published Date	Map No
Middlesex	1:10,560	1882	00200
Middlesex	1:10,560	1897-1898	002NW
Hertfordshire	1:10,560	1916-1920	041NW
Hertfordshire	1:10,560	1916	041NW
Hertfordshire	1:10,560	1935	041NW
Hertfordshire	1:10,560	1938	041NW
Historical Aerial Photography	1:10,560	1945	TL20SE-TL30SW
Ordnance Survey Plan	1:10,000	1960	TL20SE-TL30SW
Ordnance Survey Plan	1:10,000	1970-1974	TL20SE-TL30SW
Ordnance Survey Plan	1:10,000	1973	TL20SE
Ordnance Survey Plan	1:10,000	1980-1989	TL20SE-TL30SW
Ordnance Survey Plan	1:10,000	1988	TL30SW
10k Raster Mapping	1:10,000	1999	TL20SE-TL30SW
10k Raster Mapping	1:10,000	2006	TL20SE-TL30SW
Vector Local Map	1:10,000	2020	TL20SE-TL30SW
Hertfordshire	1:2,500	1874	041_06
Hertfordshire	1:2,500	1899	041_05
Hertfordshire	1:2,500	1914	041_05
Hertfordshire	1:2,500	1935	041_05
Ordnance Survey Plan	1: 2,500	1970-1971	TL2902-2901-3002-3001
Supply of Unpublished Survey Information	1:2,500	1973	TL3002
Additional SIMs	1:2,500	1983	TL3002
Large Scale National Grid Data	1:2,500	1992	TL2902-2901-3002-3001
Large Scale National Grid Date	1:2,500	1996	TL3002
Historical Aerial Photography	-	1999	A13

A brief overview of the 1: 10,560 and 1: 10,000 maps, which are included at in **Appendix D**, are provided below.

Map of Middlesex - Published 1882 (1:10,560):

The Map of Middlesex published in 1882 indicates that the site is undeveloped. The site is called up as Wells Farm and appears to indicate a small woodland on the south eastern corner of the site. Northaw Road East forms the southern boundary of the site however the road is not called up on the 1882 map. Colesdale Farm is called up and is located to the south west of the site. The area surrounding the site appears to be undeveloped.

Map of Middlesex - Published 1897-1898 (1:10,560):

The Map of Middlesex published between 1897 and 1898 indicates 3 no. buildings on site. The woodland on the south eastern corner of the site appears to have been cleared. There are no other changes to the site and/or the immediate area surrounding the site.

Map of Hertfordshire - Published 1916-1920 (1:10,560):

The Map of Hertfordshire published between 1916 and 1920 does not indicate a significant change in or around the immediate vicinity of the site during this period. The Enfield Branch Extension to the Great Northern Railway (GNR) appears along the east of the site within the 1916-1920 maps. Cuffley and Goff's Oak Station is also called up on the 1916-1920 map. Northaw Road East is shown on the map but is not called up. The area in and around the site remains undeveloped.

Map of Hertfordshire - Published 1916 (1:10,560):

Same as above.

Map of Hertfordshire - Published 1935 (1:10,560):

The Map of Hertfordshire published in 1935 indicate some form of physical change to the southern part of the site, in the areas adjacent to the buildings. Northaw Road East is called up in the 1935 map. The map indicates Northaw Pumping Station (Barnet Dist. Gas & W.W Co.) to the north of the site. According to the map, areas to the north east appear to have seen significant development during this period. Under the 1923 grouping, the Great Northern Railway (GNR) became part of the London and North Eastern Railway (L.N.E.R) as is called up on the 1935 map

Map of Hertfordshire - Published 1938 (1:10,560):

The Map of Hertfordshire published in 1938 does not have any information.

Historical Aerial Photography - Published 1945 (1:10,560):

The historical aerial photography map published in 1945 does not indicate any significant changes in and around the site.



Ordnance Survey Plan - Published 1960 (1:10,000):

The Ordnance Survey Plan published in 1960 does not indicate a significant change in or around the site during this period. A sports ground is shown on the site opposite Northaw Road East along the southern boundary.

Ordnance Survey Plan – Published 1970-1974 (1:10,000):

The Ordnance Survey plan published between 1970-1974 does not indicate a significant change on the site although the number of buildings on site appear to have increased. The density of developments to the northeast of the site appears to have increased. A tennis court and bowling green along with pavilions are shown within the sports grounds on the site opposite Northaw Road East.

Ordnance Survey Plan – Published 1973 (1:10,000):

The Ordnance Survey plan published in 1973 does not indicate any major changes in an around the site.

Ordnance Survey Plan – Published 1980- 1989 (1:10,000):

The Ordnance Survey Plan published in 1980-1989 indicates increased activity on the southern part of the site. Hempshill Brook has been called up along the western boundary of the site in the 1980-1989 map. There is little change in the areas around the site.

Ordnance Survey Plan – Published 1988: (1:10,000):

The Ordnance Survey Plan published in 1988 does not indicate any significant change within the area surrounding the site.

10K Raster Map – Published 1999 (1:10,000):

The 10k Raster Map published in 1999 indicates 5 no. buildings in the centre of the site and 1 no. L- shaped building towards the south eastern corner of the site. A pond is indicated along the south west corner of the site. Hempshill Brook is shown along the western boundary of the site. The brook crosses the road and connects into Northaw Brook heading east.

10K Raster Map – Published 2006 (1:10,000):

The 10k Raster Map published in 2006 does not indicate any major changes on the site. No significant changes were noted in the area surrounding the site.

Vector Local Map – Published 2020 (1:10,000):

The Vector Local Map published in 2017 does not indicate a significant change in and around the site.



A brief overview of the 1: 2,500 maps, which are included in **Appendix D**, is provided below.

Map of Hertfordshire– Published 1874 (1:2,500):

The Map of Hertfordshire published in 1864 indicates some buildings on site along with woodland on the south east portion of the site. The site has been called up on the 1874 map. The surrounding area remains undeveloped.

Map of Hertfordshire– Published 1898 (1:2,500):

The Map of Hertfordshire published in 1898 also indicates that the site is undeveloped. The brook along the western boundary is indicated on the map however is not called up. The map does not indicate significant changes within the site.

Map of Hertfordshire– Published 1914 (1:2,500):

The map of Hertfordshire published in 1914 does not indicate any major changes on the site.

Map of Hertfordshire– Published 1935 (1:2,500):

The map of Hertfordshire published in 1935 indicates minor changes within the site. Development are shown to have appeared towards the north east of the site.

Ordnance Survey Plan– Published 1970-1971 (1:2,500):

The Ordnance Survey Plan published in 1970-1971 indicates significant changes and additional buildings within the site. Hempshill Brook is called up and runs along the western boundary of the site. Northaw Road East is also called up in the 1970-1971 map. A new sports ground, tennis courts, bowling green and pavilions are shown on the site across Northaw Road East. The density of developments towards the north east of the site appear to have increased.

Supply of Unpublished Survey Information– Published 1973 (1:2,500):

The Supply of Unpublished Survey Information Map published in 1973 does not indicate any significant changes in and around the site.

Additional SIMs– Published 1983 (1:2,500):

The Additional SIMs published in 1983 indicates an additional building towards the south eastern corner of the site does.

Large Scale National Grid Data – Published 1992 (1:2,500):

The Large Scale National Grid Data Map published in 1992 does not indicate any major changes on the site.



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Large Scale National Grid– Published 1996 (1:2,500):

The National Grid map published in 1992 does not indicate any major changes on the site.

Historical Aerial Photography-Published 1999:

The Historical Aerial Photography Map published in 1999 does not indicate any major changes within the site. The pond in the southwest corner of the site appears to be indicated on the aerial photography map of 1999.

4.0 Regulatory Review

4.1 The Envirocheck report indicates that:

- The site is located in Fluvial Flood Zone 1.
- The site is located in an area which has potential for ground water flooding to occur at the surface.
- The site lies over a Secondary A aquifer with a high leaching potential and outside Ground Water Source Protection Zones (SPZ).
- There are 2No. Discharge Consents within 501-1000m of the site.
- There are 2No. Local Authority Pollution Prevention and Controls within 501-1000m of the site.
- The nearest surface water feature is within 0-250m of the site.
- There are 1No. Pollution Incidents to Controlled Waters within 0-250m and 4No. pollution Incidents within 501-1000m of the site.
- There is 1 No. Substantial Pollution Incident within 250-500m and 7 No. within 501-1000m of the site.
- There are 1No. Water Abstractions within 501-1000m of the site.
- There are 2No. Licenced Waste Management Facilities (locations) within 501-1000m of the site.
- There are 2No. Local Authority Landfill Coverage on site.
- There are 2No. Potentially Infilled Land (Non-Water) entries within 501-1000m of the site.
- There are 5No. Potentially Infilled Land (Water) entries within 501-1000m of the site.
- There are 2No. BGS Recorder Mineral Sites within 501-1000m of the site.
- There are 1No. records of Man-Made Mining Cavities within 501-1000m of the site.
- There are 1No. records of Natural Cavities within 501-1000m of the site.
- The site is located in a zone which has potential for Collapsible Ground Stability hazards on site and within 0-250m of the site.
- The site is located in a zone which has potential for Compressible Ground Stability hazards within 0-250m of the site.
- The site is located in a zone which has potential for Ground Dissolution hazards on site and within 0-250m of the site.
- The site is located in a zone which has Potential for Landslide Ground Stability hazards.
- The site is located in a zone which has Potential for Running Sand Ground Stability hazards on site and within 0-250m of the site.
- There is Potential for Shrinking or Swelling Clay Ground Stability hazards on site.
- The site is located in a Radon Affected Area.
- There are 1No. Contemporary Trade Directory entries within 250m, 4No. within 0-



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250m, 4No. within 251-500m and 29No. within 501-1000m of the site.

- There are 2No. Fuel Station entries within 501-1000m of the site.
- There are 1No. Commercial Services entries within 0-250m, 1No. within 251-500m and 1No. within 501-1000m of the site.
- There are 12No. Manufacturing and Production industries within 501-1000m of the site.
- There are 7No. Public Infrastructure listings within 501-1000m of the site.
- There are 2No. Recreational and Environmental listings within 0-250m of the site.

5.0 Contamination Assessment

5.1 For an Environmental Risk to exist there must be a source of contamination, a receptor or receptors which are vulnerable to such contamination and a pathway between the two. Under the terms of Part IIA of the Environmental Protection Act 1990, if a source, receptor and pathway are all present it is defined that a 'plausible pollutant linkage' exists. The purpose of the risk assessment is, therefore, to identify whether plausible linkages exist on site.

5.2 Potential Contamination Sources :

On-Site Sources

The site was originally a farmyard with a number of existing barn buildings and hard standing. Over the years the agricultural use has substantially decreased, and the site currently includes some employment uses and residential use in the farmhouse and cottage, which is currently leased. Residual use of the site is hay cropping and storage. Based on the past use of the site no potential sources of on-site contamination have been identified.

Off-Site Sources

Based on the desktop study, the following potential off-site sources of contamination have been identified:

1. 2 No. Fuel stations (obsolete) within 952 and 955m of the site.

5.3 Potential Receptors:

Potential receptors of contamination at the site, if present, have been identified as:

The Secondary A Aquifer underlying the site.

Ground workers during the development of the site.

Future occupiers of the site.

5.4 Potential Pathways:

Any service conduits, the underlying geology, the underlying Aquifer and any made ground present at the site represents pathways via which contamination, if, present, may be able to migrate. Dermal absorption, ingestion and inhalation represents pathways via which ground workers and future users may become exposed to contamination.

5.5 Summary of Risks:



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The desktop study indicates no plausible on-site source pathway receptor linkage that may pose a risk to site workers, end users and groundwater.

The desktop study has identified one plausible off-site source pathway receptor linkage relating to the possible migration of petroleum related contamination that may pose a risk to site workers, end users, and ground water.



6.0 Recommendations

- 6.1** A Phase II Environmental and Geotechnical investigation is recommended at the site prior to development. This investigation should include boreholes with monitoring well installations to investigate the nature of any ground water contamination. Soil and groundwater testing should be carried out on a range of samples for contaminants appropriate to the historical uses in the vicinity. Additional leachability testing should also be carried out as part of the Phase II investigation.
- 6.2** A detailed services tracing survey in accordance with BSi: PAS 128: 2014, Specification for Underground Utility Detection, Verification and Location is recommended at the site prior to development. The survey should be undertaken to Survey Category B1P – M2P / M4 in accordance with PAS 128, Appendix A & B.