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PHASE I GEO-ENVIRONMENTAL SITE ASSESSMENT

KINGSPAN

SHERBURN IN ELMET

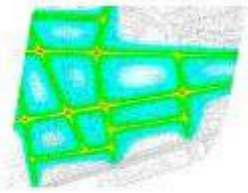
LS25 6NA

REC REFERENCE: 101374P1R0

REPORT PREPARED FOR: FISHER GERMAN

JUNE 2016





QUALITY ASSURANCE

Issue/revision	Issue 1	Revision 1	Revision 2
Remarks	Draft for Client Comment		
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Project number	101374		

EXECUTIVE SUMMARY	
Site Address	Land Adjacent to Aviation Way, Sherburn Enterprise Park, Sherburn In Elmet, Leeds LS25 6NA
Grid Reference	E: 451223, N: 433337
Site Area	1.14 ha
Current Site Use	The site is occupied by Kingspan Insulation Ltd, involved in the manufacture of insulation products. The part of the Kingspan premises proposed for redevelopment is primarily made up of undeveloped grassland, with a tarmac road running around the north and west boundaries of the site. Two skips are located on site, one is housed in an aluminium clad portal frame structure, and the other is located behind the portal frame structure.
Proposed Site Use	The site is proposed for a potential industrial development, comprising the installation of a biomass combined heat and power (CHP) plant, in addition to associated infrastructure including boiler housing, turbine building, offices, a fuel store, weighbridge, gatehouse and new access road. Drawing No. 26478/3 details the location of the development proposals.
Adjacent Site Use	The site is located within the Sherburn Enterprise Park. The Kingspan manufacturing factory forms the northern and western boundaries of the site.
Environmental Setting	**Geology** – The site is underlain by glacio-lacustrine (silty clay) deposits overlying the Roxby Formation (calcareous mudstone). **Aquifers** – The site is underlain by a Secondary (B) Aquifer (calcareous mudstone). **Sensitive Land Uses** – No sensitive land uses were found on or near the site. **Hydrology** – A man-made deluge pond is situated 10m east of site and the culverted Green Dyke runs adjacent to the south side of the site which flows from east to west.
Site History	Historical maps indicate that the site was undeveloped agricultural land until pre WWII where it was developed to become an airfield with a runway and a taxi-lane cutting through the middle of the site area. After 1950, the area became disused and was redeveloped into an industrial estate.
Landfill Sites & Ground Gases	No nearby landfill sites have been identified. Made Ground associated with the development of the site may give rise to ground gases.
Radon	Under 1% of homes are above the Action Level. The British Geological Survey (BGS) reports that no radon protective measures are necessary in the construction of new dwellings or extensions.
Coal Mining / Land Stability	The site is noted to be within a coal mining area. However, in the Coal Authority (CON29) report it was stated that "The site is not in the likely zone of influence of any past or present surface or underground workings".
Initial Conceptual Site Model (CSM)	On-site - Potential onsite contaminants have been identified associated with historical and present site activities, particularly associated with the previous airfield use. It is considered that these activities may have resulted in localised organic contamination of the soil and shallow groundwater due to leaks and spillages. Made ground materials may have been placed on site during the decommissioning of the airfield and/or the construction of the industrial estate. These materials have the potential to contain toxic heavy metals, sulphates, asbestos, polycyclic aromatic hydrocarbons (PAHs) and hydrocarbons. Given the type and nature of the historical development, and the relatively low permeability of drift geology, the likelihood of the site being affected by the presence of any on-site contamination is **low-moderate**. Off-site – Historical uses of the land adjacent to the site were involved in the

	operation and maintenance of aircraft which could possibly have created contaminants such as fuel (mainly kerosene) and lubricant oils, heavy metals and solvents. An above ground storage tank containing MDI Polyols (thiocyanates and isocyanates) north and up gradient of the site is considered to have the potential to migrate hazardous material onto site. Cadmium known to have been released into the Green Dyke 260m west of site by an off site industrial manufacturer has the potential to migrate onto site via the culvert adjacent to the south side of the site area. Due to the proximity of the Kingspan Insulation factory, the distance from previous manufacturing and maintaining works associated with the airfield and the variable permeability of the Glacio-lacustrine deposits it is considered the risk of offsite contamination to be **moderate.**
Preliminary Geotechnical Assessment	**Ground Conditions** The site is underlain by glacio-lacustrine (silty clay) drift deposits which in turn overlie calcareous mudstone. **Indicative Foundation Solutions** Based on the information reviewed as part of the Phase I Assessment, it may be feasible to construct the proposed development using strip foundations or pad foundations supporting column loads if the ground investigation confirms suitable bearing capacities within the underlying strata.
Recommendations	As the site is located on a former airfield which may potentially have been constructed pre WWII, it is considered prudent to perform a desk study assessment for unexploded ordnance (UXO) in order to establish whether there are any potentially significant UXO risks to the proposed development. A detailed Phase II intrusive Geo-Environmental ground investigation (GI) should be undertaken in order to confirm the findings of the initial conceptual site model, to determine foundation design and to assess the anticipated depths of Made Ground including monitoring wells and a ground gas assessment. A detailed drain survey should be undertaken to assess the current integrity of the culvert and exact locations of drains on the site. A Remediation Strategy and Enabling Works Plan and Material Management Plan (MMP) maybe required depending on the findings of the Phase II GI.

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Background

Resource and Environmental Consultants Ltd (REC) has been commissioned by Fisher German, on behalf of Challoch Energy, to undertake a Phase I Geo-Environmental Site Assessment for a parcel of land forming the southwest quadrant of the Kingspan premises, hereafter referred to as 'the site'.

1.2 Proposed Development

The site is proposed for a potential industrial development, comprising the installation of a biomass combined heat and power (CHP) plant, in addition to associated infrastructure including boiler housing, turbine building, offices, a fuel store, weighbridge, gatehouse and new access road. Drawing No. 26478/3 details the location of the development proposals.

1.3 Objectives

The objectives of the desk based study are to:

- Review historical plans, geology, hydrogeology, site sensitivity, flood-plain issues, mining records and any local authority information available in order to complete a Desk Study in line with Environment Agency (EA) document Model Procedures for the Management of Contaminated Land (Contaminated Land Report 11 (CLR11));
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors; and,
- Provide a factual and interpretative report relating to the desk study and provide preliminary recommendations on any potential development issues.

1.4 Sources of Information

Background information was sought from the following sources:

- Groundsure Database Search;
- Historical mapping dated 1848 to 2012. A selection of historical maps are reproduced in Appendix IV;
- On-line planning records held by North Yorkshire County Council;
- Environment Agency Groundwater Vulnerability Map (www.environment-agency.gov.uk/wiyby);
- Radon: Guidance on protective measures for new buildings (BRE Document BR 211, 2015); and,
- British Geological Survey Map (Sheet 70, 1:50,000, Leeds, Solid & Drift edition).

1.5 Risk Classification

REC has utilised the available data to classify the site on the basis of its likely contaminated land liability and potential for geotechnical constraints in relation to the property development. The risk classification definitions are summarised overleaf:

Risk	Definition
Low	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property.
Low-Moderate	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property with regard to the proposed use. However, minor issues may require further consideration in the event of a future redevelopment of the site etc.
Moderate	Some potential contaminated land liabilities/geotechnical constraints are likely to affect the property as a result of historical and/or current activities. The risks identified are unlikely to pose an immediate significant issue but the purchaser/developer may wish to make further enquiries of the vendor or undertake further environmental improvements. Redevelopment of the site will likely require further site investigation.
Moderate-High	Some potentially significant contaminated land liabilities/geotechnical constraints have been identified at the property that requires further assessment including intrusive ground investigations.
High	Significant potential contaminated land liabilities/geotechnical constraints have been identified at the property. Further assessment including intrusive ground investigation will be required to determine to level of risk and associated liability.

1.6 Limitations of the Study

The full limitations of this report are presented in Appendix I.

2.0 SITE SETTING

2.1 Site Details

Site Address	Land Adjacent to Aviation Way, Hurricane Park, Sherburn In Elmet, Leeds LS25 6NA
National Grid Reference	E: 451223, N: 433337
Site Area	1.14 ha

A site location map is presented in Appendix II as Drawing No. 101374p1r0-001.

2.2 Current Site Use

Site Walkover Brief

A site walkover was undertaken on 24th May 2016 and the following site description comprises the site's current layout / features based on the REC Engineer's observations at the time of the site walkover. The walkover is primarily used to identify potential sources of soil and water contamination present at the site. The walkover is not a professional assessment of any potential future remedial, demolition or decommissioning works required and advice on such matters should be sought by the appropriate specialist contractors.

The main site features are shown on Drawing No 26478/4 – Existing Site Plan in Appendix II and selected photographs are presented in Appendix III.

Site Description

The subject site is a roughly rectangular shaped parcel of land, approximately 150m in length and 80m in width, located within the grounds of the Kingspan Insulation Plant, northeast of Aviation Road. The site accessed off Enterprise Way to the north, following an access road to the east of the main factory buildings.

Previously, the site was used for the manufacture of furniture. The site is currently used for the manufacture of Kingspan Insulation products.

The site comprises a level grass field adjacent to the Kingspan factory to the north and west with a level grass field to the south. An aluminium clad portal frame structure is situated near the northern boundary of the site and houses a general waste skip. Another skip for scrap metal is located to the east of the portal frame structure.

The site has a man-made pond (approximately 20m x 20m) situated at 10m to the east which serves the role of a deluge pond for any spillages from the site. The Green Dyke is a submerged culvert flowing east-west across the southern section of the site at a depth of approximately 5.0m bgl (from site observations of the open channel section adjacent to the site). A small pump/electricity substation is associated with, and located adjacent to, the balancing pond and located on concrete hardstanding. A 'step' in the land is evident running east-west across the northern section of the site, where the culvert is located.

The majority of the site is mostly surfaced in grass with a level topography with limited areas of hard landscaping on the west of site including a tarmac road and car park hardstanding.

Aboveground Storage Tanks (ASTs)

No ASTs are located on site. There was one AST situated to the north east of site. This comprised of a 50,000kg resin AST holding MDI Polyols. The AST is bunded externally with the condition of the concrete hardstanding and brickwork bund appearing in good condition. Further ASTs of similar size and construction were located within the factory unit, the site representative did not provide any further information about the contents of these ASTs however, the ASTs are externally bunded and appear to be in good condition. If contamination from this source was to occur, the site is down gradient of these tanks and could be influenced by their contents.

Underground Storage Tanks (USTs)

No Underground Storage Tanks (UST) were directly observed at the site

Polychlorinated Biphenyls (PCBs)

No equipment that may potentially contain PCBs was observed at the site.

Asbestos Containing Material (ACM)

Although no ACMs were identified during the site walkover, given the history of the site and age of the building, the presence of ACM with Made Ground deposits cannot be entirely discounted and consideration of this should be made when conducting site investigations. Anecdotal information gleaned from discussions during the site walkover, suggests that an asbestos survey had been undertaken in which no evidence of asbestos was found in the areas tested within the building. A copy of the asbestos management plan has not been forwarded to REC for review.

Waste Storage

On site, there were two skips one holding scrap metal and another general waste. Further waste storage areas were demarcated around the factory unit, with caged areas for Calor gas cylinders (separate compartments for empty and full cylinders), as well as skips for designated waste types. No hazardous materials storage was noted on the site.

Drainage Issues

A formal drainage survey has not been commissioned, however Green Dyke is known to culvert across the southern area of the site. It is recommended a drainage survey is conducted in order to determine the location, composition and condition of the culvert.

2.3 Surrounding Area

The surrounding land uses are summarised below:

Direction	Land Use
North	Industrial Units – Kingspan Insulation Manufacturing
East	Hurricane Close and Industrial Units - Various
South	Grassland and Industrial Units - Eddie Stobart
West	Industrial Units – Kingspan Insulation Manufacturing

3.0 SITE HISTORY

3.1 On-Site Historical Development

A review of historical maps pertinent to the site is summarised in Table 3.1 below.

Table 3.1 Summary of Potentially Contaminative Historical Land Uses

Map Edition	Historical Land Use
1848 (1:10,560)	The site is recorded as undeveloped agricultural land, with Green Dyke and a footpath running below the southern section of the site.
1908 (1:2,500)	There are no changes recorded on the site up to 1908. No mapping records are available between 1908 and 1950.
1950 (1:10,560)	The site is located within a large area of land, designated as an "Airfield". No further detail is provided. Green Dyke is no longer shown below the site, believed culverted.
1957 to 1967 (1:10,560) & (1:2,500)	The airfield in which the site is situated is now described to be 'disused'. The mapping records now become more detailed and a runway travels through the middle of the site adjacent to a narrow taxi-lane for aircraft.
1977-1984 (1:2,500)	The main runway running is no longer shown.
1985 (1:2,500)	Industrial building, now Kingspan Insulation, is built on both the north and west sides of the site boundary.
1993 (1:2,500)	A road running around the industrial building is built, which cuts across the western end of the site.
2011- Present Day (1:2500)	A small square building is shown in the northern section of the site.

3.2 Off-Site Historical Development

A review of potentially contaminative land uses identified on historical Ordnance Survey maps within a 250m radius of the site is summarised below in Table 3.2.

Table 3.2 Summary of Potentially Contaminative Off-Site Historical Land Uses

Surrounding Feature	Distance	Dates	Direction
Airfield *Then* Disused *Then* Developed into warehouses/commercial premises	Adjacent	Pre 1950 - Pre 1958 Pre 1958 – Pre 2012 Pre 2012 - Present	Omni-Directional
Sherburn Enterprise Park.	10m Onwards	Pre 1993 to Present	Omni-directional
Industrial Building – Currently Kingspan Ltd.	Adjacent	Pre 1993	North and West
Potential unrecorded features and structures relating to RAF Airfield.	Unknown	1914 to 1950	Unknown
Hospital for Infectious Diseases	120m	Pre 1908 to Pre 1950	East
Manufacturing, maintenance and unidentified	150m- 700m	Pre 1957 to Present	South-West

Surrounding Feature	Distance	Dates	Direction
works.			

3.3 Planning History

REC has undertaken a review of on-line planning records held by North Yorkshire County Council and Sherburn in Elmet Parish Council and no planning records are recorded for the subject site although a total of 31 historic planning applications have been identified for the surrounding area. The majority are related to the improvement and expansion of Athelston School and Sherburn High School located at over 2km away from the site. The following relate to environmentally pertinent applications within the vicinity of the site;

- Planning application (MIN/1946) application by British Gypsum relating to the Stockpiling of gypsum at Fenton Lane (located at 500m north west of the subject site).

4.0 ENVIRONMENTAL SETTING

4.1 Geology & Hydrogeology

The British Geological Survey (BGS) map for the site, (Sheet 70, 1:50,000, Leeds, Solid & Drift edition) indicates that the site is underlain by the following geological sequence:

Geological Unit	Classification	Description	Aquifer Classification	Sensitivity
Drift	Glacio-lacustrine	Silty Clay	Unproductive strata	Low
Solid	Roxby Formation	Calcareous Mudstone	Secondary B Aquifer	Low - Moderate

The GroundSure report indicates there are three groundwater abstractions within 1.5km radius of the site, the nearest of which is located approximately 500m west of the site. None of the abstractions and are associated with general industrial usage, none are for potable water. The site is not situated with a Source Protection Zone.

4.2 Geotechnical Data

Geotechnical Data presented within the Groundsure report identifies the following ground conditions:

Hazard	Designation
Shrink-Swell Clay	Low
Landslides	Very Low
Ground Dissolution	Low
Compressible Ground	Moderate
Collapsible Deposits	Very Low
Running Sand	Negligible

4.3 Coal Mining

The Groundsure report indicates the site is in an area which is potentially affected by coal mining, and the Gascoigne Wood Colliery is located 1.3km south of the site. Based upon this a Coal Authority Report was obtained, which states “The site is not in the likely zone of influence of any past or present surface or underground workings”.

4.4 Hydrology

Surface water features in the vicinity of the subject site are as follows:

Surface Water Feature	Quality*	Distance (m)	Direction
Bishop Dyke	C (2009)	270m	North
Green Dyke	N/A	10m	South

*Chemical water quality as classified under the EA's General Quality Assessment (GQA) Scheme

4.5 Radon Risk Potential

The UK radon website indicates the site is situated in an area where less than 1% of homes are above the Action Level and that that full radon protective measures are not necessary in the construction of new properties or extensions.

4.6 Industrial Land Uses

The subject site was previously a furniture manufacturing plant.

The site is situated within the Sherburn Enterprise Park with the Trade Directory recording thirty-eight trade entries within 250m as follows;

- 14 No. Industrial Product Sites;
- 7 No. Motoring Sites including Repair and Servicing;
- 7 No. Infrastructure and Facility Sites;
- 5 No. Industrial Features; and,
- 5 No. other sites.

4.7 Sensitive Land Uses

No sensitive areas of land use have been identified within influencing distance of the site.

4.8 Site Sensitivity Assessment

The site is considered to be located within a low sensitivity setting due to the following reasons:

- No residential properties are located in close proximity;
- Green Dyke is culverted flowing east-west across the southern section of the site and emerges into an open channel approximately 20m to the east;
- The site is within the Sherburn Enterprise Park;
- Drift deposits of low permeability are expected across the site; and,
- The underlying solid geology is classified as a Secondary (B) Aquifer.

5.0 CONSULTATIONS

5.1 Local Authority

Mr Jack Hopper, a representative at Selby District Council was contacted by email on 1st June 2016 for information which the Council may hold on the site. Mr Hopper provided information on 9th June 2016 which did not highlight any additional areas/sources of potential contamination other than a breakdown of potentially contaminated sites associated with the former airfield. A copy of the correspondence is contained in Appendix V.

The Building Control Officer from Selby District Council was contacted in January 2014 and held no pertinent information regarding the subject site in question.

British Gypsum was contacted in January 2014 regards to potential gypsum extraction. Informal correspondence indicated that there is no significant evidence to indicate gypsum extraction was carried out within the vicinity of the site.

5.2 Landfill Sites and Waste Treatment Sites

No current or historical landfill sites have been identified within influencing distance of the site.

5.3 Regulatory Database

The following information has been obtained from a commercially available environmental database. The summary table only includes records not otherwise detailed in the report.

Table 5.1 Summary of Groundsure Data

Activity	0-249m	250-500m	Details
Contaminated Land Register Entries and Notices	0	0	Not Applicable (N/A).
Authorised industrial processes (IPC/IPPC/LAPPC).	0	3	All three relate to Ab Agri Ltd for the treating of raw materials for animal food.
Fuel Stations Entries	0	0	N/A.
Licensed radioactive substances	0	0	N/A.
Enforcements, prohibitions or prosecutions	4	4	The closest relates to a permit type Part B for a small waste oil burner
Discharge Consents	0	21	The closest is for trade discharge of process water into Green Dyke, approximately 260m west of the site.
Pollution Incidents	1	1	The closest involved sewage discharge resulting in Category 2 (Significant) impact.
Consents issued under the Planning (Hazardous Substances) Act 1990	0	0	N/A.
Control of Major Accident Hazard (COMAH) sites	0	0	N/A.

6.0 CONCEPTUAL SITE MODEL (CSM)

6.1 Initial CSM

In accordance with Environment Agency, CLR 11 (2004) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), REC have developed an initial CSM to identify potential contamination sources, migration pathways and receptors within the study area.

6.2 Contaminant Sources

A number of potential sources of contamination have been identified on the site as follows:

- Airfields are potential sources of volatiles, solvents, ethylene glycol and total petroleum hydrocarbons (TPH) which have been generated from leaks and spillages from aircraft, vehicles, machinery and associated repairs/maintenance although, it is unlikely that oils and lubricants were stored on or in the vicinity of the runway or taxi lanes, it is still possible there could have been contamination in the site area; and,
- Made Ground associated with the construction of the site buildings / hardstanding areas may give rise to heavy metals, sulphates, PAHs, asbestos and hydrocarbons along with hazardous ground gases such as methane and carbon dioxide.

Off-site Potential Sources

A number of potential off-site contaminant sources have been identified as follows:

- Nearby land was also used for the operation and maintenance of aircraft, using potential contaminants of fuel, lubricant oils, heavy metals, solvents and asbestos;
- A 50,000kg AST holding MDI Polyols is situated up gradient to the north of the site (potentially containing isocyanates and thiocyanate);
- It is understood that an offsite industrial manufacturer have historically been permitted to release Cadmium into Green Dyke 260m west of the site. Permitted concentrations and form of cadmium, plus the residual contaminant concentrations within the stream are unknown. The hydraulic flow of the stream would carry the contaminant through the site via the culvert. The potential for contamination would be dependent on the integrity of the culvert and the flows involved but there is a possibility that concentrations of cadmium dissolved within stream water may locally impact the water surrounding the culvert; and,
- The specific composition of the superficial deposits, will affect the potential lateral migration from off-site contaminant sources.

6.3 Potential Pathways

Receptors may be potentially at risk from the identified potential sources of contamination via the following pathways:

- Migration of mobile contaminants on or off site via services, sewers and manmade conduits;
- Direct contact, ingestion (home grown produce and contaminated dusts) and inhalation of contaminants on site;

- Migration of contaminated dusts during earthworks;
- Migration of mobile contaminants into groundwater and transport into surface waters;
- Migration of mobile contaminants directly into the surface waters;
- Migration of hazardous gases; and,
- Permeation of organic contaminants through plastic pipework and subsequent consumption of contaminated potable waters.

6.4 Potential Receptors

Human Receptors

- Site investigation and construction workers during the redevelopment of the site from hazardous short term exposure;
- Future users of the site and buildings; and,
- Users of adjacent areas due to off-site migration of gases, vapours or contaminated dust.

Controlled Waters

- Groundwater contained within the underlying Secondary (B) Aquifer; and,
- The Green Dyke culvert crossing to the south of the site.

6.5 Preliminary Risk Assessment

Human Health

On-site
It is anticipated that Made Ground deposits of an unknown origin associated with the construction of the building and hardstanding areas may present a **low** risk to human receptors.

The risk posed by hydrocarbon contamination from the past airfield activities is considered to be **moderate**.

Off-site
The risk posed by adjacent above ground storage tanks is considered **moderate** as any incident would be up gradient of the site area.

The risk posed by the release of Cadmium into Green Dyke 260m west of the site is considered **moderate.**

Controlled Waters

<u>Groundwater</u>

The majority of the site has been shown to be underlain by the Silty Clay drift deposits and as such, the underlying solid geology (Secondary (B) Aquifer) is offered variable protection depending on the composition and granular content of the deposits. However, it is considered that the cohesive

stratum will limit the vertical migration of contaminants. With consideration to the above, and the level of contaminants that may be present at the site, it is considered that the risk of contamination to the underlying groundwater is **low.**

Surface Waters

The nearest surface water to the site is a man-made deluge pond for spillages adjacent to the site's eastern side. A culvert, running from east to west, is situated adjacent to the southern boundary of the site which emerges into an open channel adjacent to the site's eastern border. Considering the number of sources present and potential permeability of drift deposits the risk posed is considered **moderate**.

Ecological Sites / Ecosystems

No areas of local ecological importance have been identified within the immediate vicinity of the site in the Envirocheck Report. As no potential receptors are located in the vicinity of the site no pollutant linkages are considered to be present.

Buildings, Foundations and Services

Future redevelopment of the site will include the construction of new foundations. Elevated sulphate concentrations could affect the integrity of buried concrete structures. Services may be affected by the presence of aggressive contaminants which may corrode or penetrate services. Water supply pipes can be susceptible to penetration by hydrocarbons which may then affect the quality of the water supply.

Overall Environmental Risk Assessment

The preliminary risk to the site is considered **moderate** this is based on the presence of a number of contamination sources anticipated within the subject site area.

7.0 CONCLUSIONS & RECOMMENDATIONS

Current Environmental Risk
The site area is comprised mostly of unoccupied grassland. With the only current structures being two skips, one housed in an aluminium clad portal frame shed, the other on hard standing to the rear of the shed. An access road and limited car parking hardstanding is located on the northern and western boundaries. The current environmental risk is considered **low**.
Environmental Sensitivity
Geology Roxby formation (Calcareous Mudstone) solid geology overlain by Glacio-lacustrine (silty clay) drift deposits. **Aquifers** – The site is underlain by Secondary (B) Aquifer (Calcareous Mudstone). **Sensitive Land Uses** – No residential dwellings within close proximity and the site is within an industrial estate. **Hydrology –** Man-made deluge pond 10m east of site and Green Dyke Culverted adjacent to the south of the site.
Likelihood of Historical Contamination
Historical maps indicate that the site was largely undeveloped until some point between 1909 and 1950 (probably WWII) where it was used as an airfield. This continued till approximately 1950 where the airfield became disused, and was eventually redeveloped into industrial land. The likelihood of historical contamination is considered **moderate**.
Likelihood of Regulatory Action
Correspondence has been made to Selby District Council which is included in Appendix V. The comments and observations made by Selby District Council confirmed the findings of this report.
Radon Risk
Less than 1% of homes are above the Action Level, as a result the BGS reports that no radon protective measures are necessary in the construction of new dwellings or extensions.
Preliminary Geotechnical Assessment
Ground Conditions The site is underlain by glacio-lacustrine (silty clay) drift deposits which in turn overlie calcareous mudstone. **Indicative Foundation Solutions** Based on the information reviewed as part of the Phase I Assessment, it may be feasible to construct the proposed development using shallow strip foundations or pad foundations to support column loads if the ground investigation confirms suitable bearing capacities within the underlying strata.
Initial Conceptual Site Model (CSM)
Human Health **On-site** - Potential onsite contaminants have been identified associated with historical and present site activities, particularly associated with the previous airfield use including the runway and taxi lane running through the middle of the site area. It is considered that these activities may have resulted in localised organic contamination of the soil and shallow groundwater due to leaks and spillages. Two geological faults are recorded beneath the site are potential pathways for the migration of hazardous ground gases related to coal seams, estimated to be at a depth of approximately 200m bgl. However, the Coal Authority Report indicates that no coal mining has occurred beneath the site. Made ground materials may have been placed on site during the decommissioning of the airfield and/or the construction of the industrial estate. These materials have the potential to contain toxic heavy metals, sulphates, asbestos, PAH and hydrocarbons. These may pose a risk to the future site users via dermal contact, direct ingestion of soils, the inhalation of vapours and contaminated dusts. Given the type and nature of the historical development, and the relatively low permeability of drift geology, the likelihood of the site being affected by the presence of any on-site contamination is **low-moderate.**

Off-site – Historical uses of the land adjacent to the site were involved in the operation and maintenance of aircraft which could possibly have created contaminants such as fuel and lubricant oils, heavy metals and solvents.

An above ground storage tank for MDI Polyols north and up gradient of the site is considered to have the potential to migrate significant amounts of hazardous material onto site.

Cadmium released into the Green Dyke 260m west of site by Linpac Plastics has the potential to migrate onto site via the culvert running from east to west adjacent to the south side of the site area.

There are 38 total entries in the trade directory within a 250m radius of site with various types of industry.

Due to the proximity of the Kingspan Insulation factory, the distance from previous manufacturing and maintaining works associated with the airfield and the variable permeability of the Glacio-lacustrine deposits it is considered the risk of offsite contamination to be **moderate.**

Controlled Waters
The risk posed to controlled waters is considered **moderate** based on the number of sources present and variable lateral permeability of the Glacio-lacustrine deposits.

Overall Environmental Risk Rating	**Moderate**
Recommendations	As the site is located on a former airfield which may potentially have been constructed pre WWII, it is considered prudent to perform a desk study assessment for unexploded ordnance (UXO) in order to establish whether there are any potentially significant UXO risks to proposed development site. A detailed Phase II intrusive Geo-Environmental ground investigation (GI) should be undertaken in order to confirm the findings of the initial conceptual site model, to determine foundation design and to assess the anticipated depths of Made Ground including monitoring wells and a ground gas assessment. A detailed drain survey should be undertaken to assess the current state of the culvert and exact locations of drains on the site. A Remediation Strategy and Enabling Works Plan and Materials Management Plan (MMP) maybe required depending on the findings of the Phase II GI.

END OF REPORT

APPENDIX I

LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between REC Ltd and the Client as indicated in Section 1.2.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not be made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.

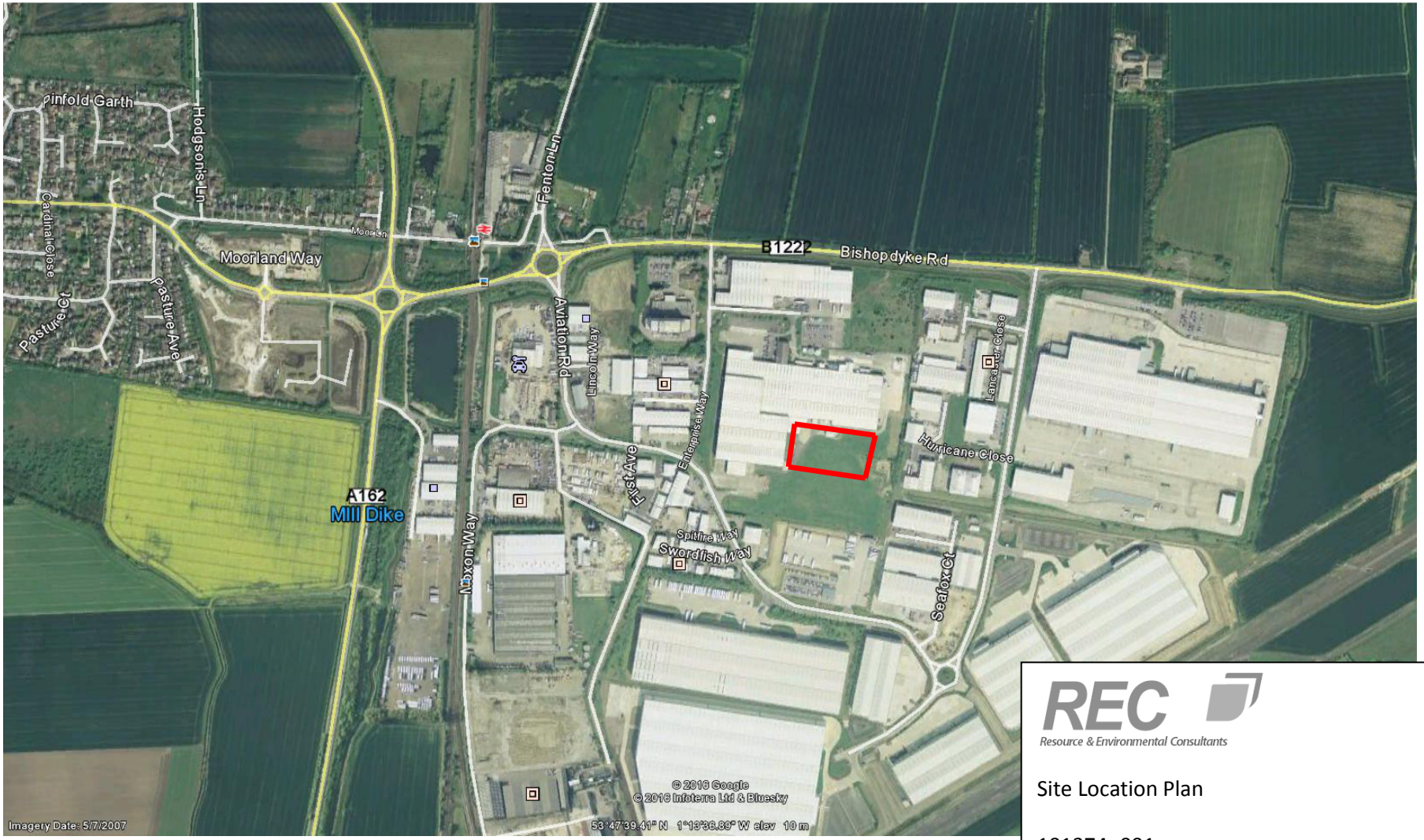
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

9. REC cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by REC is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by REC in this connection without their explicit written agreement there to by REC.

10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II

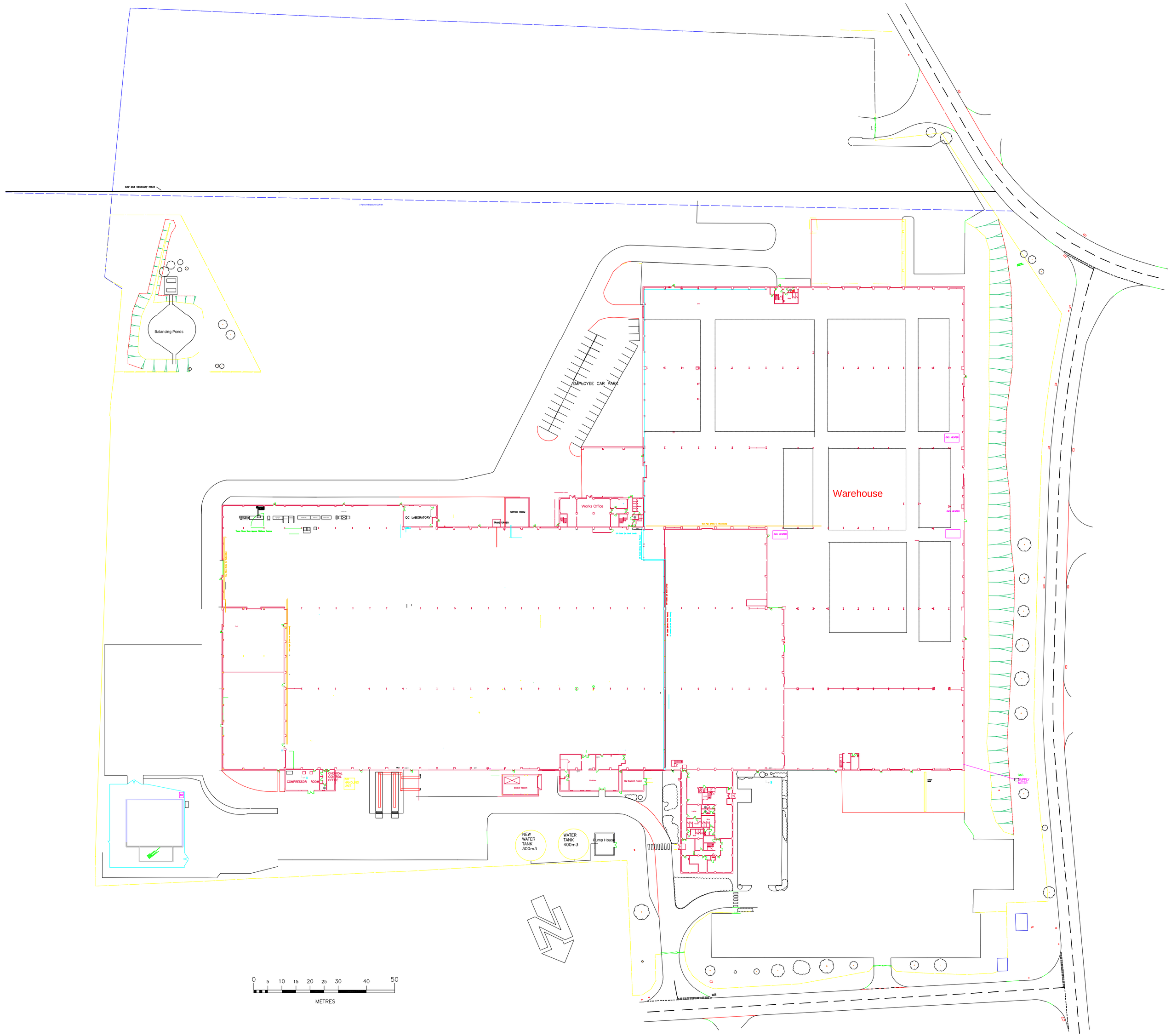
DRAWINGS



REC
Resource & Environmental Consultants

Site Location Plan

101374 -001



Revision	By	Date	

supercraft STRUCTURES LIMITED
Shobdon Airfield,
Shobdon, Nr Leominster, Herefordshire. HR6 9NR
Tel: 01568 708456 / 708114 Fax: 01568708212
Email: dave@supercraftltd.co.uk

Client

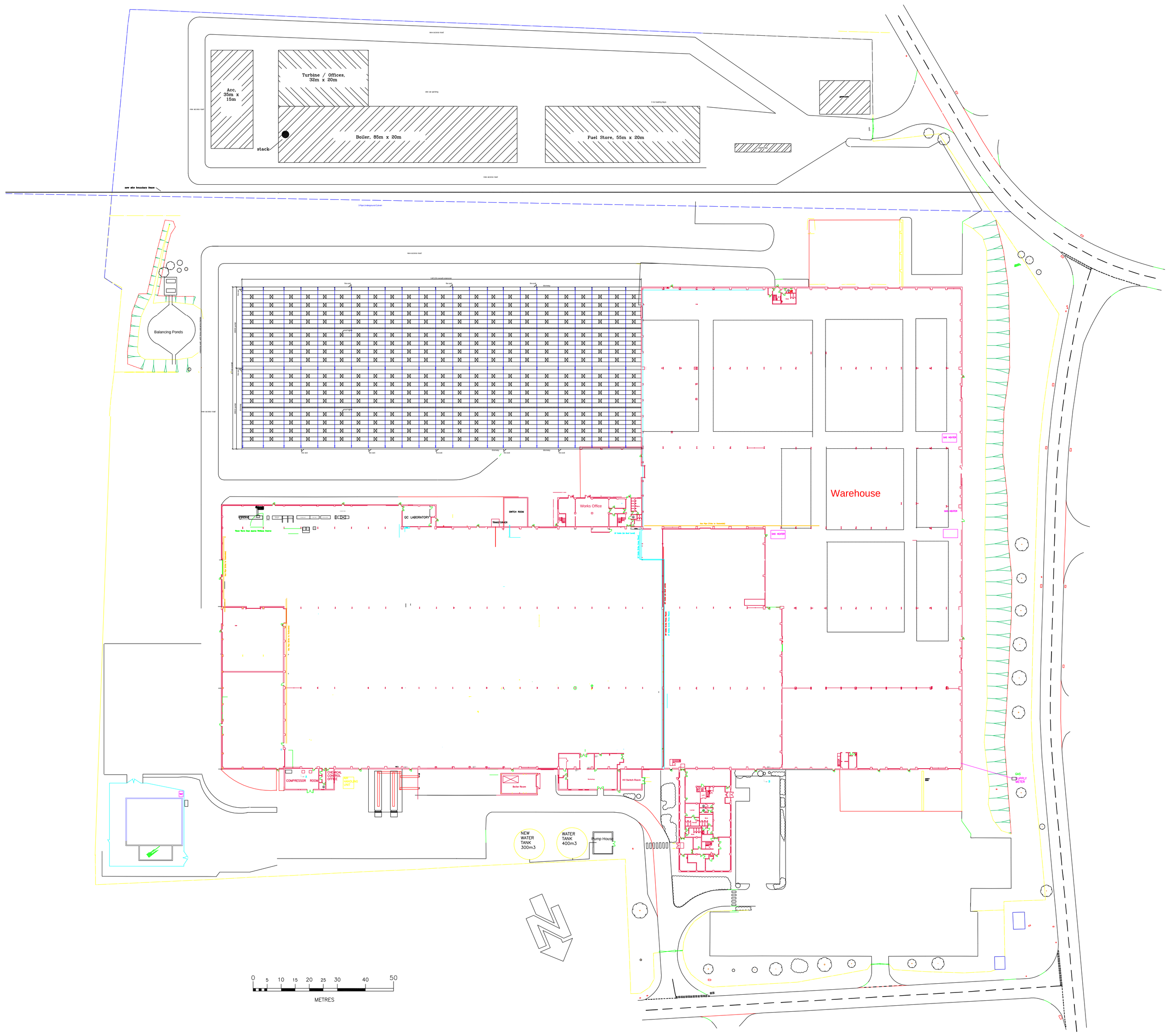
Job Title
Industrial Building

Site
Kingspan Imnsulations Ltd
Pembridge
Herefordshire

Drawing Title
EXISTING SITE PLAN

Drawn DGM
Date June 2016
Checked by dgm
Scale 1:500 at A0

DRAWING No. 26478 / 4
REVISION



Revision	By	Date

Shobdon Airfield,
Shobdon, Nr Leominster, Herefordshire, HR6 9NR

Tel: 01568 708456 / 708114 Fax: 01568708212
Email: dave@supercraftltd.co.uk

Client

Job Title
Industrial Building

Site
Kingspan Imnsulations Ltd
Pembridge
Herefordshire

Drawing Title
PROPOSED SITE PLAN

Drawn DGM
Date June 2016
Checked by dgm
Scale 1:500 at A0

DRAWING No. 26478 / 3

REVISION

APPENDIX III

PHOTOGRAPHS

PLATE 1: CAR PARK HARDSTANDING ON WEST OF SITE FACING SOUTH

PLATE 2: VIEW ALONG EASTERN BOUNDARY OF SITE FACING SOUTH

PLATE 3: GENERAL VIEW OF SITE FACING SOUTH

PLATE 4: DISUSED ULTRASONIC DETECTORS

PLATE 5: DELUGE POND TO EAST OF SITE

PLATE 6: ALLUMINIUM CLAD PORTAL FRAME SHED HOUSING WASTE SKIP

PLATE 7: SKIP CONTAINING SCRAP METAL

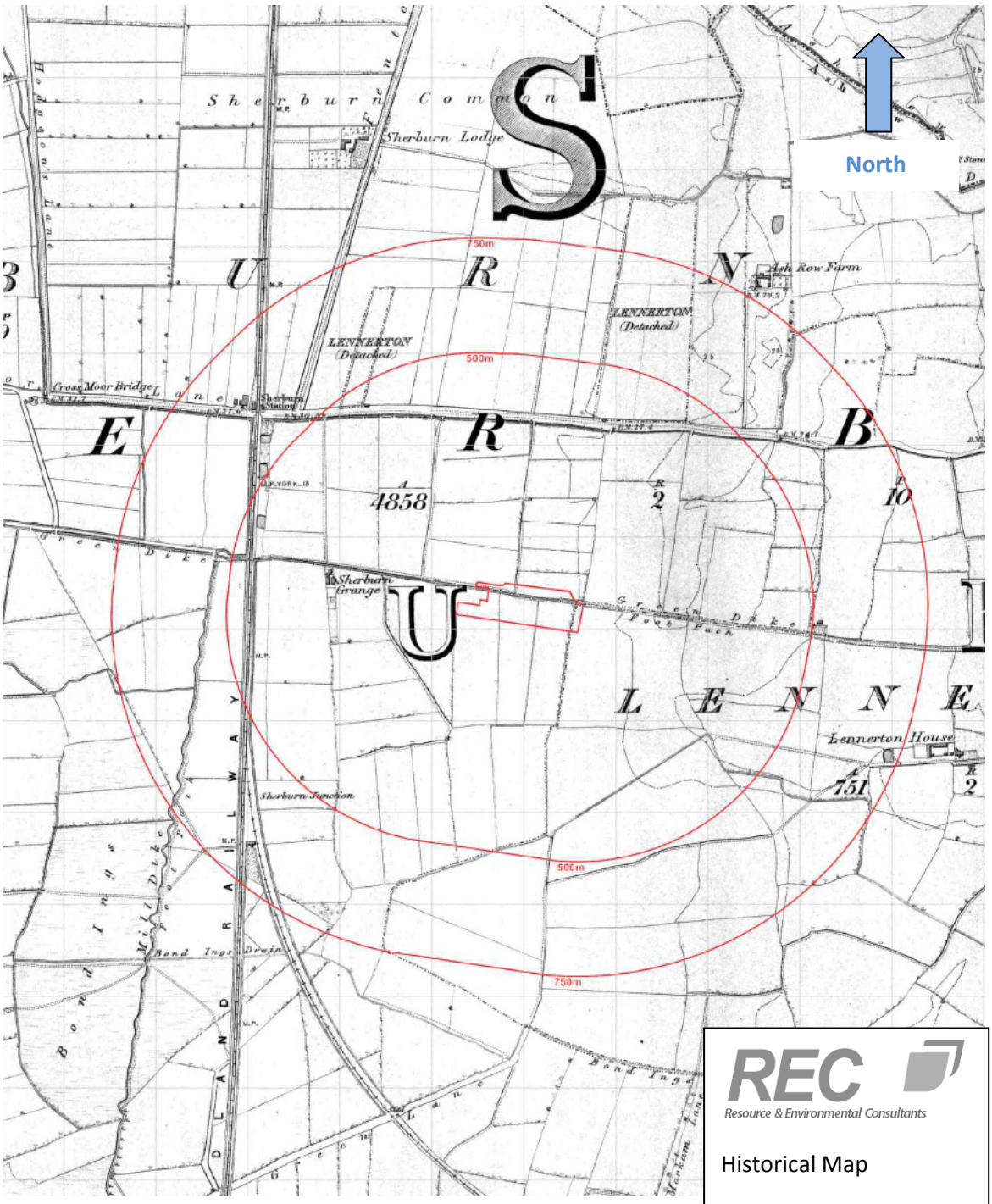
PLATE 8: DEMARCATED GAS STORAGE AND SKIPS

PLATE 9: EXTERNAL AST HOLDING POLYOL

PLATE 10: GREEN DYKE BEFORE ENTERING CULVERT TO SOUTH OF SITE

APPENDIX IV

HISTORICAL MAPS



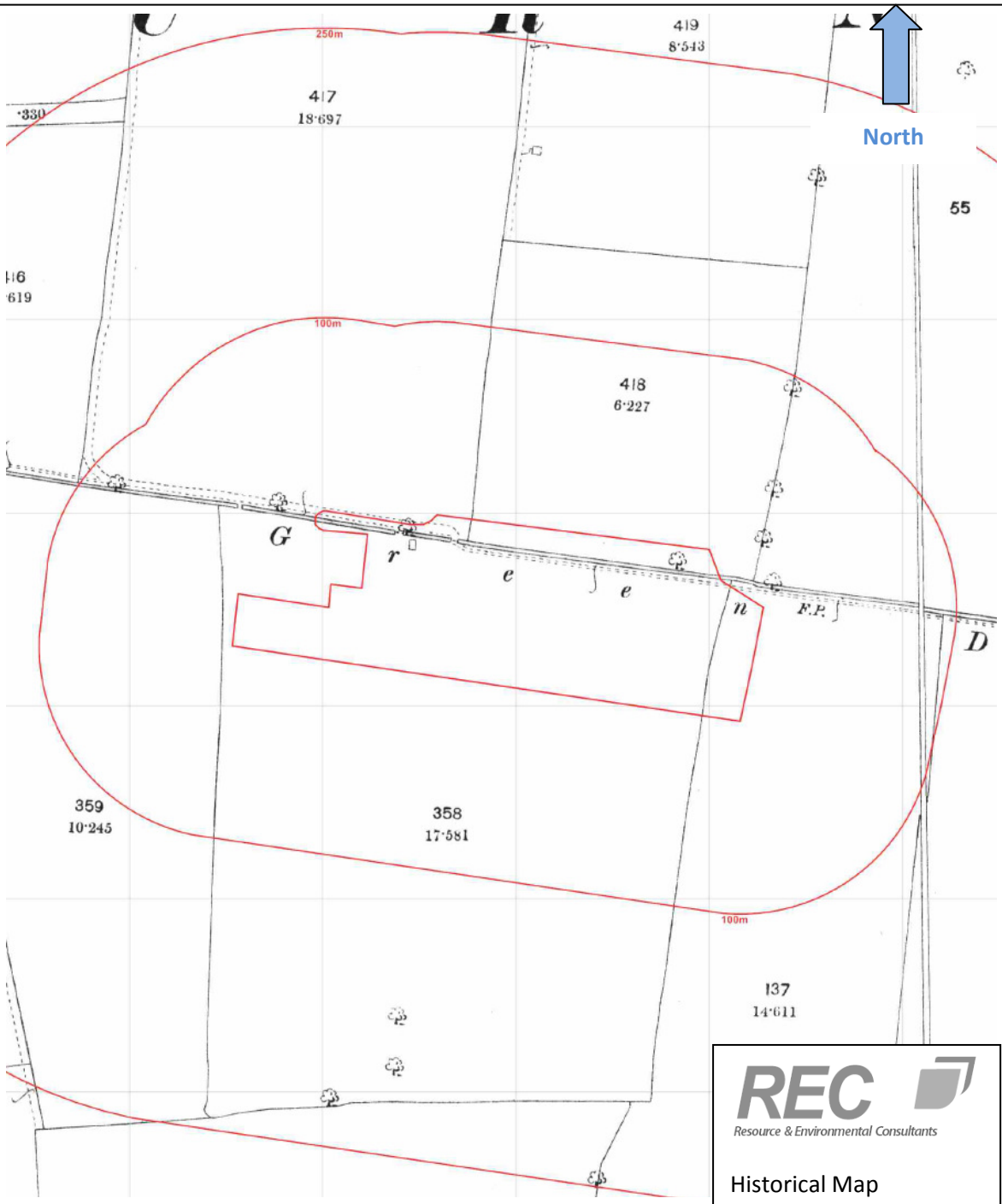
REC
Resource & Environmental Consultants

Historical Map

Dated: 1848

Original Scale: 1:10,560

Outline shows site to immediate south of area investigated

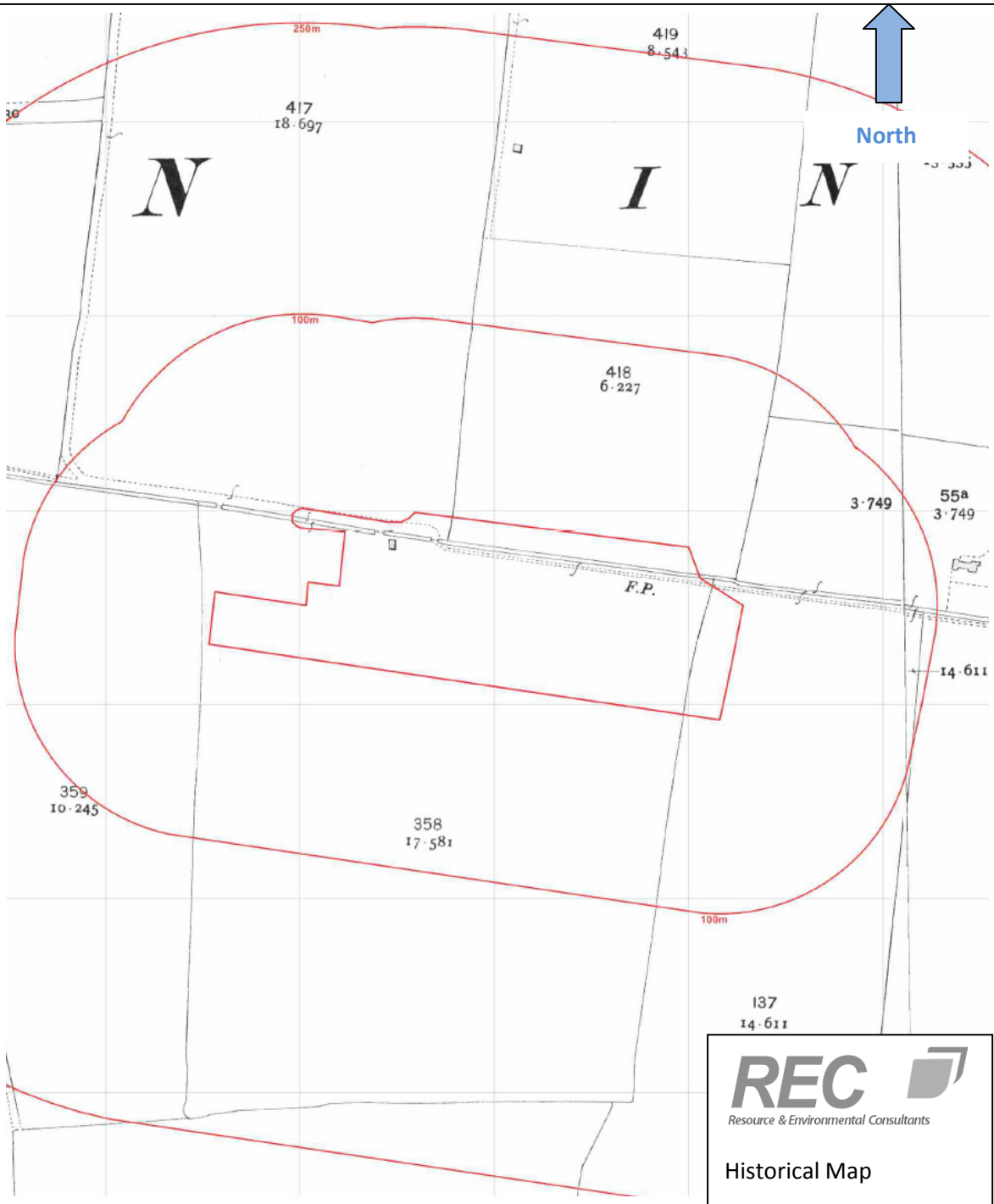


Historical Map

Dated: 1891

Original Scale: 1:2,500

Outline shows site to immediate south of area investigated



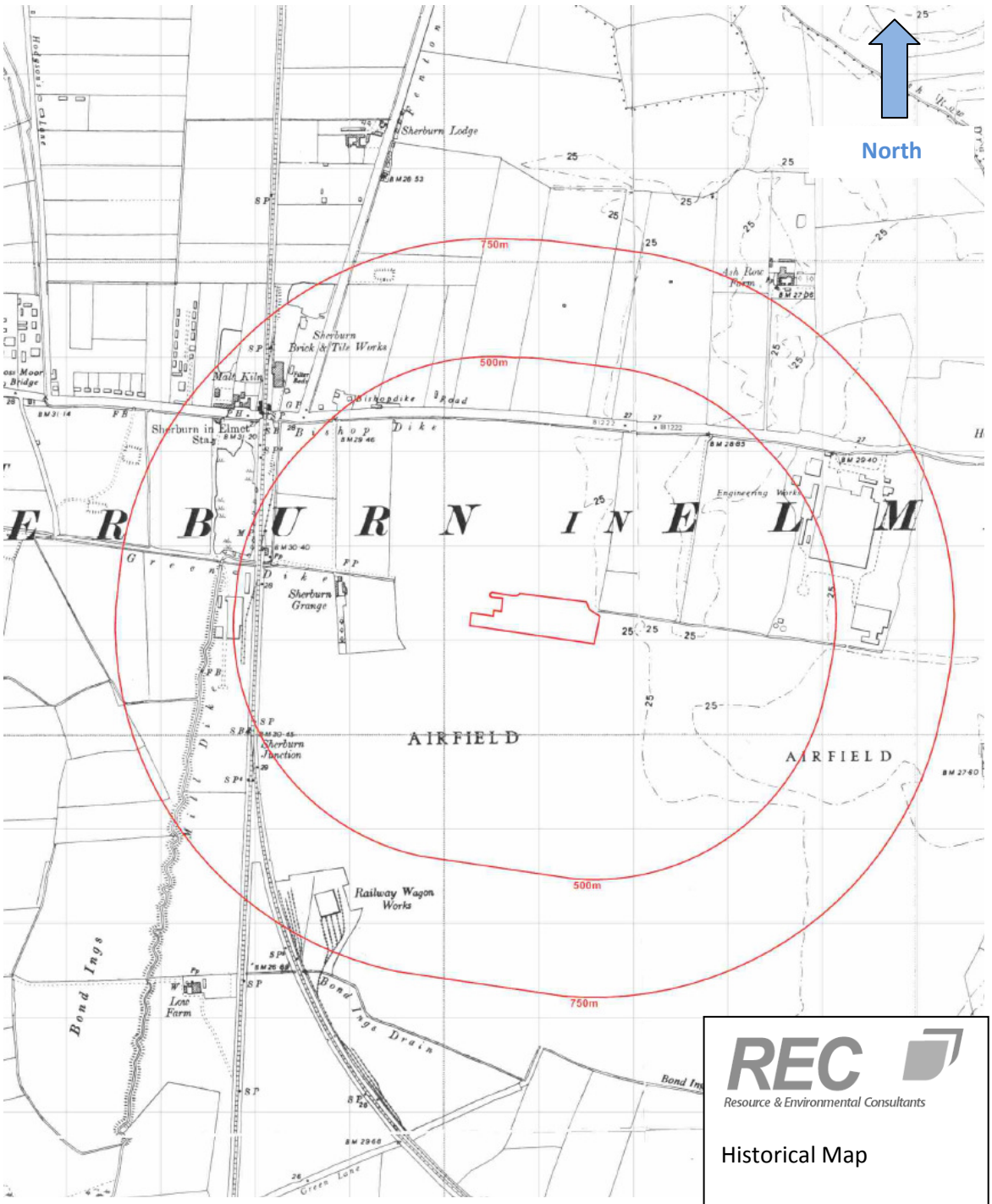
REC
Resource & Environmental Consultants

Historical Map

Dated: 1908

Original Scale: 1:2,500

Outline shows site to immediate south of area investigated



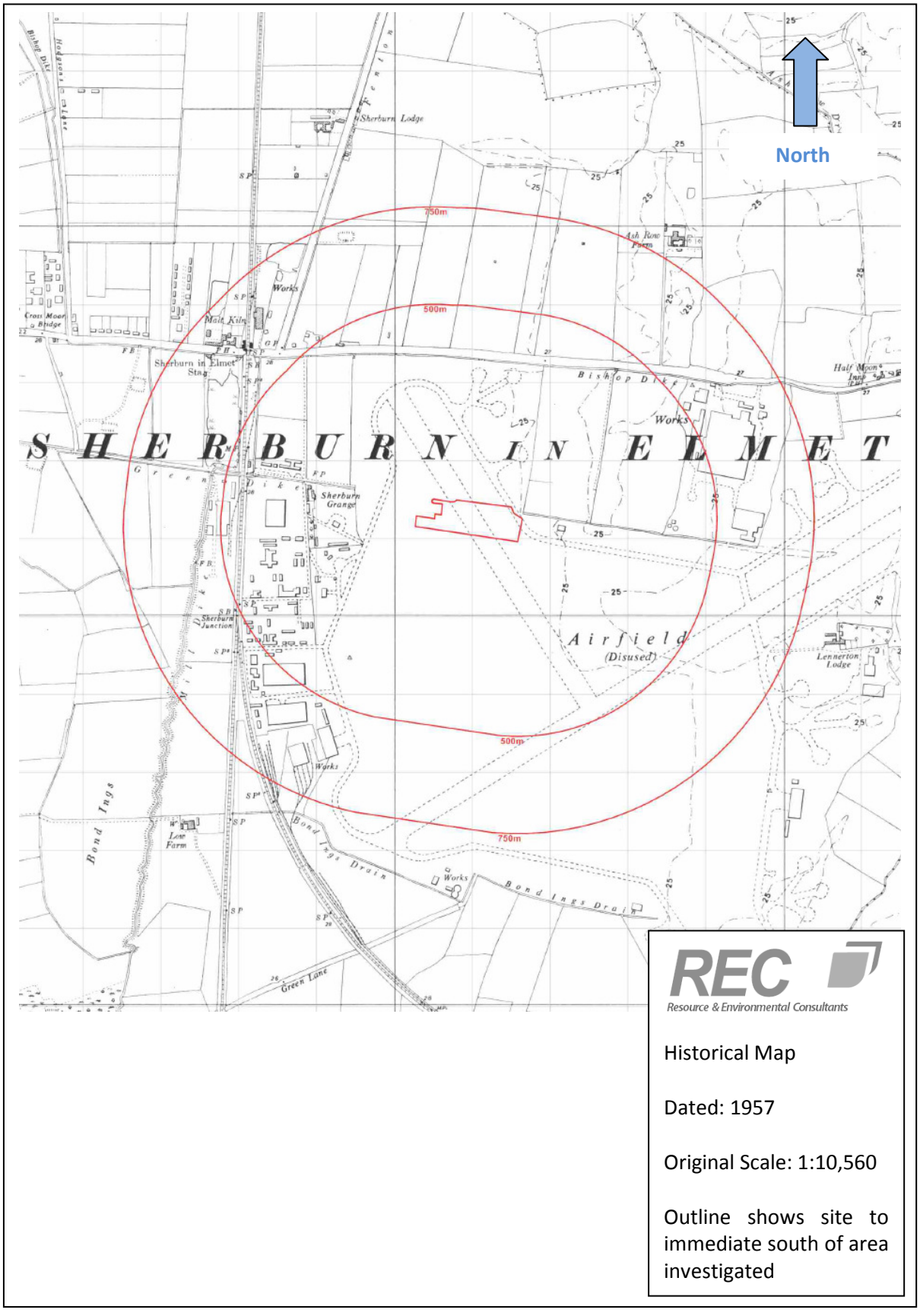
REC
Resource & Environmental Consultants

Historical Map

Dated: 1950

Original Scale: 1:10,560

Outline shows site to immediate south of area investigated



REC
Resource & Environmental Consultants

Historical Map

Dated: 1957

Original Scale: 1:10,560

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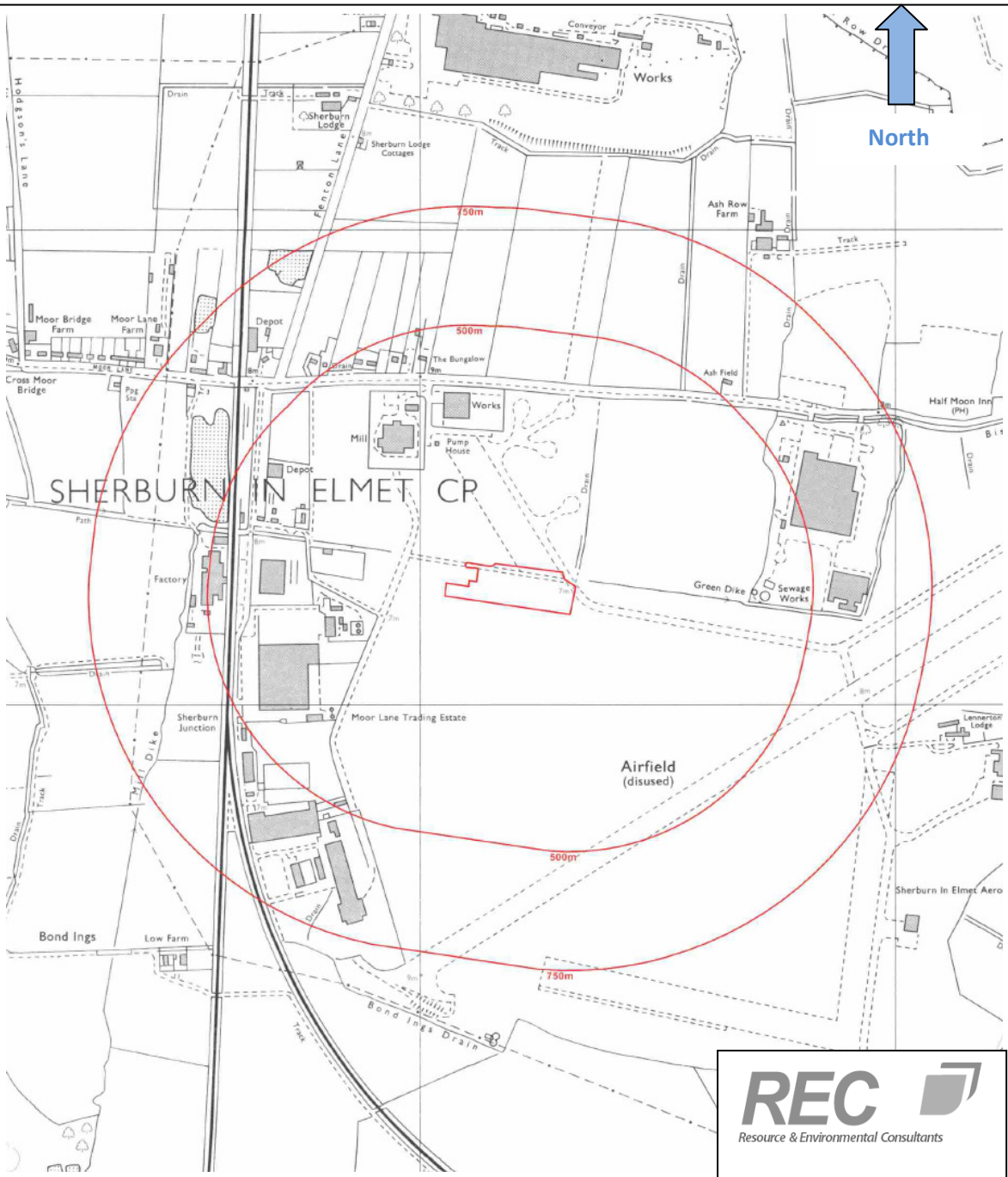
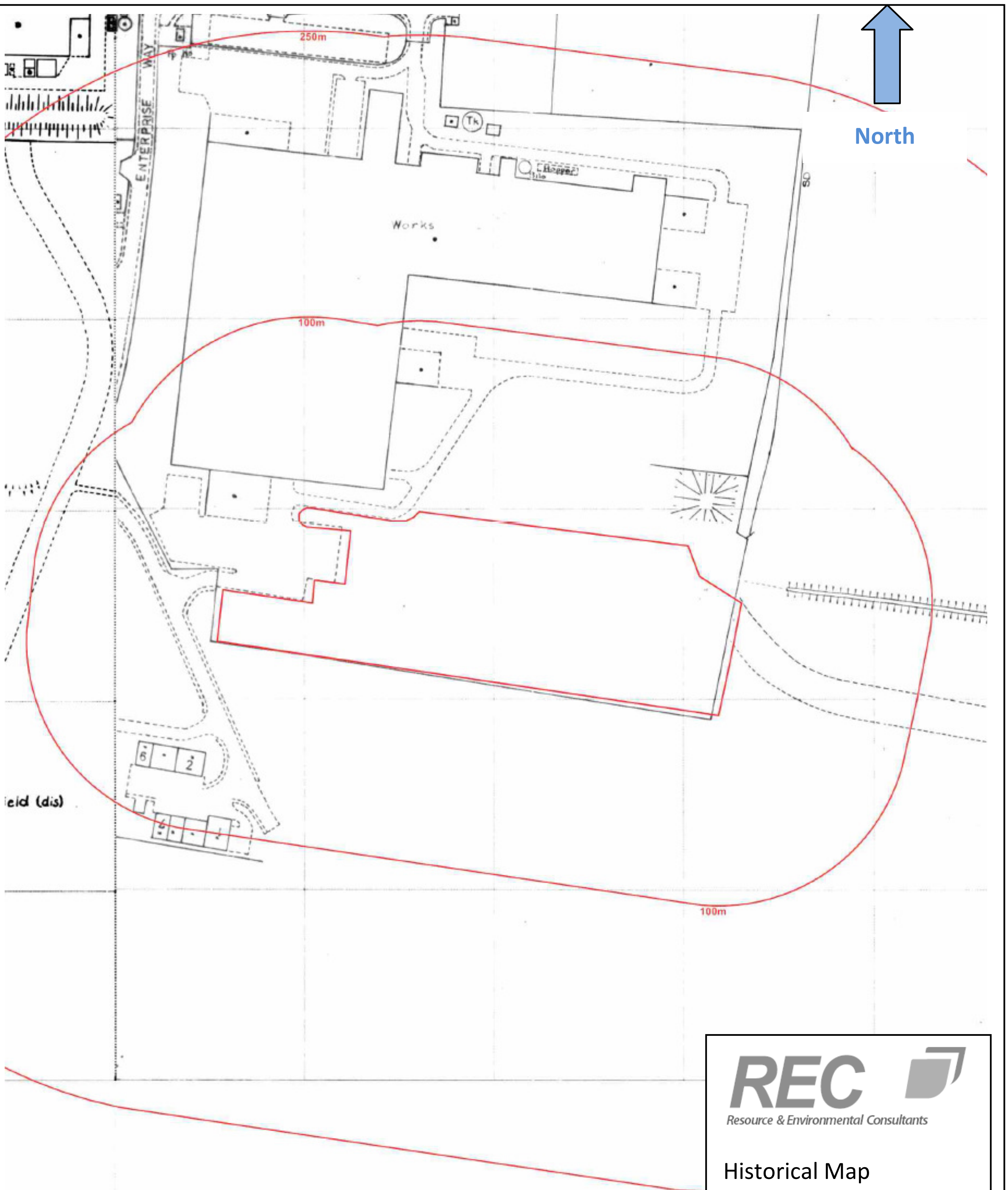


Historical Map

Dated: 1984

Original Scale: 1:10,000

Outline shows site to immediate south of area investigated

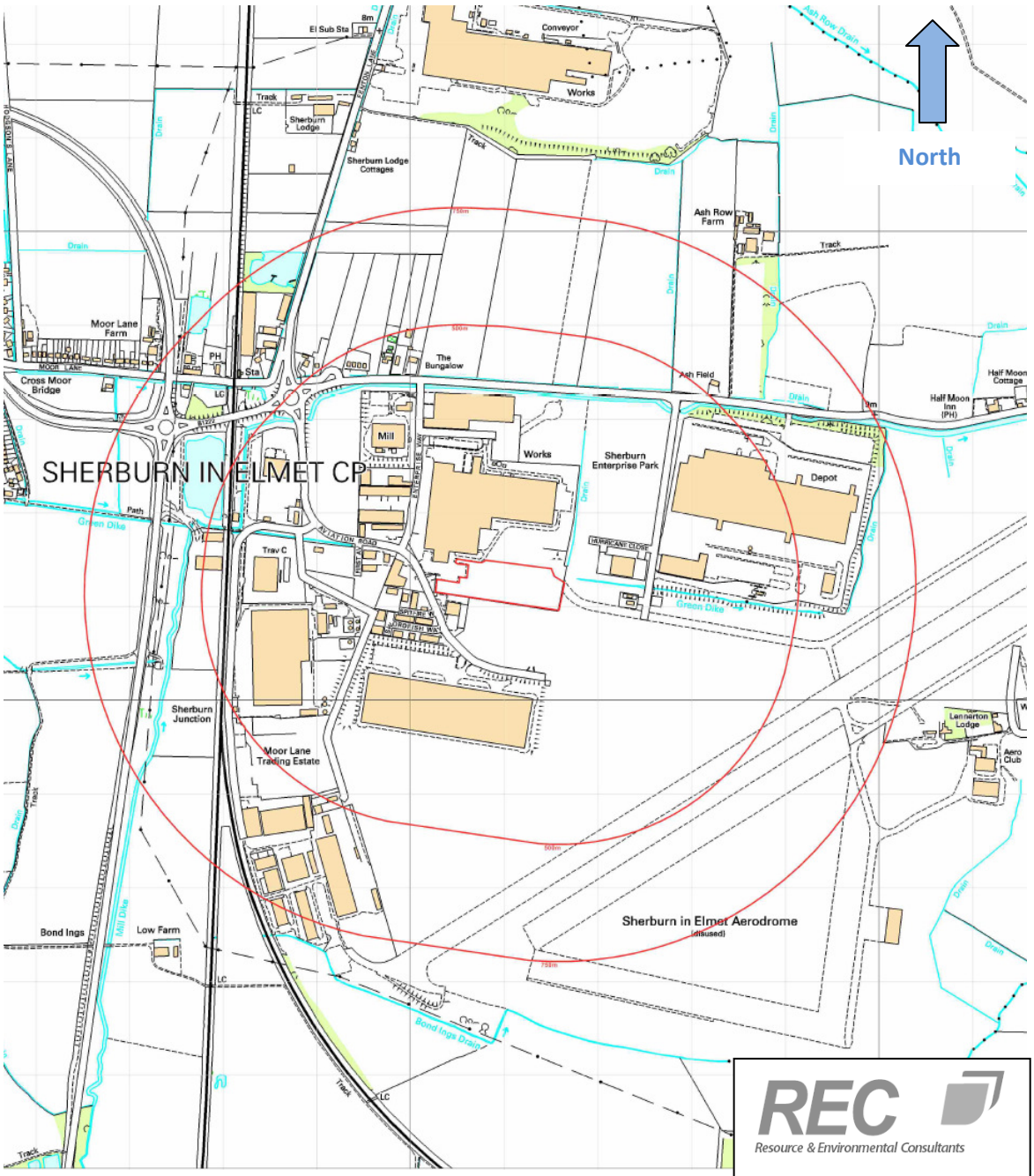


Historical Map

Dated: 1993

Original Scale: 1:2,500

Outline shows site to immediate south of area investigated



REC
Resource & Environmental Consultants

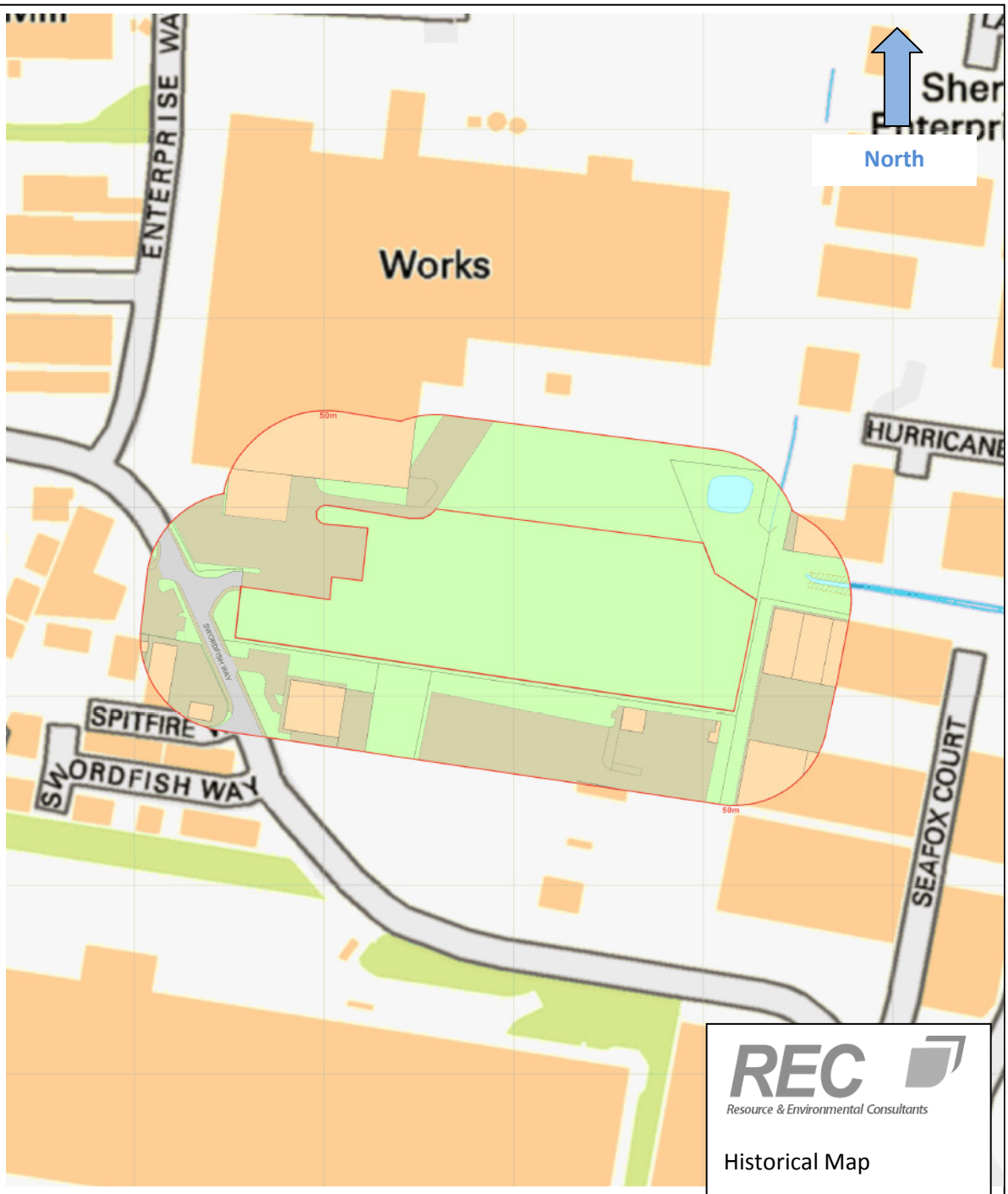
Historical Map

Dated: 2002

Original Scale: 1:10,000

Outline shows site to immediate south of area investigated


North
Works
Sherburn Lodge
Lodge Cottage
750m
Ash Row Farm
Moor Lane Farm
Cross Moor Bridge
MOOR LANE
PH
Sta
Coin Cottage
500m
The Bungalow
Ash Field
Works
Mill
Sherburn Enterprise Park
Depot
Works
Green Dike
AVIATION ROAD
HURRICANE CLOSE
Ppg Sta
Bypass Park Estate
Sherburn Junction
Moor Lane Trading Estate
Runway (disused)
500m
Sherburn in Elmet Aerodrome
Bond Ings
Low Farm
Mill Dike
750m
Bond Ings Drain
LC
Historical Map
Dated: 2012
Original Scale: 1:10,000
Outline shows site to immediate south of area investigated



REC
Resource & Environmental Consultants

Historical Map

Dated: 2012

Original Scale: 1:1,250

Outline shows site to immediate south of area investigated

APPENDIX V

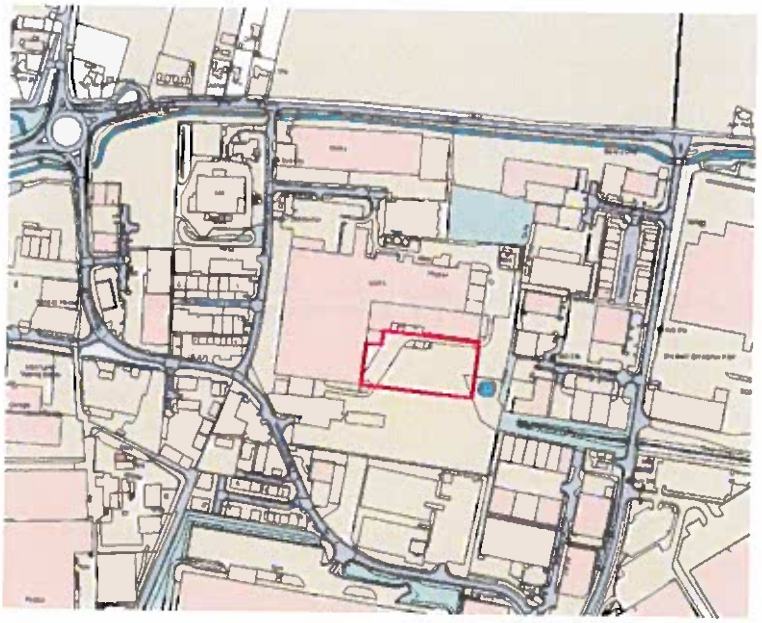
REGULATORY CORRESPONDENCE

SELBY DISTRICT COUNCIL
Moving forward with purpose

Alex Reavley
Geoenvironmental REC Ltd
Osprey House
Pacific Quay
Broadway
Salford
M50 2UE

Ref: 029/JH
e-mail: jhopper@selby.gov.uk
Please ask for: Jack Hopper
Telephone: 01757 705101
Fax Number: 01757 292229

Date: 2nd June 2016
Site: Hurricane Park, Sherburn in Elmet, Leeds, LS25 6NA
Site Ref: CLM/0069



The contaminated land regime is set out in Part 2A of the Environmental Protection Act 1990 and provides a means of investigating and, if necessary, remediating land to ensure that it is suitable for its current use and does not present an unacceptable risk to human health, controlled waters, ecological systems, crops, livestock, buildings and property.

I refer to your contaminated land information request made on 1st June 2016 regarding the above site. This report makes reference to:

1. Part 2A status including current and former uses of the site (if applicable),
2. Current and former uses of sites within a 250m radius identified within our Part 2A list of potentially contaminated sites (if applicable), and
3. Details of current and former landfill sites within a 500m radius (if applicable).

1. Current and former uses of the site

The site is situated within the boundary of a disused airfield (CLM/0069) evident in present and 1980's maps of the area. This area is not known to be contaminated but is included on our Part 2A inspection list of potentially contaminated sites. The risk is considered to be medium and investigation within the next 5 years is unlikely.

There are a number of potentially contaminated sites associated with the airfield which are listed below with grid reference. My understanding is that none of these are within the boundary of your site:

- Barracks (GR 450195:434298),
- Barracks (GR 450054:434200) - Fuel Storage Compound On Site (82' x 54'),
- WAAF Barracks (450446:433801) - Fuel Storage Compound On Site (54'x45'),
- Barracks (GR 450020:433810) - 2 x Fuel Storage Compounds,
- Fuel Storage Tank (48,000g),
- Sewage Works (GR 452220:432920),
- Barracks (GR 450803:434256).

2. Part 2A sites within 250m

Site Ref: CLM/0406 (overlaps CLM/0069)
Distance: Borders with

Kingspan Group Plc borders to the north and west of the boundary evident in present maps of the area. This site was a former Schedule B timber process (Eurospace Furniture Plc) evident in 1980's maps of the area. The risk is considered to be medium and investigation within the next 5 years is unlikely.

Site Ref: CLM/1035
Distance: 128m east

A site to the east is a former hospital for infectious diseases evident in the 1910's maps of the area. Current use of the site is a depot. The risk is considered to be medium and investigation within the next 5 years is unlikely.

Site Ref: CLM/1034
Distance: 160m west

An area to the west is currently occupied by various industrial units. The risk is yet to be determined and investigation within the next 5 years is unlikely.

Site Ref: CLM/1097
Distance: 164m south west

A site to the south west is a depot evident in present maps of the area. The risk is considered to be medium and investigation within the next 5 years is unlikely.

Site Ref: CLM/1287
Distance: 230m east

A site to the east is a depot evident in current maps of the area. The risk is yet to be determined and investigation within the next 5 years is unlikely.

Site Ref: CLM/0413
Distance: 220m north west

An area to the north west is the former Schedule B animal feed process (J Bibby Agricultural Ltd.) evident in 1980's maps of the area. It is now operated by ABN animal feed evident in current maps of the area. The risk is considered to be medium and investigation within the next 5 years is unlikely.

Site Ref: CLM/0071
Distance: 235m north west

A site to the north west is a works evident in present maps of the area. The risk is considered to be medium and investigation within the next 5 years is unlikely.

Site Ref: CLM/0423
Distance: 244m south west

A site to the south west is a Schedule A application with radioactive substances (Linpac Polymers) evident in 1980's and current maps of the area. The risk is yet to be determined and investigation within the next 5 years is unlikely.

3. Landfill sites within 500m

We have no record of any landfill site within 500m

I trust the above provides a satisfactory response to your request however you may contact me on the above details should you wish to discuss this further,

Yours sincerely,

Jack Hopper
Environmental Health Technician
Environmental Health

APPENDIX VI

COAL AUTHORITY REPORT

file…coal.pdf,,,all

APPENDIX VII

RADON REPORT

Public Health England

Report of address search for radon risk

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Radon Risk Report for addresses in England and Wales

Issued by Public Health England and the British Geological Survey using Address-Point® and Royal Mail PAF®.

Address searched: Aitkens Sportsturf Ltd, Unit 1, Aviation Road, Sherburn in Elmet, Leeds, LS25 6NB

Grid reference searched:

451092 East

433200 North

Date of report: 17 January 2014

Guidance for existing properties

Is this property in a radon Affected Area? - No

The answer to the standard enquiry on house purchase known as CON29 Standard Enquiry of Local Authority; 3.13 Radon Gas: Location of the Property in a Radon Affected Area is:

No, this property is not in a Radon Affected Area as defined by Public Health England.

The estimated probability of the property being above the Action Level for radon is: 0-1%

The result may not be valid for buildings larger than 25 metres.

This report informs you of the estimated probability that this particular property is above the Action Level for radon. This does not necessarily mean there is a radon problem in the property; the only way to find out whether it is above or below the Action Level is to carry out a radon measurement in an existing property.

Radon Affected Areas are designated by the Public Health England. PHE advises that radon gas should be measured in all properties within Radon Affected Areas.

If you are buying a currently occupied property in a Radon Affected Area, you should ask the present owner whether radon levels have been measured in the property. If they have, ask whether the results were above the Radon Action Level and if so, whether remedial measures were installed, radon levels were re-tested, and the results of re-testing confirmed the effectiveness of the measures.

Further information is available from PHE or http://www.ukradon.org

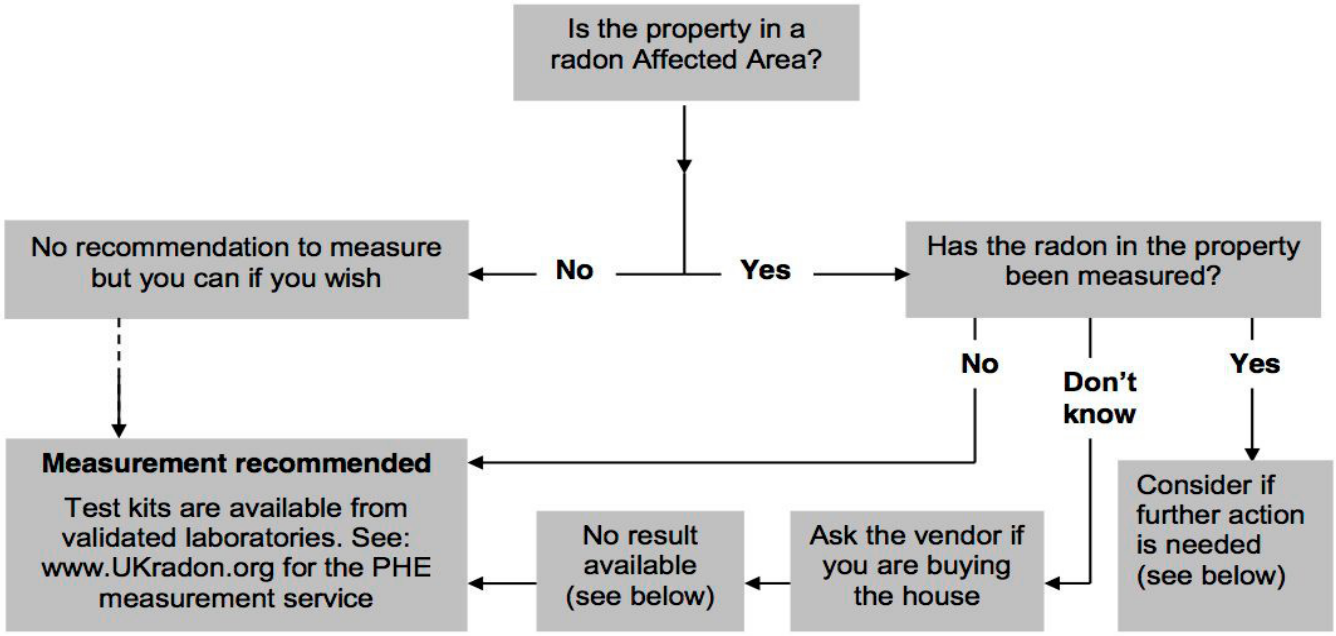
Guidance for new buildings and extensions to existing properties

What is the requirement under Building Regulations for radon protection in new buildings and extensions at the property location? - None

If you are buying a new property in a Radon Affected Area, you should ask the builder whether radon protective measures were incorporated in the construction of the property.

See the Radon and Building Regulations for more details.

PHE guidance for occupiers and prospective purchases



Existing radon test results: There is no public record of individual radon measurements. Results of previous tests can only be obtained from the seller. Radon levels can be significantly affected by changes to the building or its use, particularly by alterations to the heating and ventilation which can also be affected by changes in occupier. If in doubt, test again for reassurance.

Radon Bond: This is simply a retained fund, the terms of which are negotiated between the purchaser and the vendor. It allows the conveyance of the property to proceed without undue delay. The purchaser is protected against the possible cost of radon reduction work and the seller does not lose sale proceeds if the result is low. Make sure the agreement allows enough time to complete the test, get the result and arrange the work if needed.

High Results: Exposure to high levels of radon increases the risk of developing lung cancer. If a test in a home gives a result at or above the Action Level of 200 Becquerels per cubic metre of air (Bq/m3), formal advice will be given to lower the level. Radon reduction will also be recommended if the occupants include smokers or ex-smokers when the radon level is at or above the Target Level of 100 Bq/m3; these groups have a higher risk. Information on health risks and radon reduction work is available from PHE. Guidance about radon reduction work is also available from some Local Authorities, the Building Research Establishment and specialist contractors.

PHE designated radon website: http://www.ukradon.org
Building Research Establishment: http://www.bre.co.uk/radon/reduce.html