



Contaminated Land Inspection Report

Closed Landfill,
Rouse's Lane
Downham Market, King's Lynn

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Executive Summary

The Borough Council of King's Lynn and West Norfolk (BCKLWN) has a statutory duty to inspect its district for potentially contaminated land under Part 2A of the Environmental Protection Act 1990. The contaminated land inspection strategy has identified the former landfill at Rouses Lane, Downham Market as a site which requires detailed inspection.

This site is a former landfill which forms part of a field bounded by residential properties to the west and north within the district of King's Lynn. An initial assessment of the site was undertaken to assess the potential for harm to human health, controlled waters, the environment and property under Part 2A.

To gather information of the site's history a desk study and preliminary risk assessment were carried out by the Environmental Quality Team. From the evidence gathered during the desk study of the site history and a site walkover, the following can be stated:

- The site was a sand quarry which was then used as a landfill.
- The site is now being used as paddocks.
- From the site walkover occasional waste material was noted on the surface.
- From planning records the tip was known to accept several different types of waste, sometimes in contravention of their permission from Downham Market Rural District Council. Therefore it is considered to be prudent to consider that the site accepted all types of waste.
- Residential properties bound the site to the north and west.
- The site is not considered to have been lined or have any leachate collection systems in place.
- The site is anticipated to have been capped, but the capping is not expected to have been engineered.
- It is unclear who operated the landfill. However, anecdotal evidence indicates that it may have been Messrs Barber and Wright (8th Oct 1953)/ 'Mr W Starling (applicant) Mr HW Barber, Royston End, DM (1959) up to 1966. Baker Bros filling to 1980.
- A site investigation was undertaken by EPS Ltd as part of a planning application. This recorded elevated levels of contamination above the threshold for its proposed end use (Residential with domestic gardens). The levels of contamination in the near surface soils were not considered to be significantly elevated. Some contaminants were detected in the groundwater beneath the site, but this was considered to be perched water and not in hydraulic continuity with the principal Aquifer beneath the site due to the impermeable clay layer beneath the site.

Following the initial assessment, it was concluded that no additional information was required to characterise and categorise the site. A site investigation undertaken as part of the planning process indicated that the site has been used for waste disposal. The site investigation indicated that elevated levels of contamination existed on site, but further assessment concluded that a significant risk to human health the environment or property did not exist. There is not a strong case for

taking action under Part 2A EPA 1990 and therefore the site has been classified into Category 4 regarding the risk to human health. No evidence was found of significant pollution or significant possibility of such pollution of controlled waters.

Therefore the site is not considered to be contaminated land under Part 2A of the Environmental Protection Act 1990 at this time. If further planning applications are received the status of the site should be re-evaluated.

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1. Introduction

This report details a review of information and written statement about a former landfill at Rouses Lane, Downham Market, King's Lynn and provides a conclusion on the risk to human health, property, groundwater and the wider environment.

The Contaminated Land Statutory Guidance (DEFRA, 2012) suggests that where the authority has ceased its inspection and assessment of land as there is little or no evidence to suggest that it is contaminated land the authority should issue a written statement to that effect. This document provides that written statement.

2. Desk Study Information

Location

The site is at South of Rouses Lane, West of Cemetery and East of Howdale Rise, Downham Market, Norfolk. The location is shown in Appendix B. The grid reference for the centre of the site is 561723, 302949 and the nearest postcode is PE38 9AN.

Initial Prioritisation Score

The site was initially assessed as having a 'Very High' Potential Hazard Rating due to the risk to groundwater.

Previous Site Usage

The site (drawing CL202/101) was a sand pit, which has been used as a landfill.

Present Site Usage

Its present use comprises a series of paddocks which are accessed by a road from the north. Residential properties bound the site to the west and north a cemetery is located to the east and a field to the south.

Ownership

Enquiries have been made to establish land ownership. This report will be made available to the site owners.

Environmental Setting

Geology

The Solid and Drift Geology Sheet 160, 1:50,000, 1999 and Regional Hydrological Characteristics Sheet 1 1:125 000 shows the site surface is approximately 33meters above ordnance datum (maOD).

The bedrock geology is the Leziate Member - Sand.

No superficial geology is noted in the west of the site, Lowestoft Formation – Diamicton covers the east of the site.¹

¹ BGS website: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

Hydrogeology

The site is on land classified as a principle aquifer but not within a Source Protection Zone (SPZ) (Environment Agency Website).

The Principle Aquifer comprises the Leziate Member, which has a very high permeability allowing it to transmit pollutant very easily.

The superficial deposits are classed as a secondary Aquifer (Undifferentiated).

Hydrology

The nearest major water feature is the Relief Channel, approximately 1.5km north and west of the site.

There are no surface water abstraction points, private water or Environment Agency licenced abstractions exists within 1000m.

Local Authority Pollution Prevention and Control Regulations (LAPPC)

No LAPPC processes are on site or within 500m of the site.

The Environment Agency Web site records

The Environment Agency Web site records the following:

- The site is not in an area where flood alerts or warnings are given.
- The site is within a priority Waters Area and is vulnerable to Nitrate (Surface and Groundwater).
- The superficial deposits beneath the site are classified as being a Secondary Aquifer (undifferentiated).
- The bedrock beneath the site is a Principal Aquifer.
- The groundwater has a high vulnerability at this location.
- The site is not recorded as being a landfill.
- No significant pollution incidents are recorded within 1km of the site.

MAGIC website records

MAGIC website records the following

- Part of the site is covered by Woodland – Water Quality (England) of the Lower Spatial Priority.
- The site is covered by a Countryside Stewardship Water Quality Priority Areas (England) (Medium Priority).
- The site is covered by a Phosphate Issues Priority (Medium Priority)
- The site is designated as a Nitrate Vulnerable Zone for Surface and Groundwater.
- Part of the site is covered by Drinking Water Protected Areas (Surface Water) (England)

Historical Maps

E-map Explorer

Enclosure Map 1800 - 1850 – Not available.

Tithe map circa 1840– The site was part of a field labelled as No 127. The site was surrounded by fields with a road to the north.

Ordnance Survey 1st Ed. 1879-1886 – The site was still a field and was still surrounded by fields.

Historical Maps on file at the Borough Council of King's Lynn and West Norfolk

1843 – 1893: The site was as depicted on the 1st OS map.

1891 – 1912: The site was generally as depicted above with the exception that a building has been constructed on the opposite side of the road to the north.

1904 – 1939: The site was as described above with the exception that additional buildings have been constructed on the opposite side of the road to the north.

1919 – 1943: Not available.

1945 – 1970: The area was labelled as a 'Sand Pit' and had expanded to the south. Additional buildings have been developed to the north of the site adjacent to Rouse's Lane.

1970 – 1996: Not available.

1996+: The sand pit was no longer shown. A housing estate has been developed to the west of the site.

Aerial Photographs

1945 – 1946 MOD Aerial Photograph - The site was shown as a field although some excavation appears to have begun in the north western corner of the site.

1988 Aerial Photograph - The site was shown as having undergone significant excavation. However, significant amounts of material appear to have been placed into the excavation. The nature of the fill material is unidentifiable in the photograph..

1999 Aerial Photograph – The site was covered with vegetation. The surrounding area is as depicted on the 1996+ map.

2006-09 Aerial Photograph – The site and surrounding area are as depicted above with the exception that the cemetery appears to have expanded to the south.

Planning History

One planning application for the site exists in the Borough Council records. This relates to a proposed residential development. Detail of this application is presented below.

15/01779/OM - Outline Application: Proposed residential development for 50 dwellings, garages and public open space. Refused.

As part of this planning application a Phase I and II site investigation report was produced by EPS Ltd. This included a Desk Study and intrusive Site Investigation which comprised drilling 10 Window Sampler boreholes, chemical analysis of selected soil samples and the installation of ground gas/groundwater monitoring installations. The site investigation indicated that the site had been backfilled to depth greater than 10m with waste.

Elevated levels of heavy metals, polycyclic aromatic hydrocarbons (PAHs) and total petroleum hydrocarbon (TPH) compounds were detected in the selected soil samples when compared the relevant assessment criteria (Residential end use with home grown vegetables) . The majority of the samples which recorded elevated analytes were at depth, while the surface samples generally recorded low levels of contamination. Groundwater was analysed but did not return values which were considered to be a risk to groundwater or nearby surface waters.

Ground gases were detected in all ground gas monitoring installations. Methane was only encountered in one borehole at a maximum level of 2.4%. Carbon Dioxide was detected in all installations varying between 0.8 and 10.1%.

Environment Agency Records

The Environment Agency was contacted but did not hold any records relating to the landfill.

Norfolk County Council Records

No planning applications are recorded on the County Councils planning system via the website.

Norfolk County Council has been contacted and was able to supply records which indicate that the site had permission (DU.114/1) for use as a mineral extraction pit (Sand) the area of which was extended under planning permission DU.276. Several complaints were received about the sand pit regarding the extraction activities being undertaken and also about the material being used to backfill the excavation. The materials documented as being backfilled were paper ashes, rubble and general garden waste. The condition which relates to the backfilling of the sand pit is as follows:

'The excavation shall be filled in and the land restored at such times, in such manner, in such stages and with such materials as shall be agreed with the Local Planning Authority, provided that the surface of the filling material shall be of such depth and consist of materials capable of readily promoting plant growth, having regard to the possible future use of the land.'

3. Site Walkover

A site visit was carried out by an Environmental Quality Officer of the Borough Council of King's Lynn and West Norfolk on 04/07/2018 and the following was noted. Photographs are presented in the Appendix A.

The site was accessed by a locked gate on the northern boundary of the site. Residential properties were noted along the northern and western boundary. A cemetery was noted along the eastern boundary and the southern boundary was a wooded area beyond which were paddocks. The site was an open field which had been subdivided into three paddocks by electric fences (some broken) but no livestock was present on the site. The surface of the site was generally flat with some evidence of landfilled material noted (bricks, concrete and polystyrene). The vegetation on site appeared generally healthy and no signs of vegetative stress were noted.

4. Assessment of Site Use

From the assessment of the site using County Council data, historical maps, aerial photography and a site walk over it has been possible to conclude that the site has been used for mineral extraction. Subsequently the site has been used as a landfill under planning permission granted by Norfolk County Council.

Receptors have been noted on surrounding or beneath the site. These are the residential properties to the north and west of the site with their occupants; the horses grazing the site and the Principal Aquifer underlying the site.

Assessment of probability of a contamination event

The site was a quarry which has been used for mineral extraction and was then used as a landfill.

The site has been used as a landfill and is now used as a paddock. This will restrict the access to the site to the people tending the horses and their occupation of the site would be transient and intermittent. Therefore it is considered that the probability of a significant contamination event effecting human health (via direct contact or inhalation) is considered LOW.

The site investigation recorded that the landfill was underlain by clay which is considered to act as a barrier to the migration of any contamination into the aquifer. Therefore the probability of a contamination event occurring to controlled waters is considered to be UNLIKELY.

Consideration has been given to the fact that the landfill, while capped, would not have had an engineered cap placed across it. This would allow ground gases to percolate through the low pressure soil pores spaces into the atmosphere rather than forcing the gases to migrate laterally into the adjacent properties.

The site appears to have been used as a paddock but given the dilapidated state of the electric fences the site has not been used for a while. Therefore the probability of an event occurring which would posed a significant risk to property by the landfill is considered to be UNLIKELY.

Assessment of Hazard

The risks posed by the site have been assessed under the statutory guidance, the Contaminated Land Statutory Guidance. This is discussed further below:

Human Health

The site has been used as a landfill and chemical analysis of the soils indicated that there are elevated levels of contamination on site. The levels of contamination detected while elevated when compared to the proposed land use are not considered to be significantly elevated for its current use. Therefore it is considered that the hazard to human health (via direct contact or inhalation) is considered LOW.

Property

If ground gases from the landfill accumulated in one of the residential properties then the potential consequences could be significant. But the site investigation report only recorded low levels of ground gas. Any livestock being kept on the site would naturally graze the grass and other vegetation. The level of contamination detected within the soil is not considered to be elevated to a point where the uptake of contaminants into the livestock via ingestion would pose a significant risk to their health. Therefore the hazard to property is considered to be LOW.

Environment

The site and area do not contain any of the receptors stipulated in Table 1 of the Statutory Guidance. Therefore this receptor is not considered any further in this report.

Controlled Water

Groundwater and Surface Waters

The site investigation undertaken by EPS Ltd analysed the groundwater beneath. One water sample recorded an elevated level of Fluoranthene, 0.11ug/l from WS1 when compared to 0.02ug/l as stipulated in the Environmental Quality Standards. Regardless the site was not considered to be a risk to groundwater or surface water due to the impermeable layer beneath the landfill. Therefore the hazard is considered to be LOW.

Conceptual site model

The conceptual site model (Table 1) shows the sources, pathways and receptors identified and the subsequent risk classification.

Table 1: Preliminary conceptual site model

Source	Pathway	Receptor	Probability	Hazard	Risk
Metals and metalloids within waste material	Direct contact	Humans	Low	Low	Low Risk
	Inhalation				
Metals and metalloids within waste material	Direct Contact	Property	Unlikely	Low	Very Low Risk
	Inhalation				
Metals and metalloids within waste material	Direct contact	Environment	N/A	N/A	N/A
Metals and metalloids within waste material	Direct contact	Controlled water	Unlikely	Low	Very Low Risk

Outcome of Preliminary Risk Assessment

No plausible source pathway receptor linkage was identified as no source of contamination has been identified. Therefore further investigation is not considered necessary.

Conclusion

From the information gathered and the site walkover it is apparent that the site was excavated for sand after which the excavations were backfilled with waste material.

No evidence was noted of significant harm and there is not a strong case to consider that the risks from the land are of sufficient concern that the land poses a significant possibility of significant harm to Humans (via direct contact, ingestion and inhalation), Property, Environmental Receptors or Controlled Water as defined in the statutory guidance. CIRIA C552 states that on a site with a very low risk classification 'There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.'²

Human Health

Following the above assessment, the site is assessed as Category 4: Human Health³ as set out in the Statutory Guidance, as such no further assessment is considered necessary with regards to the risk to human health.

Controlled Waters

No further inspection is considered to be required with regards to controlled waters as it is considered that there is no reasonable probability that a significant contaminant linkage exists as set out in the Statutory Guidance⁴. This assessment applies to the site's current use.

No further assessment of the site is considered necessary unless additional information is discovered or if the site is considered for redevelopment.

Part 2A status of the site

The site is not considered to be contaminated land under Part 2A of the Environmental Protection Act 1990 at this time. If further planning applications are received the status of the site should be re-evaluated.

² Contaminated land risk assessment. A guide to good practice. CIRIA C552, ISBN 0860175529.

³ Appendix E sets out the categories of land in the Contaminated Land Statutory Guidance.

⁴ (Contaminated Land Statutory Guidance April 2016)

2.13. If at any stage the local authority considers, on the basis of information obtained from inspection activities, that there is no longer a reasonable possibility that a significant contaminant linkage exists on the land, the authority should not carry out any further inspection in relation to that linkage.

Appendices

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Appendix A Site Photographs



Photograph 1.



Photograph 2.



Photograph 3



Photograph 4



Photograph 5.



Photograph 6.



Photograph 7.



Photograph 8.



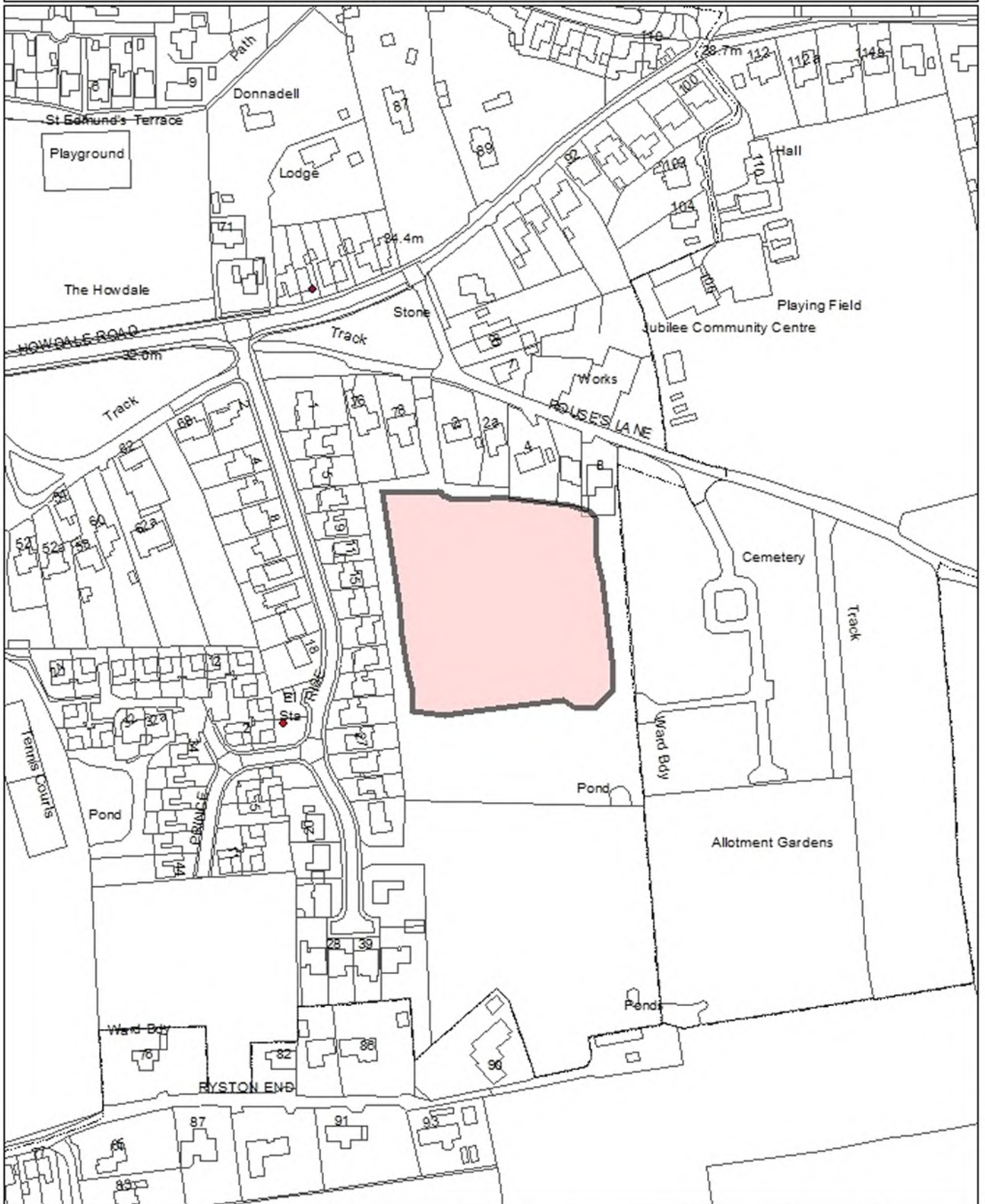
Photograph 9.





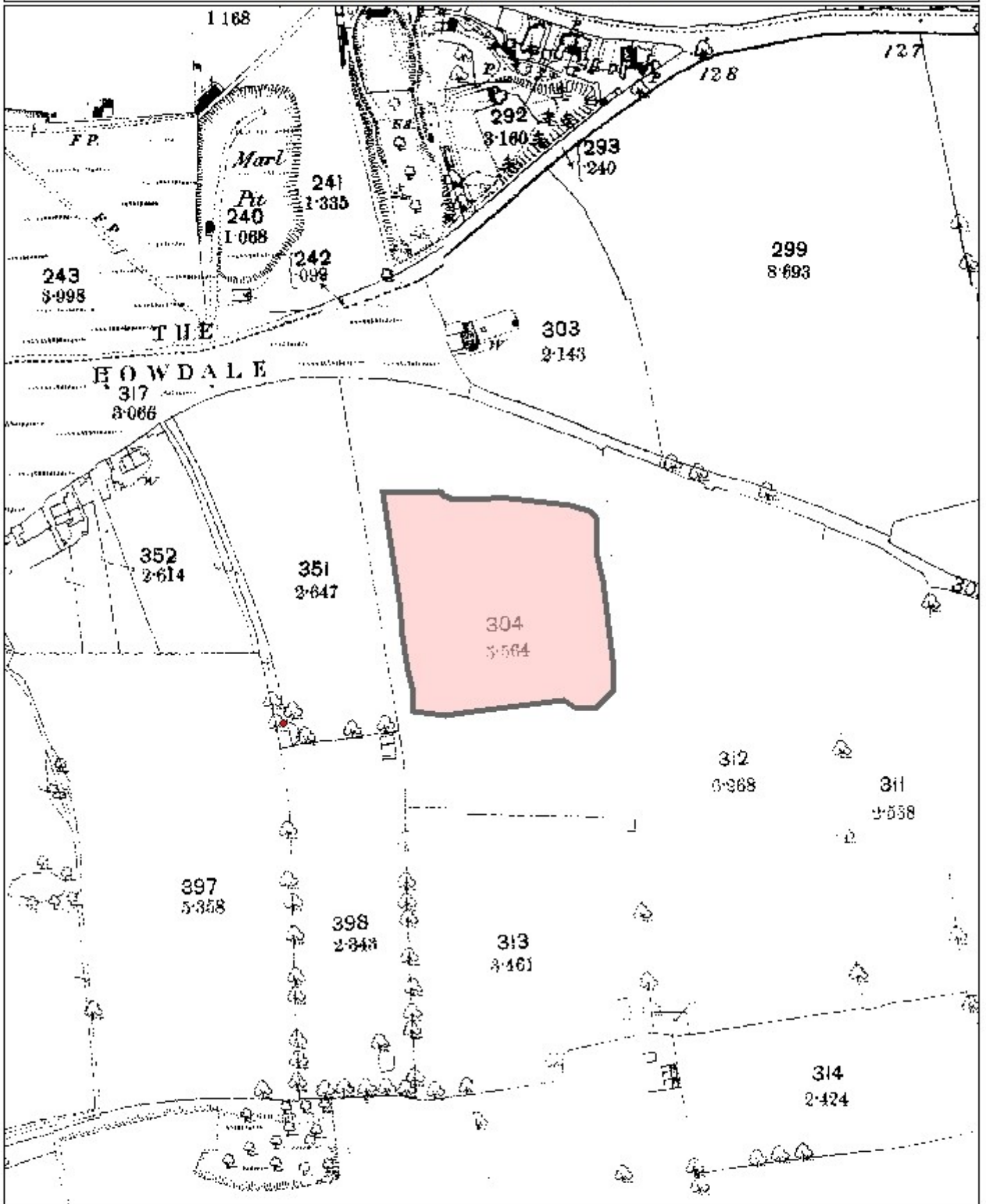
Photograph 10.



Appendix B Drawings

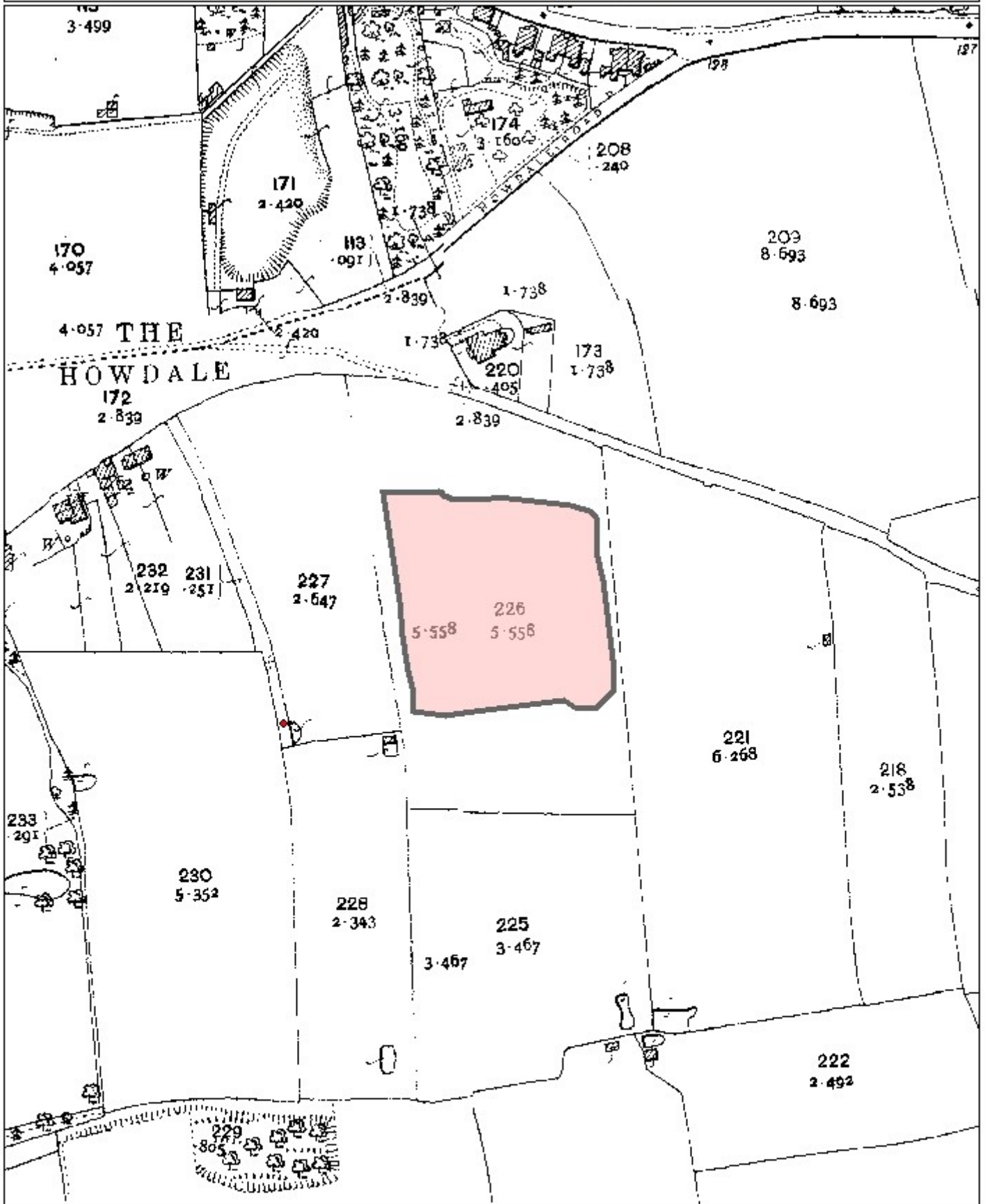
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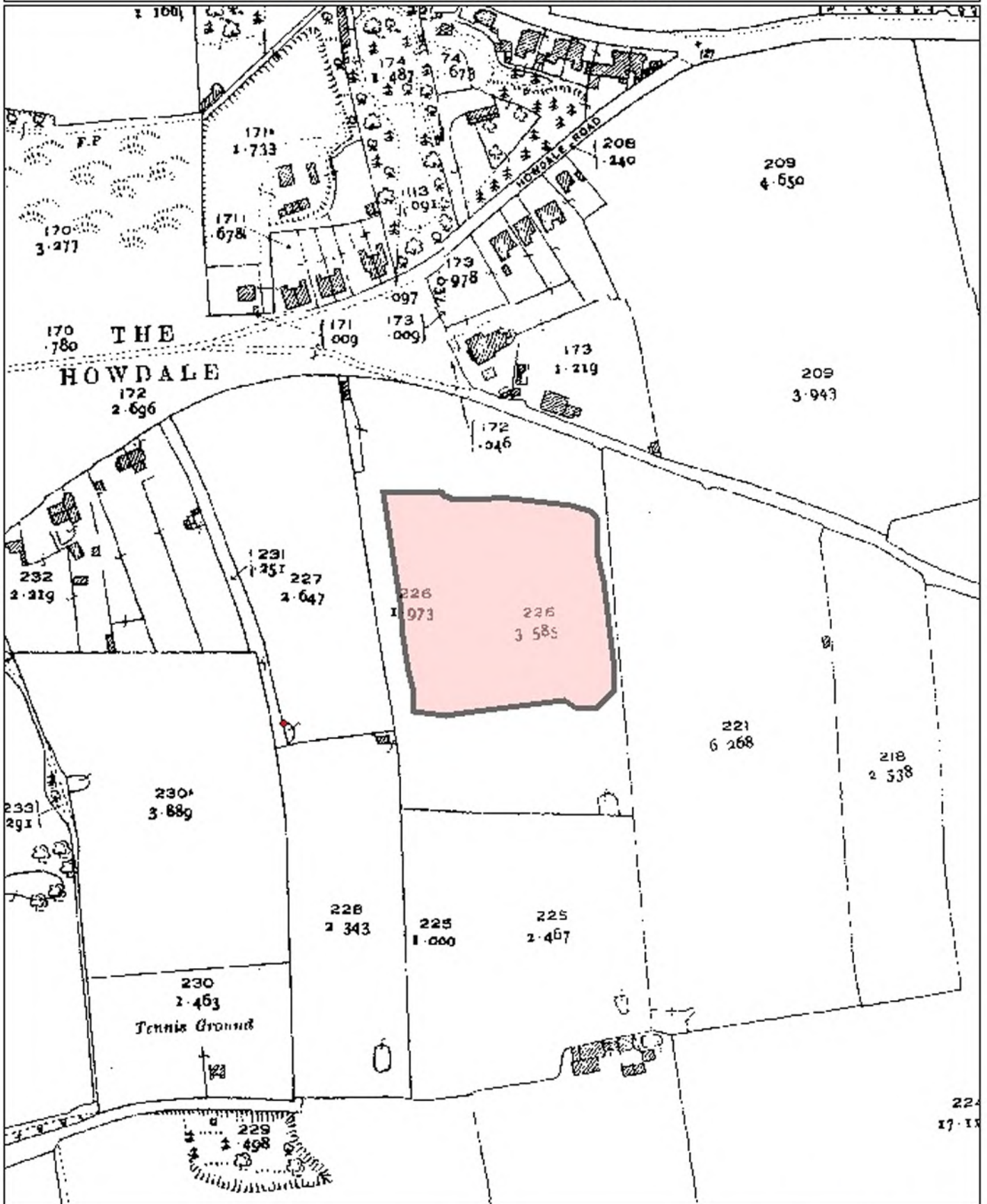
<p>Borough Council of King's Lynn & West Norfolk</p>  <p>Tel. 01553 616200 - Fax 01553 691663</p>	<p>Title</p> <p>Site Plan</p>		<p>Scale</p> <p>1:2,500</p>
			<p>Date</p> <p>July 2017</p>
	<p>Project / Details</p> <p>Rouse's Lane, Downham Market</p>	<p>Drawn by</p> <p>EH&H</p>	
		<p>Drawing / Reference Number</p> <p>CL 202/001</p>	





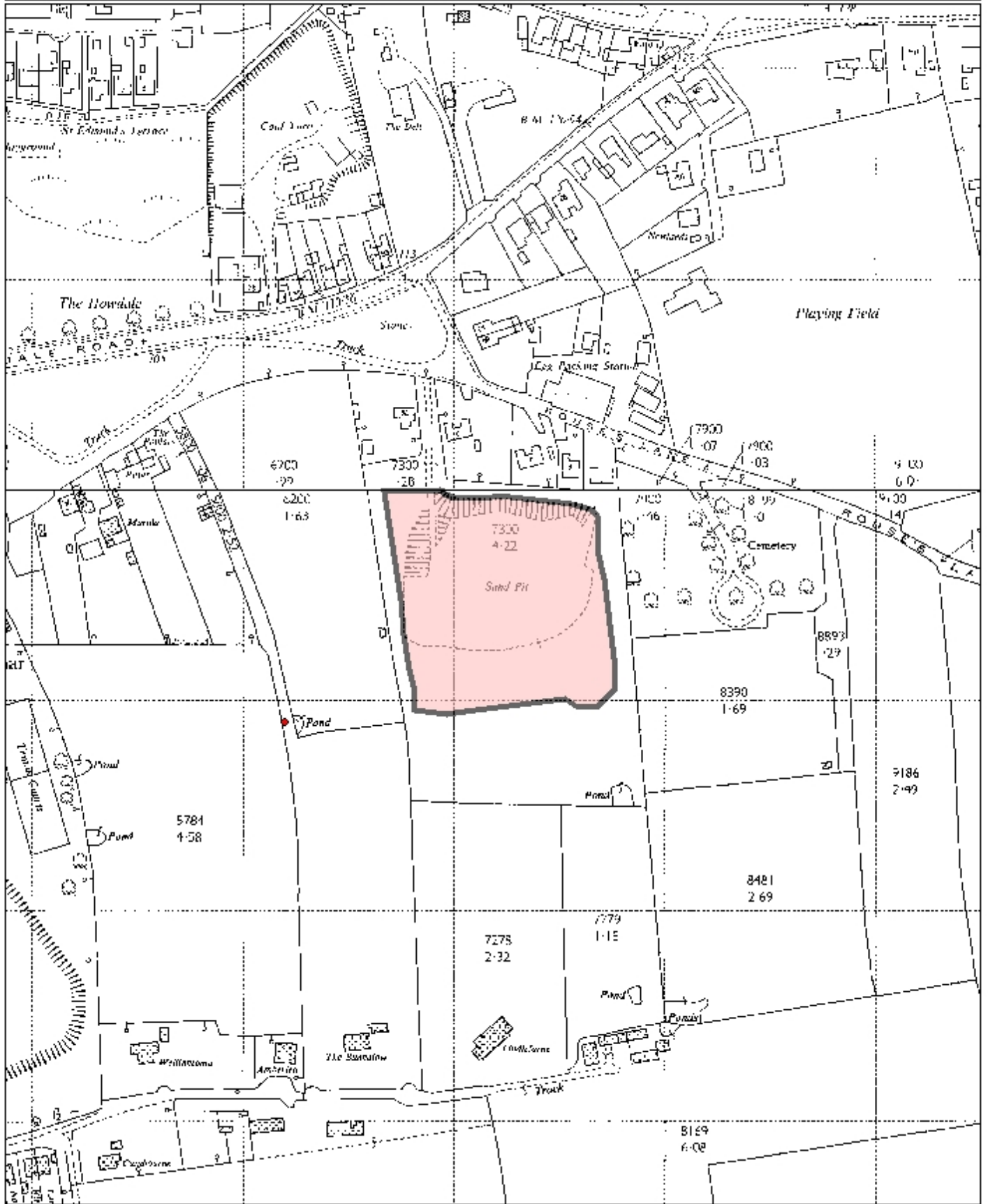
Borough Council of King's Lynn & West Norfolk 	Title Historic Map 1843-1893		Scale 1:2,500
	Project / Details Rouse's Lane, Downham Market		Date July 2017
Tel. 01553 616200 - Fax 01553 691663		Drawn by EH&H	Drawing / Reference Number CL202/002





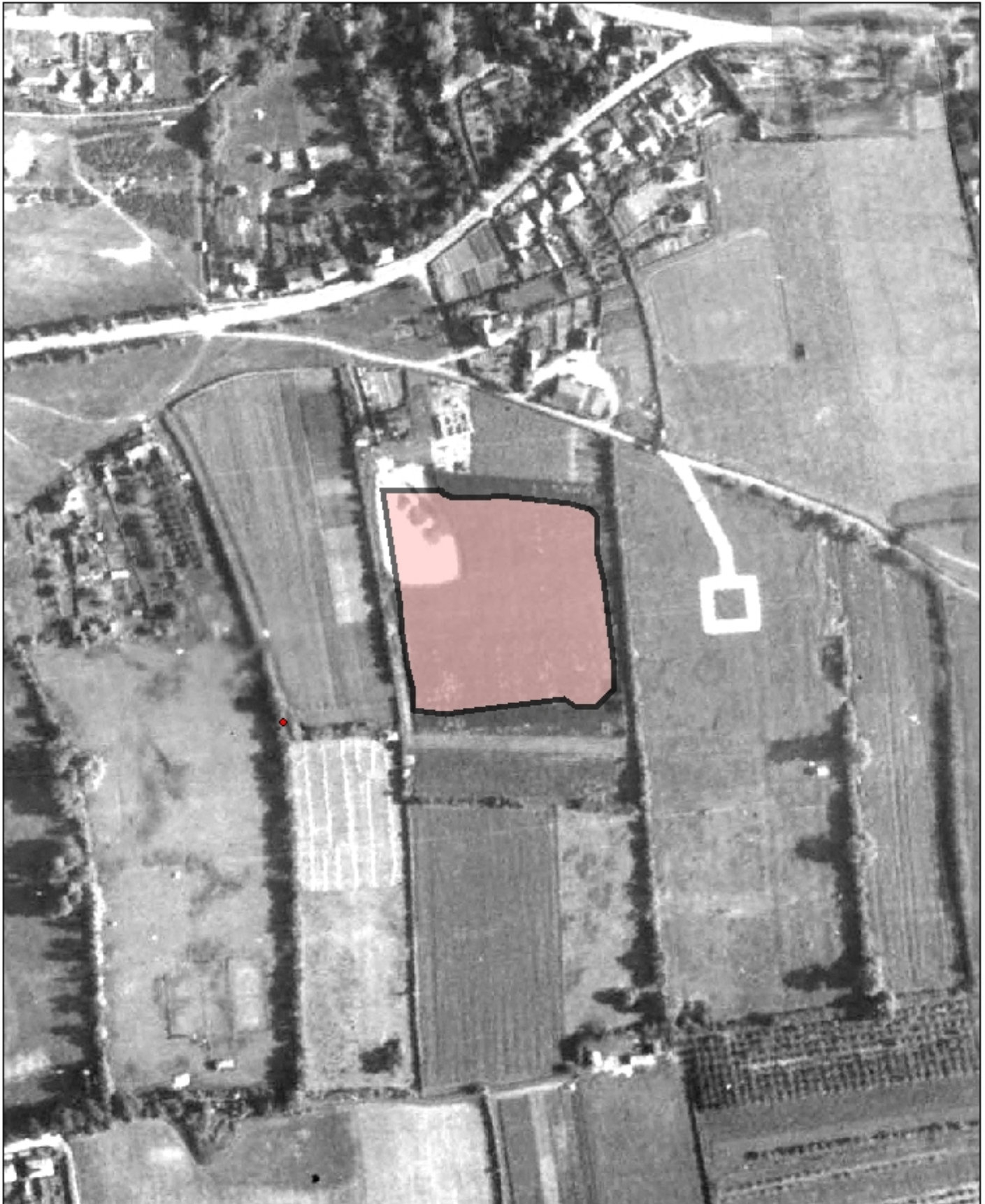
 Borough Council of King's Lynn & West Norfolk Tel. 01553 616200 - Fax 01553 691663	<p>Title</p> <p>Historic Map 1891-1912</p>		<p>Scale</p> <p>1:2,500</p>
	<p>Project / Details</p> <p>Rouse's Lane, Downham Market</p>		<p>Date</p> <p>July 2017</p>
		<p>Drawn by</p> <p>EH&H</p>	<p>Drawing / Reference Number</p> <p>CL 202/003</p>





 <p>Borough Council of King's Lynn & West Norfolk</p> <p>Tel. 01553 616200 - Fax 01553 691663</p>	<p>Title</p> <p>Historic Map 1904-1939</p>		<p>Scale</p> <p>1:2,500</p>
	<p>Project / Details</p> <p>Rouse's Lane, Downham Market</p>		<p>Date</p> <p>July 2017</p>
			<p>Drawn by</p> <p>EH&H</p>
			<p>Drawing / Reference Number</p> <p>CL 202/004</p>





 <p>Borough Council of King's Lynn & West Norfolk</p> <p>Tel. 01553 616200 - Fax 01553 691683</p>	<p>Title</p> <p>Historic Map 1945-1970</p>		<p>Scale</p> <p>1:2,500</p>
	<p>Project / Details</p> <p>Rouse's Lane, Downham Market</p>		<p>Date</p> <p>July 2017</p>
		<p>Drawn by</p> <p>EH&H</p>	
		<p>Drawing / Reference Number</p> <p>CL 202/005</p>	





<p>Borough Council of King's Lynn & West Norfolk</p>  <p>Tel. 01553 616200 - Fax 01553 691683</p>	<p>Title</p> <p>Aerial photograph 1940s</p>		<p>Scale</p> <p>1:2,500</p>
	<p>Project / Details</p> <p>Rouse's Lane, Downham Market</p>		<p>Date</p> <p>July 2017</p>
			<p>Drawn by</p> <p>EH&H</p>



<p>Borough Council of King's Lynn & West Norfolk</p>  <p>Tel. 01553 616200 - Fax 01553 691683</p>	<p>Title</p> <p>Aerial photograph 1999</p>		<p>Scale</p> <p>1:2,500</p>
	<p>Project / Details</p> <p>Rouse's Lane, Downham Market</p>	<p>Date</p> <p>July 2017</p>	<p>Drawn by</p> <p>EH&H</p>
			<p>Drawing / Reference Number</p> <p>CL 202/007</p>



<p>Borough Council of King's Lynn & West Norfolk</p>  <p>Tel. 01553 616200 - Fax 01553 691663</p>	<p>Title</p> <p>Aerial photograph 2006-2009</p>		<p>Scale</p> <p>1:2,500</p>
	<p>Project / Details</p> <p>Rouse's Lane, Downham Market</p>		<p>Date</p> <p>July 2017</p>
			<p>Drawn by</p> <p>EH&H</p>
			<p>Drawing / Reference Number</p> <p>CL202/008</p>

Appendix C. Norfolk County Council Planning Documents

NORFOLK COUNTY COUNCIL

**TOWNS AND COUNTRY PLANNING ACT, 1947
TOWNS AND COUNTRY PLANNING GENERAL DEVELOPMENT ORDER, 1966
APPLICATION FOR PERMISSION TO DEVELOP LAND (See Note 1)**

(This form is to be filled in by the applicant)

I, the undersigned, hereby apply for permission to develop the land shown on the site plan attached to this application in accordance with the provisions of the Towns and Country Planning Act, 1947, and the Towns and Country Planning General Development Order, 1966.

PART ONE - GENERAL

1. NAME AND ADDRESS OF APPLICANT

2. NAME AND ADDRESS OF OWNER

3. NAME AND ADDRESS OF AGENT (if any)

4. ADDRESS OF SITE

5. SITUATION OF PROPERTY

6. PURPOSE OF DEVELOPMENT

7. PARTICULARS OF THE DEVELOPMENT

8. STATEMENT OF THE APPLICANT'S REASONS FOR APPLYING FOR PERMISSION TO DEVELOP THE LAND

9. STATEMENT OF THE APPLICANT'S REASONS FOR APPLYING FOR PERMISSION TO DEVELOP THE LAND

PART TWO - PARTICULARS

10. PARTICULARS OF THE DEVELOPMENT

11. PARTICULARS OF THE DEVELOPMENT

12. PARTICULARS OF THE DEVELOPMENT

13. PARTICULARS OF THE DEVELOPMENT

14. PARTICULARS OF THE DEVELOPMENT

15. PARTICULARS OF THE DEVELOPMENT

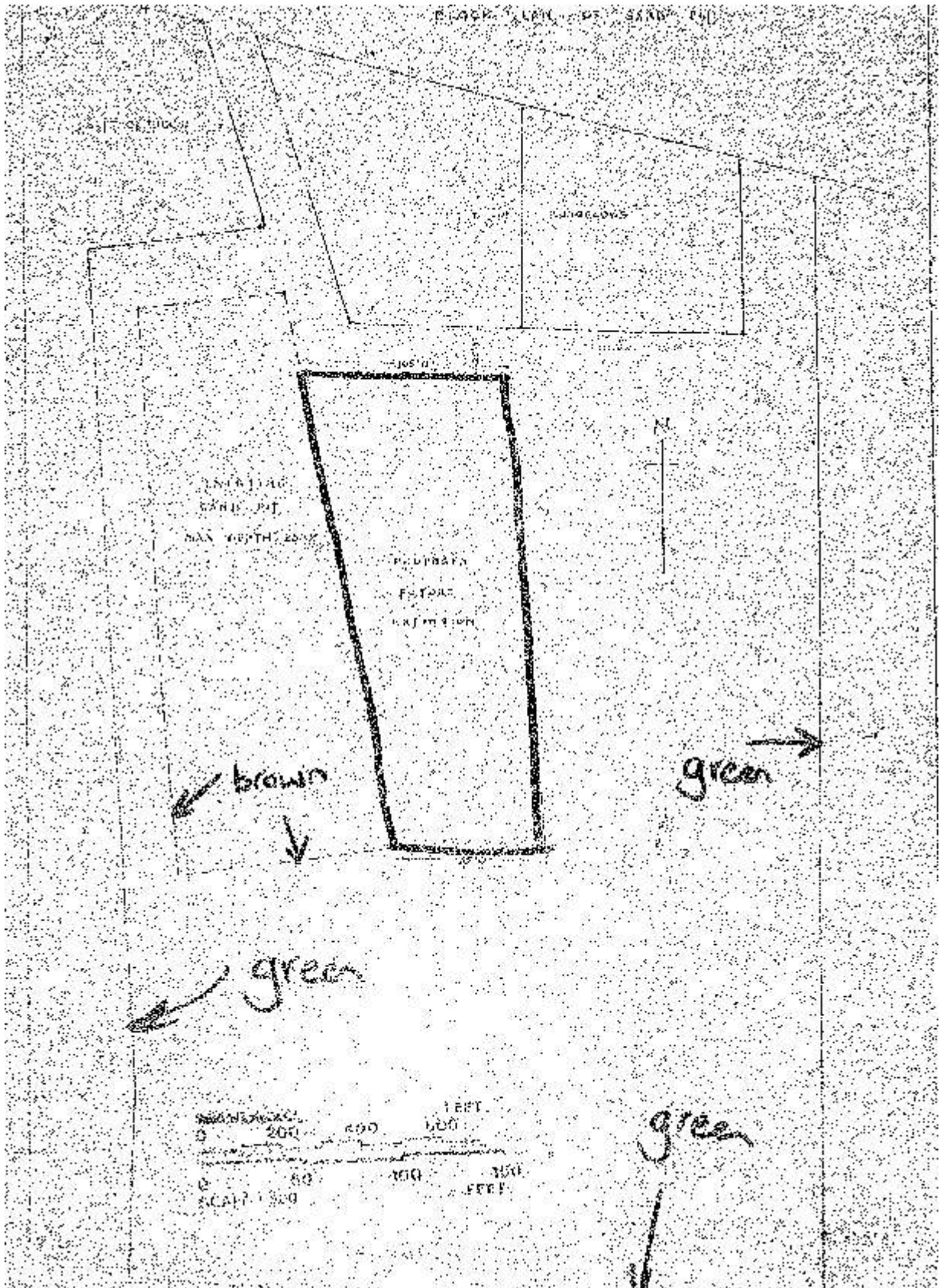
16. PARTICULARS OF THE DEVELOPMENT

17. PARTICULARS OF THE DEVELOPMENT

18. PARTICULARS OF THE DEVELOPMENT

19. PARTICULARS OF THE DEVELOPMENT

20. PARTICULARS OF THE DEVELOPMENT



Appendix D - Planning Permissions

Borough Council Planning History

- 15/01779/OM – Outline Application: Proposed residential development for 50 dwellings, garages and public open space

Norfolk County Council Planning History

- DU.114/1 – Mineral Extraction
- DU.276 – Extension to the mineral extraction

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Appendix E. Risk Assessment Methodology

The Model Procedures for the Management of Land Contamination (CLR11⁵) provide the technical framework for applying a risk management process when dealing with contaminated land.

The Borough Council's Contaminated Land Strategy has identified priority sites based on mapping and documentary information. The Contaminated Land Inspection Report collates all the existing information on the site and develops a conceptual site model to identify and assess potential pollutant linkages and to estimate risk.

The risk assessment process focuses on whether there is an unacceptable risk, which will depend on the circumstances of the site and the context of the decision. The Council has used a process adapted from CIRIA C552, Contaminated Land Risk Assessment, a guide to good practice⁶ to produce the conceptual site model and estimate the risk of harm to defined receptors. This involves the consideration of the probability, nature and extent of exposure and the severity and extent of the effects of the contamination hazard should exposure occur.

The probability of an event can be classified as follows:

- Highly likely: The event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution;
- Likely: It is probable that an event will occur, or circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;
- Low likelihood: Circumstances are possible under which an event could occur, but it is not certain even in the long term that an event would occur and it is less likely in the short term;
- Unlikely: Circumstances are such that it is improbable the event would occur even in the long term.

The severity of the hazard can be classified as follows:

- High: Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. Short term risk to an ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Contaminated Land Statutory Guidance, April 2012');
- Medium: Chronic damage to human health ('significant harm' as defined in 'Contaminated Land Statutory Guidance, April 2012'), pollution of sensitive water resources, significant change in an ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Contaminated Land Statutory Guidance, April 2012');

⁵ <https://www.gov.uk/guidance/land-contamination-risk-management>

⁶ <https://www.brebookshop.com/samples/142102.pdf>

- Low: Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Contaminated Land Statutory Guidance, April 2012'). Damage to sensitive buildings, structures or the environment.

Once the probability of an event occurring and hazard severity has been classified, a risk category can be assigned from the table below:

		Hazard		
		High	Medium	Low
Probability	High Probability	Very High Risk	High Risk	Moderate Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk
	Low Probability	Moderate risk	Moderate/Low Risk	Low Risk
	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk
Very High Risk	<p>There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening</p> <p>This risk, if realised, is likely to result in a substantial liability.</p> <p>Urgent investigation (if not undertaken already) and remediation are likely to be required.</p>			
High Risk	<p>Harm is likely to arise to a designated receptor from an identified hazard.</p> <p>Realisation of the risk is likely to present a substantial liability.</p> <p>Urgent investigation (if not undertaken already) if required to clarify the risk and to determine the potential liability. Some remedial work may be required in the longer term.</p>			
Moderate risk	<p>It's possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that harm would be relatively mild.</p>			
Moderate/Low risk	<p>It is possible that harm could arise to a designated receptor from an identified hazard. However, if any harm were to occur it is more likely that harm would be relatively mild.</p>			
Low Risk	<p>It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.</p>			
Very Low Risk	<p>There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is unlikely to be severe.</p>			

Appendix F. Determination of contaminated land – Contaminated Land Statutory Guidance, April 2012

Human Health

Category	
1	<p>The local authority should assume that a significant possibility of significant harm exists in any case where it considers there is an unacceptably high probability, supported by robust science-based evidence that significant harm would occur if no action is taken to stop it. For the purposes of this Guidance, these are referred to as “Category 1: Human Health” cases.</p> <p>Land should be deemed to be a Category 1: Human Health case where:</p> <ul style="list-style-type: none">(a) The authority is aware that similar land or situations are known, or are strongly suspected on the basis of robust evidence, to have caused such harm before in the United Kingdom or elsewhere; or(b) The authority is aware that similar degrees of exposure (via any medium) to the contaminant(s) in question are known, or strongly suspected on the basis of robust evidence, to have caused such harm before in the United Kingdom or elsewhere;(c) The authority considers that significant harm may already have been caused by contaminants in, on or under the land, and that there is an unacceptable risk that it might continue or occur again if no action is taken. Among other things, the authority may decide to determine the land on these grounds if it considers that it is likely that significant harm is being caused, but it considers either: (i) that there is insufficient evidence to be sure of meeting the “balance of probability” test for demonstrating that significant harm is being caused; or (ii) that the time needed to demonstrate such a level of probability would cause unreasonable delay, cost, or disruption and stress to affected people particularly in cases involving residential properties.
2	<p>Land should be placed into Category 2 if the authority concludes, on the basis that there is a strong case for considering that the risks from the land are of sufficient concern, that the land poses a significant possibility of significant harm, with all that this might involve and having regard to Section 1. Category 2 may include land where there is little or no direct evidence that similar land, situations or levels of exposure have caused harm before, but nonetheless the authority considers on the basis of the available evidence, including expert opinion, that there is a strong case for taking action under Part 2A on a precautionary basis.</p>
3	<p>Land should be placed into Category 3 if the authority concludes that the strong case described in 4.25(a) does not exist, and therefore the legal test for significant possibility of significant harm is not met. Category 3 may include land where the risks are not low, but nonetheless the authority considers that regulatory intervention under Part 2A is not warranted. This recognises that placing land in Category 3 would not stop others, such as the owner or occupier of the land, from taking action to reduce risks outside of the Part 2A regime if they choose. The authority should consider making available the results of its inspection and risk assessment to the owners/occupiers of Category 3 land.</p>

Category

- 4** The local authority should consider that the following types of land should be placed into Category 4: Human Health:
- (a) Land where no relevant contaminant linkage has been established.
 - (b) Land where there are only normal levels of contaminants in soil, as explained in Section 3 of this Guidance.
 - (c) Land that has been excluded from the need for further inspection and assessment because contaminant levels do not exceed relevant generic assessment criteria in accordance with Section 3 of this Guidance, or relevant technical tools or advice that may be developed in accordance with paragraph 3.30 of this Guidance.
 - (d) Land where estimated levels of exposure to contaminants in soil are likely to form only a small proportion of what a receptor might be exposed to anyway through other sources of environmental exposure (e.g. in relation to average estimated national levels of exposure to substances commonly found in the environment, to which receptors are likely to be exposed in the normal course of their lives).

Ecological system effects

Relevant types of receptor	Significant harm	Significant possibility of significant harm
<p>Any ecological system, or living organism forming part of such a system, within a location which is:</p> <ul style="list-style-type: none"> • A site of special scientific interest (under section 28 of the Wildlife and Countryside Act 1981) • A national nature reserve (under s.35 of the 1981 Act) • A marine nature reserve (under s.36 of the 1981 Act) • An area of special protection for birds (under s.3 of the 1981 Act) • A "European site" within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2010 • Any habitat or site afforded policy protection under paragraph 6 of Planning Policy Statement (PPS 9) on nature conservation (i.e. candidate Special Areas of Conservation, potential Special Protection Areas and listed Ramsar sites); or • Any nature reserve established under section 21 of the National Parks and Access to the Countryside Act 1949. 	<p>The following types of harm should be considered to be significant harm:</p> <ul style="list-style-type: none"> • Harm which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any substantial part of that location; or • Harm which significantly affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location. <p>In the case of European sites, harm should also be considered to be significant harm if it endangers the favourable conservation status of natural habitats at such locations or species typically found there. In deciding what constitutes such harm, the local authority should have regard to the advice of Natural England and to the requirements of the Conservation of Habitats and Species Regulations 2010.</p>	<p>Conditions would exist for considering that a significant possibility of significant harm exists to a relevant ecological receptor where the local authority considers that:</p> <ul style="list-style-type: none"> • Significant harm of that description is more likely than not to result from the contaminant linkage in question; or • There is a reasonable possibility of significant harm of that description being caused, and if that harm were to occur, it would result in such a degree of damage to features of special interest at the location in question that they would be beyond any practicable possibility of restoration. <p>Any assessment made for these purposes should take into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.</p>

Property effects

Relevant types of receptor	Significant harm	Significant possibility of significant harm
<p>Property in the form of:</p> <ul style="list-style-type: none"> • Crops, including timber; • Produce grown domestically, or on allotments, for consumption; • Livestock; • Other owned or domesticated animals; • Wild animals which are the subject of shooting or fishing rights. 	<p>For crops, a substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage. For domestic pets, death, serious disease or serious physical damage. For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage.</p> <p>The local authority should regard a substantial loss in value as occurring only when a substantial proportion of the animals or crops are dead or otherwise no longer fit for their intended purpose. Food should be regarded as being no longer fit for purpose when it fails to comply with the provisions of the Food Safety Act 1990. Where a diminution in yield or loss in value is caused by a contaminant linkage, a 20% diminution or loss should be regarded as a benchmark for what constitutes a substantial diminution or loss.</p> <p>In this section, this description of significant harm is referred to as an “animal or crop effect”.</p>	<p>Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question, taking into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.</p>
<p>Property in the form of buildings. For this purpose, “building” means any structure or erection, and any part of a building including any part below ground level, but does not include plant or machinery comprised in a building, or buried services such as sewers, water pipes or electricity cables.</p>	<p>Structural failure, substantial damage or substantial interference with any right of occupation. The local authority should regard substantial damage or substantial interference as occurring when any part of the building ceases to be capable of being used for the purpose for which it is or was intended.</p> <p>In the case of a scheduled Ancient Monument, substantial damage should also be regarded as occurring when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled.</p> <p>In this Section, this description of significant harm is referred to as a “building effect”.</p>	<p>Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question during the expected economic life of the building (or in the case of a scheduled Ancient Monument the foreseeable future), taking into account relevant information for that type of contaminant linkage.</p>

Controlled waters

Significant pollution of controlled waters

The following types of pollution should be considered to constitute significant pollution of controlled waters:

- (a) Pollution equivalent to “environmental damage” to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009, but which cannot be dealt with under those Regulations.
- (b) Inputs resulting in deterioration of the quality of water abstracted, or intended to be used in the future, for human consumption such that additional treatment would be required to enable that use.
- (c) A breach of a statutory surface water Environment Quality Standard, either directly or via a groundwater pathway.
- (d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminants (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC)5).

Significant possibility of significant pollution of controlled waters

Category

1	This covers land where the authority considers that there is a strong and compelling case for considering that a significant possibility of significant pollution of controlled waters exists. In particular this would include cases where there is robust science-based evidence for considering that it is likely that high impact pollution (such as the pollution described in paragraph 4.38) would occur if nothing were done to stop it.
2	This covers land where: (i) the authority considers that the strength of evidence to put the land into Category 1 does not exist; but (ii) nonetheless, on the basis of the available scientific evidence and expert opinion, the authority considers that the risks posed by the land are of sufficient concern that the land should be considered to pose a significant possibility of significant pollution of controlled waters on a precautionary basis, with all that this might involve (e.g. likely remediation requirements, and the benefits, costs and other impacts of regulatory intervention). Among other things, this category might include land where there is a relatively low likelihood that the most serious types of significant pollution might occur
3	This covers land where the authority concludes that the risks are such that (whilst the authority and others might prefer they did not exist) the tests set out in Categories 1 and 2 above are not met, and therefore regulatory intervention under Part 2A is not warranted. This category should include land where the authority considers that it is very unlikely that serious pollution would occur; or where there is a low likelihood that less serious types of significant pollution might occur.
4	This covers land where the authority concludes that there is no risk, or that the level of risk posed is low. In particular, the authority should consider that this is the case where: <ul style="list-style-type: none"> (a) No contaminant linkage has been established in which controlled waters are the receptor in the linkage; or (b) The possibility only relates to types of pollution described in paragraph 4.40 above (i.e. types of pollution that should not be considered to be significant pollution); or (c) The possibility of water pollution similar to that which might be caused by “background” contamination as explained in Section 3.