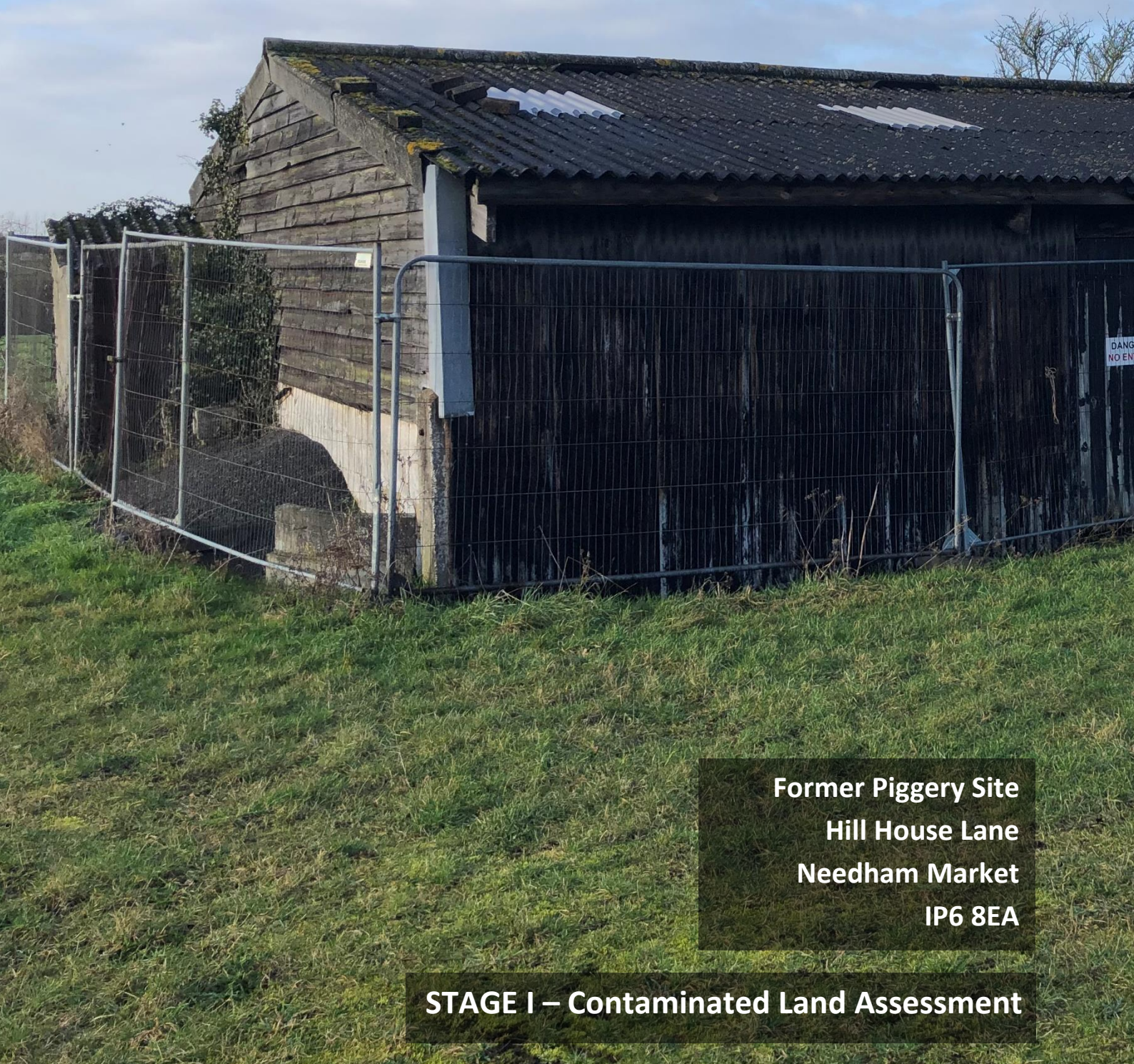


# JPC Environmental Services

(A Division of JP Chick & Partners Ltd)



**Former Piggery Site  
Hill House Lane  
Needham Market  
IP6 8EA**

## **STAGE I – Contaminated Land Assessment**

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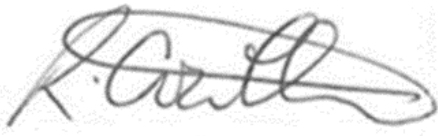
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## DOCUMENT CONTROL

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## ISSUE & REVISIONS RECORD

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## EXECUTIVE SUMMARY

<b>Site Name &amp; Address:</b>	Former Piggery Site, Hill House Lane, Needham Market, IP6 8EA
<b>Client:</b>	MJW Consultants
<b>Local Planning Authority:</b>	Mid Suffolk District Council
<b>Historical Site Use:</b>	Agricultural building
<b>Present Site Use:</b>	Disused agricultural building
<b>Proposed Site Use:</b>	Residential Dwellings
<b>Date of most recent investigation:</b>	Tuesday, 02 February 2021 - Site walkover survey
<b>Objectives:</b>	
<ul style="list-style-type: none"> <li>To develop a good understanding of the site's history and environmental context;</li> <li>To determine the potential existence of any significant pollutant linkages which might represent a potential risk to construction workers, future occupants of the site or controlled waters;</li> <li>To undertake a Stage I Preliminary 'Contaminated Land' investigation in accordance with LCRM and guidance contained in the NHBC Publication 66: 2008.</li> </ul>	
<b>Geology, Hydrogeology &amp; Hydrology:</b>	
<ul style="list-style-type: none"> <li>Based on the BGS online mapping, the site is likely to be underlain by superficial deposits comprising Lowestoft Formation - Diamicton, and further underlain by bedrock geology comprising Newhaven Chalk Formation - Chalk.</li> <li>The nearest BGS borehole to the site boundary describes the underlying geology as Pleistocene Drift, overlying Upper Chalk to a depth of 64.04m bgl. Groundwater is recorded at a level of 13.77m bgl.</li> <li>With reference to the groundwater mapping presented on the Environment Agency website, the superficial deposits are classified as Secondary (undifferentiated) Aquifer, while the bedrock geology is described as Principal Aquifer.</li> <li>In terms of groundwater vulnerability, the site is classified as predominantly Medium-High risk on the Environment Agency's groundwater vulnerability mapping.</li> <li>The site is located within Source Protection Zone 2 (Outer Catchment).</li> <li>The site is located within Flood Zone 1.</li> <li>In relation to the overall hydrology, the site is occupied by a complex of buildings and an area laid to grass. There is, therefore, opportunity for both vertical and horizontal migration.</li> </ul>	
<b>Findings:</b>	
<ul style="list-style-type: none"> <li>The earliest available historic mapping (1883) shows the site comprises part of an agricultural field. The existing piggery building is first shown on the 1967 historic map.</li> <li>The historical review of the surrounding area has shown that nearby activities have been agricultural to the north and west, and residential to the south and east.</li> <li>Our historic map review, in combination with the Enviro Insight report, has identified 4 No. infilled ponds and 1 No. infilled sand pit within 250m of the site boundary.</li> </ul>	



#### **Risk Assessment:**

- Our desk-based research and walkover survey identified the following potential sources of contamination:
  - i) On-site; Suspected asbestos containing materials, oil and fuel containers/ hoses, historic activities.
  - ii) Off-site; Infilled land, Energy features, Licensed discharges, Pollution incidents, Historic industry, Waste exemptions.
- We consider that the above sources represent a MODERATE/ HIGH risk from the asbestos containing material, and a LOW/ MODERATE risk from other sources.
- We consider the potential on-site sources of contamination to represent a LOW risk to groundwater.
- The potential risk from ground gas migrating onto the site, and affecting the proposed development, is considered to be LOW/ MODERATE.

#### **Recommendations:**

Based on the information obtained and reviewed as part of this preliminary assessment, JPC Environmental Services would advise the following:

- We would recommend that a Stage 1/ Tier 2 Quantitative Risk Assessment is undertaken around the existing structure. This investigation could comprise machine-excavated trial pits or hand-augered boreholes, with sampling of near surface soils and the deeper underlying natural geology. This work should be completed after all of the construction material/ demolition arisings have been removed from the site, particularly the small stockpiles of cement bound sheet/ cladding. Samples of near surface soil should be tested for a routine suite of organic and inorganic contaminants, including an asbestos screen.
- Although not related to the condition of the on-site soils, we would recommend undertaking an HSG264 Pre-demolition/ refurbishment asbestos survey on the existing building. All identified asbestos containing materials (ACMs) should then be removed, by a suitably experienced contractor, prior to the demolition works.
- Due to the proximity of a small infilled pond, some form of gas mitigation may be necessary. Further investigations will be required to further assess the risk of ground gas, which should comprise the installation of at least three gas monitoring wells and gas readings collected/ recorded at fortnightly intervals for a period of three months (i.e. six visits). Alternatively, the local authority may accept the inclusion of gas protection measures within the properties or the installation of a gas venting trench between the pond and the proposed dwellings.



## 1.0 INTRODUCTION

### 1.01 Brief

1.01.1 JPC Environmental Services were appointed by MJW Consultants to undertake a Stage 1 Desktop Study and Walkover Survey for 'Former Piggery Site, Hill House Lane, Needham Market, IP6 8EA' (hereafter referred to as 'the site').

1.01.2 The purpose of the investigation, comprising a desktop study and walkover survey was to:

- Identify any significant potential sources of ground contamination either on the site or in close proximity to it, which could have a negative impact on the proposed development.
- To determine the potential existence of any significant pollutant linkages that might represent a potential risk to future occupants.
- To determine whether any further investigations would be required, to enable the potential risk to human health and controlled waters to be assessed.

1.01.3 The investigation was carried out broadly in accordance with Land Contamination Risk Management (LCRM) guidance, issued in October 2020, and the updated NHBC Guidance Document "R & D Publication 66: 2008 – Guidance for the Safe Development of Housing on Land Affected by Contamination".

1.01.4 Authority to carry out this work was received on 02 February 2021 from Last & Tricker Partnership, via email.

1.01.5 This report shall be for the private and confidential use of MJW Consultants, for whom it was undertaken, and their designer, the Last and Tricker Partnership. It should not be reproduced in whole or in part, or relied upon by a third party for any use without the express written authority of JPC Environmental Services.

1.01.6 In producing this report, we have exercised all the reasonable skill, care and diligence to be expected of an appropriately qualified and competent consultant, experienced in carrying out equivalent services for developments of a similar size, value, purpose, scope and complexity.

### 1.02 Scope

1.02.1 The main elements of the investigation were as follows:

- The collection and review of historical and regulatory information relating to the site to gain an understanding of the site's history, the local environment and potential ground conditions.
- The formulation of a "Conceptual Site Model" to explore and evaluate the existence and potential impact of any plausible pollutant linkages.
- To utilise the resulting information to undertake a 'Stage I' human and environmental risk assessment.
- If appropriate, make recommendations on the extent of any intrusive investigations which may be required to fully establish the condition of the site.

1.02.2 The on-site investigations comprised the following:-

- A walkover survey of the site and surrounding area to identify the presence and types of commercial activities within the locality, and seek evidence of potential sources of on or off-site contamination.



### 1.03 Location

- 1.03.1 Site address: Former Piggery Site, Hill House Lane, Needham Market, IP6 8EA
- 1.03.2 Map coordinates: Easting: 608110  
Northing: 255567
- 1.03.3 The site is accessed from: Hill House Lane to the south-east.
- 1.03.4 A detailed map of the location is presented within the appendices.

### 1.04 Development Proposal

- 1.04.1 We understand that the intention is to demolish the former piggery building and to construct 4 No. residential dwellings, with associated gardens and access road.
- 1.04.2 An extract of the architect's site plan is shown below. A full-scale copy of the architect's drawing is presented within the appendices.



Figure 1 – Architect's Proposed Layout (extract)





## 2.0 DESK STUDY

### 2.01 Sources of Information

2.01.1 As part of the desk-based research, JPC Environmental Services consulted the following sources of information: -

- Enviro Insight Report – produced by Groundsure Ltd.
- Map Insight Report – produced by Groundsure Ltd.
- British Geological Survey (BGS) mapping and online referencing
- Environment Agency landfill mapping – online
- BR 211 Radon: Guidance on Protective Measures for New Dwellings, 2007 Edition
- Magic Map Website – [magic.defra.gov.uk](http://magic.defra.gov.uk)
- Mid Suffolk Council Planning Portal
- Google Earth (aerial photography)

### 2.02 Site Description (Walkover Survey)

2.02.1 The site walkover was conducted on Tuesday, 02 February 2021 by Robin Crowther on behalf of JPC Environmental Services.

2.02.2 The site is located to the north-west of Needham Market, and is situated to the north of an existing residential road, 'Hill House Lane'.

2.02.3 The land to the south and east has been developed for residential use with a range of single and two-storey dwellings, while to the west and north there is open arable farmland. The terrain slopes downward away from the site to the northwest and has a gentle cross-fall to the north east.

2.02.4 The site, which is broadly rectangular in shape, is readily divided into two distinct sections. The south-western third is laid to grass, with hedging along the site frontage and forming the boundary to the south, while the north-western boundary is only defined by the edges of a crop and periodic posts.

2.02.5 The larger north-eastern aspect is currently occupied by what appears on aerial photographs to be a single structure, but in reality is a collection of single and part two-storey buildings. This conjoined collection of buildings sits centrally within the developed side of the site but is surrounded by further grass rather than hard standing. The sketch below shows an artificial division of the building, which has been used to aid description.

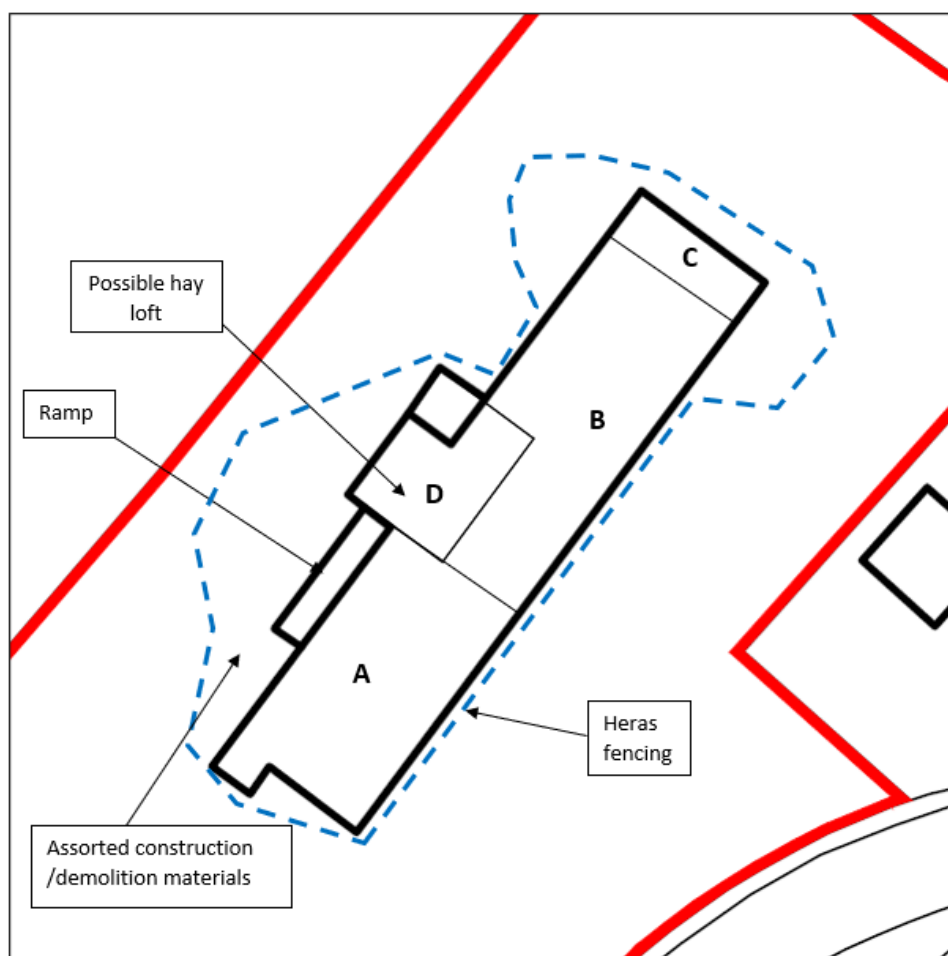


Figure 2 - Architect's Existing Layout Plan (extract)

- 2.02.6 The collection of buildings is currently enclosed by well secured Heras security fencing, which limits physical access into the structure, however most of the building footprint is laid out as a series of open fronted bays. The exception to this is a triple bay width at the southern end (Section A), where the frontage has been enclosed with timber cladding and wooden doors. Sections B & C are all entirely open fronted, opening towards Hill House Lane to the south east. While Sections A & B are of long-established construction, with blockwork walls to approximately 1.2m, and a timber framed construction over, Section C at the northern end is a modern addition formed out of galvanised metal sheeting.
- 2.02.7 Section D appears to be either one and a half or two storeys in height, and is heavily overgrown with ivy, which obscures the majority of this element from view. There is, however, a high-level door on the south west elevation, which is accessed via a masonry ramp which runs part way along the rear of Section A.
- 2.02.8 While the wall cladding is a combination of timber and galvanised tin, the roofing is almost entirely corrugated asbestos cement sheets.
- 2.02.9 While we were unable to access either Section A or D, it is clear from the construction of the building that it has historically housed livestock, anecdotally pigs, but more recently has been used to store old construction materials and machinery. This assortment of material has then



spilled out into the immediate surroundings, with neat stockpiles of brick, tile, fragmented asbestos cement roofing sheets, and boulder-sized pieces of concrete and granite chippings. Also observed amongst the building contents were old oil drums, fuel transfer hoses, pallets, and metal 'acrow props'. The floor across Section B was concrete, while Section C was bare earth.

2.02.10 Within the wider grassed area around the building, we observed a number of small heaps of tree branches. These appeared to be habitat piles rather than for bonfires, as some had become overgrown with grass.

2.02.11 A more detailed representation of the site can be gained via a series of photographs, which are presented in Appendix C.

### 2.03 Site History

2.03.1 To ascertain the existence of any potentially contaminative former land uses within the locality, JPC Environmental Services purchased a Map Insight Report compiled by Groundsure Ltd, which contains a range of historic 'County' maps and modern Ordnance Survey map extracts. The extracts reviewed as part of this desk study were produced in four scales, 1:1,250, 1:2,500, 1:10,000 (metric scale) and 1:10,560 (imperial scale), and cover the period from 1883 - 2021.

2.03.2 Details of the historic land uses are summarised in the table below and overleaf, while copies of the full-sized map extracts are presented within appendices for reference purposes.

*Table 1 - Historic Mapping*

Map Edition (Date, Scale)	The Site	Surrounding Area (distance [m]/ direction)
1883-1888 (1:2,500) (1:10,560)	The site is part of an agricultural field.	The site is surrounded by agricultural fields. Key local features include: <b>Adjacent/SE</b> - Agricultural buildings, <b>Adjacent/NE, Adjacent/SW, 80/SW, 150/SE, 220/NW, 240/SW, 450/S</b> - Ponds, <b>200/E</b> - Old Sand Pit, <b>200/NE</b> - Residential Buildings, <b>220/N</b> - River.
1903-1905 (1:2,500) (1:10,560)	The site appears unchanged.	The surrounding area appears unchanged.
1927-1928 (1:2,500) (1:10,560)	The site appears unchanged.	The surrounding area appears unchanged.
1938 (1:10,560)	The site appears unchanged.	The surrounding area appears unchanged.
1953-1958 (1:10,560)	The site appears unchanged.	<b>200/E</b> - Old Sand Pit is no longer shown.
1967-1976 (1:2,500) (1:10,000)	The site is occupied by a piggery towards the north-east of the site.	<b>Adjacent/NE, 150/SE, 240/SW</b> - Ponds are no longer shown,



(1:10,560)		<b>70/S, 80/NE, 100/E</b> - Agricultural and residential buildings.
1984-1995 (1:2,500)	The site appears unchanged.	<b>60/SW, 100/SE</b> - Agricultural and residential buildings, <b>80/SW</b> - Pond is no longer shown,
2001-2010 (1:1,250) (1:10,000)	The site appears unchanged.	The surrounding area appears unchanged.
2021 (1:10,000)	The site appears unchanged.	The surrounding area appears unchanged.

## 2.04 Geology, Hydrogeology & Hydrology

2.04.1 To determine the nature of the underlying geology, we have consulted the 1:50,000 scale geological maps compiled by British Geological Survey (BGS). Based on these maps, the site is likely to be underlain by superficial deposits comprising Lowestoft Formation - Diamicton and Gravel, and further underlain by bedrock geology comprising Newhaven Chalk Formation - Chalk.

### Geology

2.04.2 In addition to the geological mapping, we have reviewed the BGS database for nearby boreholes. The closest Borehole [TM05NE174] is located approximately 20m to the south-east of the site and is detailed below.

Table 2 - BGS Borehole Log

Nature of Strata	Thickness (m)	Depth (m bgl)
Pleistocene Drift	64.04	64.04
Upper Chalk		
Groundwater was recorded at:		13.11

### Hydrogeology

- 2.04.3 With reference to the groundwater mapping presented on DEFRA's MAGIC map, the superficial deposits are classified as Secondary (undifferentiated) Aquifer, while the bedrock geology is described as Principal Aquifer.
- 2.04.4 In terms of groundwater vulnerability, the Environment Agency divides significant groundwater catchments into three Source Protection Zones (SPZ's) based on the potential risk associated with the migration of possible contaminants. In this instance, the site is located within Groundwater Source Protection Zone 2 (Outer Catchment).
- 2.04.5 In terms of groundwater vulnerability, the site is classified as Medium-High risk, on the Environment Agency's groundwater vulnerability mapping.
- 2.04.6 In respect of the local hydrology, the nearest surface water feature is a pond, located approximately 10m to the south-west. There is an inland river, located approximately 219m to the north.





2.04.7 According to the Environment Agency's online indicative flood mapping the site is situated within Flood Zone 1. In terms of contamination, we do not consider floodwaters as posing a potential pathway for soluble or surface contaminants.

2.04.8 In relation to the overall hydrology, the site is occupied by a complex of buildings and an area laid to grass. There is, therefore, opportunity for both vertical and horizontal migration.

## 2.05 Statutory Searches

2.05.1 To obtain a more detailed understanding of the site, in context of the surrounding environment, JPC Environmental Services purchased a Groundsure Insight report. This report contains information derived from a database containing public record information from the Environment Agency, local authorities and other regulatory bodies.

2.05.2 The complete Groundsure Insight report is provided within the appendices.

2.05.3 Potential issues noted within the report have been sub-divided into source, pathway and receptor issues and are summarised in the tables below:

*Table 3 - Potential Contaminant Sources*

Source	Related to	Distance (m)
<b>Past Land Use</b>		
Historical Energy Feature	Electricity Substation	195-199
Potentially Infilled Land	Old Sand Pit	209
Historical Energy Features	Electricity Substations	315-326
		318-321
Potentially Infilled Land	Cuttings	420-462
Historic Industry	Boathouse	481-482
<b>Waste and Landfill</b>		
Waste Exemptions	Disposing of/ Treating/ Using Waste	485
<b>Current Land Use</b>		
Recent Industry	Electrical Features	25
	Electrical Features	201
Licensed Discharges	Miscellaneous - Surface Water	254
		296
Pollution Incidents	Biodegradable Materials and Wastes	357
Licensed Discharges	Sewage - Treated Effluent	489

*Table 4 - Potential Contaminant Pathways*

Pathway	Related to	Distance (m)
<b>Hydrogeology and Hydrology</b>		
Superficial Deposits	Secondary (undifferentiated) Aquifer	On-Site
Bedrock Geology	Principal Aquifer	
Groundwater Vulnerability	Secondary Aquifer/ High Vulnerability	



Table 5 - Potential Contaminant Receptors

Receptor	Related to	Distance (m)
Hydrogeology and Hydrology		
Superficial Deposits	Secondary (undifferentiated) Aquifer	On-site
Bedrock Geology	Principal Aquifer	
Groundwater Source Protection	Zone 2 (Outer Catchment)	
Surface Water Body Catchment	Gipping (d/s Stowmarket)	
	Wattisham Watercourse	
Groundwater Body	Waveney and East Suffolk Chalk & Crag	
Surface Water Feature	Inland River	219
Designated Environmentally Sensitive Sites		
Nitrate Vulnerable Zone	River Gipping (Surface Water)	On-site
	Sandlings and Chelmsford (Groundwater)	

## 2.06 Radon

- 2.06.1 According to the Enviro Insight report and BR211 (2007), the site is located in a lower probability Radon affected area. Therefore, as fewer than 1% of homes are above the action level for Radon, no radon protection measures are necessary in the construction of new buildings or residential dwellings.

## 2.07 Mineral Workings and Potentially Infilled Land

- 2.07.1 The Groundsure Insight report, and our historic map review, has highlighted 5 No. areas of potentially infilled land, located within 250m. See Figure 2 overleaf.

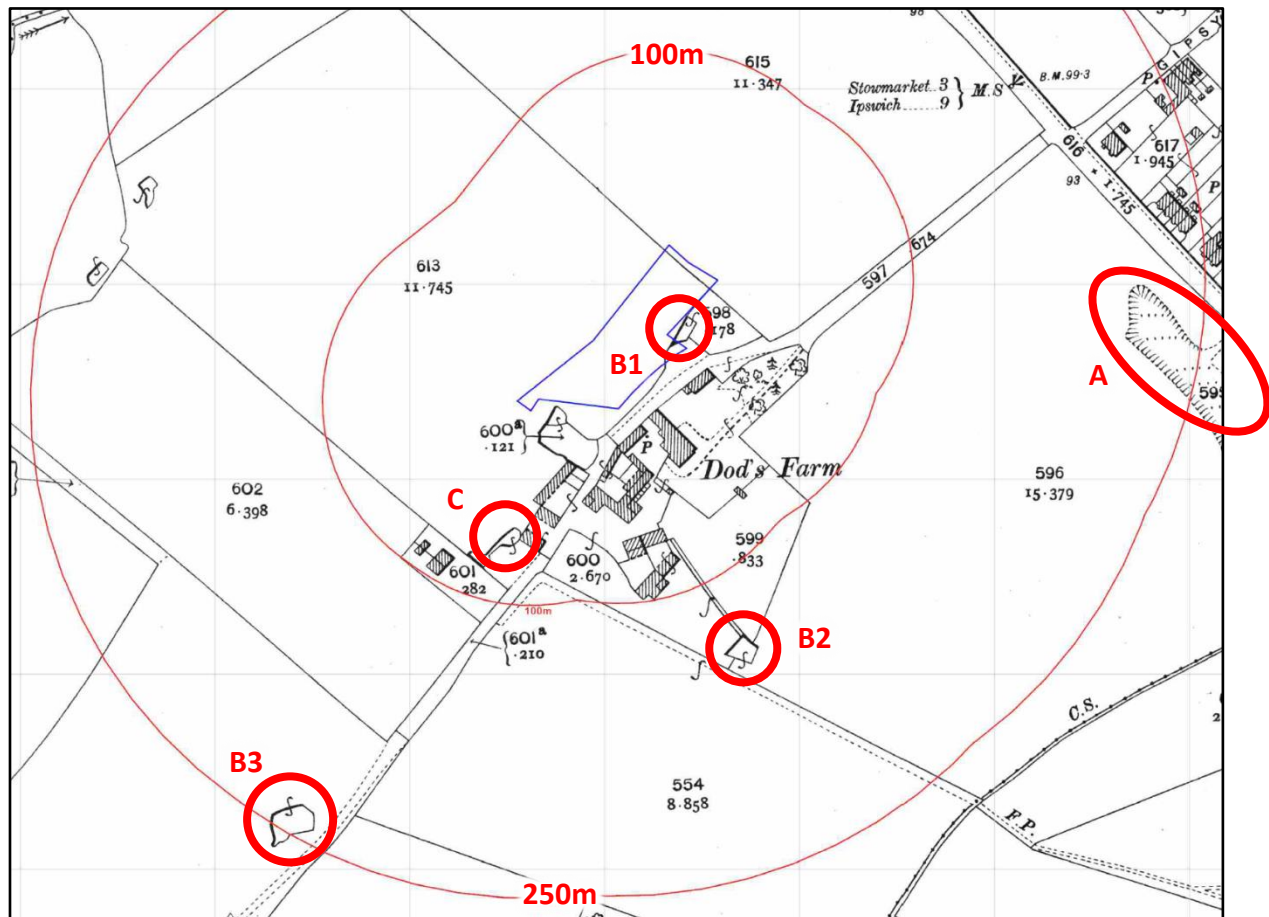


Figure 2 - Historic Map (1903, extract)

- 2.07.2 Area A comprises an old sand pit. The pit is shown on historic maps from 1883 to 1938, but is not shown on any map post-1953. The risk from ground gas is greatest within the first 20 years since infilling and diminishes with time after that. The pit appears to have been infilled for significantly longer than this (~70 years), is located at approximately 220m remote from the site, and is within a developed residential area. Due to these factors, it is considered to pose only a low risk to the development.
- 2.07.3 The ponds marked B are shown on historic maps from 1883 to 1958, but are not shown on any map post-1967, indicating that the ponds have been infilled for approximately 55 years. Each pond is detailed below:
- Pond B1 is located adjacent to the site. Due to the close proximity of this pond to the site, it is considered to pose a LOW/ MODERATE risk to the development.
  - Pond B2 is located approximately 150m to the south. Due to the small size of the pond, and the remote distance to the site, it is considered to pose a LOW risk to the site.
  - Pond B3 is located 240m to the south-west in an agricultural field. Due to the remote distance to the site, it is considered to pose a LOW risk to the site.
- 2.07.4 Pond C is shown on historic maps from 1883 to 1971, but is not shown on any map post-1984. The pond is located approximately 80m remote from the site and below a residential property and driveway. Due to this, and the small size of the pond, it is considered to pose only a low risk to the development.



2.07.5 In addition to the Enviro Insight report, we have consulted the Environment Agency landfill mapping. There are no historic landfills reported to be within 500m of the site.

## 2.08 Local Authority Information

2.08.1 During our investigation of Former Piggery Site, Hill House Lane, Needham Market, IP6 8EA, JPC Environmental Services submitted a request for information from the Data Protection Team at Mid Suffolk Council. The response was received on Wednesday, 24 February 2021, and is detailed below.

2.08.2 *'I can confirm that the search site has not been determined as Contaminated Land as defined by Part IIA of the Environmental Protection Act 1990 nor has it been scheduled for inspection under the aforementioned act.*

*No site within 500m of the search site has been determined as Contaminated Land as defined by Part IIA of the Environmental Protection Act 1990. The only sites within 500m that have been scheduled for future inspection are a Sandpit at 220m E of the site. Electrical substation at 210m to the east of the site. Electric Substation 50m S of the site and a further Electrical substation 350m to the east of the site. These have been included in the list of sites for future inspection on the basis of a desk top assessment undertaken by Mid Suffolk District Council.'*

2.08.3 A full copy of the local authority response is included within the appendices.

## 2.09 Planning Portal

2.09.1 A search was made on Mid Suffolk District Council's planning portal. This was done to further explore the evolution of the site and any available information related to nearby sites. While there are several applications within 250m of the site boundary, the majority do not provide any new or useful information from the perspective of contaminated land.

2.09.2 Application [DC/19/02363] refers to the construction of 38 No. dwellings and associated infrastructure. The attached Phase I Desk Study Report concluded that no further assessment was required. The Senior Environmental Management Officer agreed with this assessment.

2.09.3 Application [DC/17/05549] refers to the construction of 64 No. residential units. The Phase I Contaminated Land Assessment concluded that 'Due to the absence of any on-site sources of contamination we do not consider it necessary to undertake a Phase II investigation'. The Senior Environmental Management Officer confirmed that he had no objection to the proposed development from the perspective of land contamination.

2.09.4 Application [DC/18/01925] refers to the construction of a single dwelling using existing vehicular access. The application was supported by a 'Homecheck' report and the Senior Environmental Protection Officer had no objections to the development with respect to land contamination.

2.09.5 Application [DC/18/03965] refers to the construction of 9 No. dwellings. The associated Phase I geo-environmental report was followed by a Phase II investigation, which concluded that 'adopted screening criteria have not been exceeded for any contaminant at any location'. The





Senior Environmental Management Officer had no objections to the development with respect to land contamination.

- 2.09.6 Application [DC/20/01976] refers to the construction of a single two-storey dwelling. The application was supported by a contamination questionnaire and a Landmark Envirosearch report, which concluded that the site 'Passed' with respect to contaminated land. The Senior Environmental Management Officer had no objections to the development with respect to land contamination.

### 3.0 CONCEPTUAL SITE MODEL

#### 3.01 Introduction

- 3.01.1 The "conceptual site model" is a simplified representation of the ground conditions that exist on site, which is subsequently used to assess the potential risk to human and environmental receptors. According to the Land Contamination Risk Management (LCRM) guidance, "A *conceptual site model is a representation of the characteristics of the site. It shows the possible relationships between contaminants, pathways and receptors*".
- 3.01.2 Although the model is formulated during the initial phase of the investigation it is subject to change, as new information comes to light, and our understanding of the site improves. It is central to the risk assessment process and therefore must consider all potential relationships/interactions.

- 3.01.3 There are four key aspects to the model, these are:

Source(s)	These can include current or historic activities / business practices taking place either on or adjacent to the site, which may have had a negative impact on surface or sub-surface soils, or groundwater.
Pathway(s)	This is the route by which contaminants travel / migrate between their source and any available receptor.
Receptor(s)	These are varied and can include human or non-human organisms and eco-systems; controlled waters such as groundwater or surface water bodies; and structures or individual construction materials.
Pollutant linkage(s)	These exist where all three of the previous elements are present, indicating that the "link" between an identified source and a potential receptor via a pathway.

#### 3.02 Potential Sources of Contamination

Table 6 - Potential Sources of Contamination

Source	Description	Potential Contaminant	Distance (m)
Construction Materials	Suspected Asbestos Containing materials	Asbestos fibres	On-site
Oil and Fuel Containers	Disused oil drums and fuel transfer hoses	Petroleum Hydrocarbons, PAHs, Heavy Metals	
Historic Land Use	Agriculture	Bacteriological Contaminants	
Infilled Land	4 No. Ponds, 1 No. Sand Pit	Unknown Fill Material, Ground Gas	Adj., 80, 150, 200, 240



Energy features	Electrical Substations	Polychlorinated Biphenyls, PAHs	284, 364
Licensed Discharges	Miscellaneous - Surface Water, Sewage - Treated Effluent	Bacteriological Contaminants	254, 296, 489
Pollution Incidents	Biodegradable Materials	Bacteriological Contaminants	357
Historic Industry	Boathouse	Petroleum Hydrocarbons, PAHs, Heavy Metals	481-482
Waste Exemptions	Disposing of/ Treating/ Using Waste	Petroleum Hydrocarbons, PAHs, Heavy Metals	485

### 3.03 Potential Contaminant Pathways

Table 7 - Identified Potential Pathways

Pathway
Inhalation - Potential inhalation of contaminants in dust/ fibrous form.
Ingestion - Future site users could swallow small quantities of soil derived dust originating from soft landscaped/ garden areas or disturbed ground.
Dermal absorption - Contaminants present within surface or sub-surface soils/ fill material can enter the human body through the skin or via open wounds.
Buried services - If elevated levels of petroleum hydrocarbons are present within surface/ subsurface soils, then 'plastic' drinking water pipe can become compromised.
Migration/ Leaching - Potential for migration of contaminants through soil/ groundwater.
Migration of Gas - Modern construction techniques can lead to accumulation of gas within structures.

### 3.04 Potential Contaminant Receptors

Table 8 - Identified Potential Receptors

Receptor
Future site users - Future site users could be affected by contaminants in the soil, entering the mains water system or ground gas entering the building.
Construction workers - Workers involved with future site clearance and preparatory work will be exposed to contaminants present within on-site soil, should they exist.
Buildings and Infrastructure - Modern construction techniques can cause accumulations of gas, if gas is able to accumulate within new, or converted, buildings there is potential for an explosion.
Buried services - Plastic drinking water pipes are vulnerable to petroleum hydrocarbons.
On-site soil - Particularly close to the surface, may have been impacted by historic activities.

### 3.05 Plausible Pollutant Linkages

- 3.05.1 Using the 'source – pathway – receptor' tables above, potential pollutant linkages are identified. An assessment of the likely significance of each linkage is then considered, which would include; the possible extent and mobility of the source; the sensitivity of the receptor and the type of migration/ exposure pathways.
- 3.05.2 An assessment of the probability and the magnitude of potential risk is presented below to give a valuation of each potential pollutant linkage identified and their significance.



- 3.05.3 This assessment is undertaken based on the current proposal for the site at the time of issuing this report, which is to demolish a single former piggery building, and construct 4 No. residential dwellings.
- 3.05.4 This qualitative risk assessment has been undertaken in accordance with CIRIA C552: Contaminated Land Risk Assessment, A Guide to Good Practice (Rudland et al., 2001).
- 3.05.5 The following potential pollutant linkages have been identified:

Table 9 - Possible Pollutant Linkages

Possible Pollutant Linkage			RISK CHARACTERISATION
Potential Sources	Pathways	Receptors	
Suspected Asbestos Containing Materials (on-site)	Inhalation.	Future site users, Construction workers.	MODERATE/ HIGH
Oil and Fuel Containers (on-site)	Inhalation, Ingestion, Dermal absorption, Buried services, Migration/ Leaching.	Future site users, Construction workers, On-site soil, Buried services.	LOW/ MODERATE
Historic Activities (on-site; agriculture)	Inhalation, Ingestion, Dermal absorption, Migration/ Leaching.	Future site users, Construction workers, On-site soil.	LOW
Infilled Land (off-site; ponds and sand pit)	Migration of Gas	Future site users, Buildings and infrastructure	LOW/ MODERATE
Electrical Substations (off-site)	Inhalation, Ingestion, Dermal absorption, Buried services, Migration/ Leaching.	Future site users, Construction workers, On-site soil, Buried services.	NEGLIGIBLE
Licensed Discharges (off-site)	Inhalation, Ingestion, Dermal absorption, Migration/ Leaching.	Future site users, Construction workers, On-site soil.	NEGLIGIBLE
Pollution Incidents (off-site)	Inhalation, Ingestion, Dermal absorption, Migration/ Leaching.	Future site users, Construction workers, On-site soil.	NEGLIGIBLE
Historic Industry (off-site)	Inhalation, Ingestion, Dermal absorption, Buried services, Migration/ Leaching.	Future site users, Construction workers, On-site soil, Buried services.	NEGLIGIBLE
Waste Exemptions	Inhalation,	Future site users,	NEGLIGIBLE



(off-site)	Ingestion, Dermal absorption, Buried services, Migration/ Leaching.	Construction workers, On-site soil, Buried services.	
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3.05.6 The level of potential risk ascribed to each linkage is based on the following criteria:

Table 10 - Risk Classification

Risk Classification	Description
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without appropriate remedial action.
High risk	Harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remedial action.
Moderate risk	It is possible that without appropriate remedial action harm could arise to a designated receptor but it is relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely that such harm would be relatively mild.
Low risk	It is possible that harm could arise to a designated receptor from an identified hazard but is likely that, at worst, this harm if realised would normally be mild.
Negligible risk	The presence of an identified hazard does not give rise to the potential to cause significant harm to a designated receptor.

## 4.0 ENVIRONMENTAL ASSESSMENT

### 4.01 Summary of Key Drivers

4.01.1 The earliest available historic mapping (1883) shows the site to comprise a part of an agricultural field. The existing building is first shown on the 1967 maps as a piggery. The surrounding land use is agricultural to the north and west, and residential to the east. The identified asbestos-containing materials and the disused oil and fuel containers found on-site are the main drivers for potential contamination risk on this site. The other identified sources, such as the historic agricultural land use, nearby infilled land, electrical substations, licensed discharges, pollution incidents, historic industry, and waste exemptions are less likely to have had any direct adverse impacts on the site, the proposed development or future site users.

### 4.02 Environmental Risk Assessment

#### Human Health

- 4.02.1 The proposed development will lead to an increase in the number of people occupying the site, therefore the condition of the underlying soils will determine the risk posed to future occupants. Due to the nature of the development, the possible production and consumption of home-grown produce may present a pathway for potential contaminants. The risk posed to future occupants from the identified potential sources is considered to be LOW/ MODERATE, and requires further investigation.
- 4.02.2 Where asbestos cladding remains in good condition, it does not pose a risk, provided it is dismantled and disposed of correctly. However, asbestos fragments or fibres arising from damaged or heavily weathered panels, could pose a risk to future occupants and construction workers. In this case, the risk is considered to be MODERATE/ HIGH, due to the heaps of fragmented roofing sheet that have been stockpiled close to the building.





### **Controlled Waters**

- 4.02.3 Although the site is located within Source Protection Zone 2 (Outer Catchment), it is underlain by relatively impermeable superficial deposits, and the depth to groundwater is likely to be relatively deep. Due to these factors, the risk to groundwater is considered to be LOW.

### **Buildings**

- 4.02.3 Where present, infilled land represents a potential source of ground gas to any newly built or refurbished structures. In this case, our desk-based research has identified 4 No. infilled ponds and 1 No. infilled sand pit within 250m from the site boundary. The potential risk of ground gas migrating to/ accumulating beneath the new houses is predominantly low from most sources. However, 1 No. small pond is located close to Plots 3 and 4 and is, therefore, considered to pose a LOW/ MODERATE risk to the development.
- 4.02.4 This risk could be mitigated by either a venting trench along the south-east boundary, the installation of a precautionary gas-proof membrane, or further investigation.

## **4.03 Environmental Litigation (Part IIA)**

- 4.03.1 Part IIA only applies to land with chemical contamination, where the contaminants pose an unacceptable risk to human health or the wider environment i.e. land where significant pollutant linkages have been identified. The legislation also only considers risks associated with current site use, leaving any risks associated with a future use to be addressed by the planning system.
- 4.03.2 Based on our understanding of the previous site uses, and the apparent condition of the site established by our visual survey, we consider it extremely unlikely that the site would be classified as a Contaminated Land under Part IIA of the Environmental Protection Act.

## **4.04 Further Investigations**

- 4.04.1 We would recommend that a Stage 1/ Tier 2 Quantitative Risk Assessment is undertaken around the existing structure. This investigation could comprise machine-excavated trial pits or hand-augered boreholes, with sampling of near surface soils and the deeper underlying natural geology. Based on the information obtained to date, we would recommend that samples of the on-site soils/ made ground are tested for a routine suite of organic and inorganic contaminants, including an asbestos screen. Further investigation may also be required to resolve the issue of ground gas, subject to discussions with the local environmental protection officer.

## **5.0 RECOMMENDATIONS**

- 5.01 Based on the information obtained and reviewed as part of this preliminary assessment, JPC Environmental Services would advise the following:
- We would recommend that a Stage 1/ Tier 2 Quantitative Risk Assessment is undertaken around the existing structure. This investigation could comprise machine-excavated trial pits or hand-augered boreholes, with sampling of near surface soils and the deeper underlying natural geology. This work should be completed after all of the construction material/ demolition arisings have been removed from the site, particularly the small stockpiles of cement bound sheet/ cladding. Samples of near surface soil should be tested for a routine suite of organic and inorganic contaminants, including an asbestos screen.



- Although not related to the condition of the on-site soils, we would recommend undertaking an HSG264 Pre-demolition/ refurbishment asbestos survey on the existing building. All identified asbestos containing materials (ACMs) should then be removed, by a suitably experienced contractor, prior to the demolition/ conversion works.
- Due to the proximity of a small infilled pond, some form of gas mitigation may be necessary. Further investigations will be required to further assess the risk of ground gas, which should comprise the installation of at least three gas monitoring wells and gas readings collected/ recorded at fortnightly intervals for a period of three months (i.e. six visits). Alternatively, the local authority may accept the inclusion of gas protection measures within the properties or the installation of a gas venting trench between the pond and the proposed dwellings.

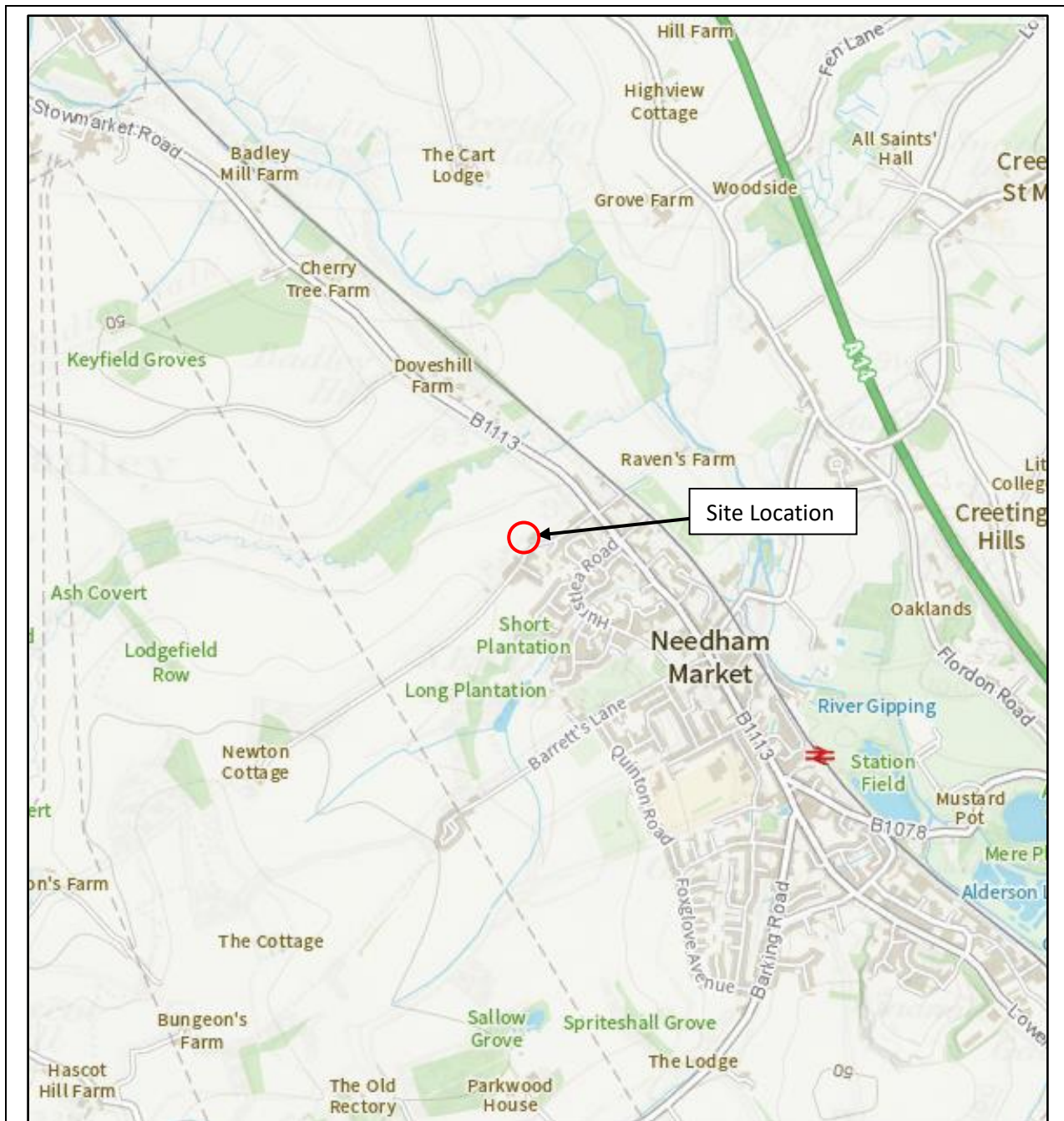


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## APPENDIX



## Appendix A - Site Location Plan



<p>JPC Environmental Services (A division of J P Chick &amp; Partners Limited) 7 Museum Street Ipswich IP1 1HQ</p>	<p><b>Project:</b> Former Piggery Site, Hill House Lane, Needham Market, IP6 8EA</p>
	<p><b>Job Number:</b> IE21/006</p>
	<p><b>Scale:</b> NTS</p>
<p><b>Drawing Title:</b> Site Location Plan</p>	<p><b>Drawing Number:</b> 1</p>






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## Appendix B – Architect's Plans



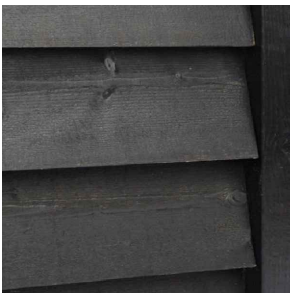
ROOF MATERIALS



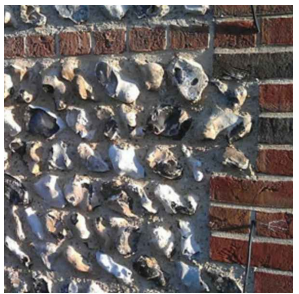
Red clay pantiles  
Sandoff - New Arcadia  
(reclaimed finish)



Red multi brickwork  
Forterra - Hampton  
Rural Blend




Horizontal boarding  
Black finish




Flint

GROUND MATERIALS



Bound shingle  
To Driveways



Block Paving  
Drivesoff Tegula  
Priora Traditional

Site Layout Plan

scale 1:200

Denotes existing trees retained (indicative)

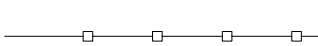


Denotes new trees (indicative)

Denotes existing hedgerow removed

New hedgerow to north west & north east boundaries

Blue line denotes existing store to be demolished

FENCING KEY

-  1.2m high post & rail fence
-  1.2m high post & rail fence with chicken wire
-  1.8m high willow fence

HILL HOUSE LANE

Rev D	Jan 21	Amended to latest plans
Rev C	Jan 21	Amended to client email 15/01/21
Rev B	Jan 21	Amended following pre-app
Rev A	Oct 20	Amended as per clients email dated 09/10/2020.

**LAST & TRICKER**  
PARTNERSHIP  
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Lower Brook Street,  
Bosworth, Suffolk, IP4 1RA  
01473 252961 / 01473 233129  
www.lastandtricker.co.uk  
info@lastandtricker.co.uk

Client: MJW Consultants Ltd.

Project: Proposed demolition of existing building and erection of 4 dwellings.  
Former Piggy Site  
Hill House Lane  
Needham Market

Drawing: Proposed Site Layout

Date: Aug '20 Scale: 1:200 at A1 Drawn: JN

Job No: 5623 Drwg No: 2 Revision: D





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## Appendix C - Site Photographs



Photograph 1



Photograph 2







Photograph 3



Photograph 4







Photograph 5



Photograph 6







Photograph 7



Photograph 8







Photograph 9



Photograph 10







Photograph 11



Photograph 12

