Borough Council of
King's Lynn &
West Norfolk

Environment and Planning

Contaminated Land Inspection Report

Zone C, RAF Downham Market,

Bexwell Road,
Downham Market, Norfolk

February 2021

Reference no. 021427/C

Written by

Fabia Pollard
Scientific Officer

Reviewed by

Philip Price
Senior Environmental Quality Officer (Land)

Approved by

Dave Robson
Environmental Health Manager

Borough Council of King's Lynn and West Norfolk
King's Court
Chapel Street
King's Lynn
Norfolk
PE30 1EX

Tel: 01553 616200
Email: environmentalquality@west-norfolk.gov.uk

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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 identified the former RAF base at Downham Market as a site which requires detailed inspection.

This site is a former RAF base, which operated during World War 2. The site has a mixed use including farmland, residential and industrial. 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.

A desk study, site walkover and preliminary risk assessment were carried out by the Environmental Quality Team. From the evidence gathered the following can be stated:

- The site was a RAF base from 1942 to 1946.
- The runways and barracks have been returned to agricultural use or redeveloped for housing.
- The former technical area is now being used as an industrial estate.

The site has been separated into zones dependent upon its previous and present use:

- Zone A – Runways and perimeter track, agricultural
- Zone B – Technical Area and fuel dump, industrial & commercial
- Zone C – Runways and taxi ways, residential dwellings
- Zone D – Bomb dump, wooded area
- Zone E – Dormitory site, agricultural, commercial and residential

This report relates to Zone C.

Following closure of the airfield, the land within Zone C was returned to agriculture before being redeveloped for housing. Therefore, people live on the site and use areas of open land for informal recreation. Garden sizes are generally small. There are houses and open land property both on site and adjacent and extensive agricultural land to the north and south of the site. There are commercial properties to the east of the site. There are no relevant types of receptor as set out in Table 1 of the statutory guidance within 1km of the site. The local geology is classed as a highly productive aquifer, but the site is not within a Source Protection Zone (SPZ). There are no surface water features on or close to the site.

From the available evidence it is considered that limited potential sources of contamination were identified in Zone C. Therefore, there is low or minor potential hazard from the sources of contamination identified in the desk study and site walkover.

There was no evidence 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 or inhalation), Property,

Environmental Receptors or Controlled Water as defined in the statutory guidance. Risk at this site is classified as LOW or VERY LOW.

Statutory Guidance states that 'If the authority considers there is little reason to consider that the land might pose an unacceptable risk, inspection activities should stop at that point.' In such cases the authority should issue a written statement to that effect. This report forms that written statement.

On the basis of its assessment, the authority has concluded that the land does not meet the definition of contaminated land under Part 2A and is not considered contaminated land. No further assessment of the site is considered necessary unless additional information is discovered or if the site is considered for redevelopment.

1. Introduction

This report details a review of information and written statement about part of the former RAF base at Downham Market, and provides a conclusion on the risk to human health, property, groundwater and the wider environment. The southwestern end of the former airfield (Zone C) has been redeveloped into residential properties with domestic gardens and forms the focus of this report.

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 contaminated land inspection report provides this written statement.

2. Desk Study Information

Location

The site's location is shown in drawing 101 in Appendix B. The grid reference for the centre of the site is 562404, 303435 and the nearest postcode is PE38 9LJ.

Initial Prioritisation Score

In the borough council's initial prioritisation, the site was assessed as potentially having a 'Very High' priority ranking due to the former military use and the potential risk to surface water, groundwater and human health.

Previous Site Usage

The site was an area of farmland which was then converted into a RAF base in 1942. The base had three concrete runways, with associated hardstanding, hangers, bomb dump and associated technical buildings. The station also had accommodation for approximately 2,000 people. The base operated a Fog Intensive Dispersal Operation (FIDO) which was located in the eastern corner of the site. The base closed in 1946.

Zone C consisted of fields prior to the development of the airfield. During the life of the airfield this zone contained part of the perimeter track which circled the site, Nissen Huts, two armament stores, a latrine, a balloon launching point, a fuzing point (ultra-heavy) and four transformers.

Present Site Usage

Zone C is now occupied by residential dwellings with domestic gardens and areas of open grassland and scrub.

Ownership

Zone C is in multiple ownership by individual homeowners and landowners. This report will be made available to the site owners and to residents.

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 varies between 34 and 37 meters above ordnance datum (maOD).

The bedrock geology is Carstone Formation - Sandstone.
The Carstone Formation is greenish grey clayey pebbly sandstone which weathers to rusty brown sand.

The superficial geology is Lowestoft Formation - Diamicton[1]
The Lowestoft Formation was deposited by glacial action. The deposits are a mixture of clay, sand, gravel, and boulders varying widely in size and shape and containing chalk and flint.

Hydrogeology

The Lower Greensand Group is classed as a highly productive aquifer with significant intergranular flow. The site is not located within a groundwater Source Protection Zone (SPZ).

The Principal Aquifer comprises the Carstone Formation, which has an intermediate permeability allowing it to transmit potential pollutants. The Groundwater Vulnerability Map (England) classes the aquifer as medium-high vulnerability.

The surface deposits are the Lowestoft Formation; a secondary aquifer of varying permeability.

Hydrology

The Cut Off Channel is approximately 1.8km west of the site.

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

Local Authority Pollution Prevention and Control Regulations

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

DEFRA's MAGIC website records

MAGIC website records the following

- Soilscape (England) describes soils as slightly acid loamy and clayey soils with impeded drainage
- The site is in an area designated as a Nitrate Vulnerable Zone for both surface water and groundwater.

[1] BGS website: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

Historic Maps

E-map Explorer

Enclosure Map 1800 – 1850 – Not available.

Tithe map circa 1840 – The site is part of a series of fields numbered 1, 3, 28, 29 and 212.

Ordnance Survey 1st edition. 1879-1886 – The site is generally as depicted on the Tithe Map but the fields are not numbered.

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

1843 – 1893: The site was as depicted on the Ordnance Survey 1st edition with some fields numbered. A small pit appears to have been excavated in the northern section of the site with a track leading to it and a lane is depicted running north-south in the east of Zone C.

1891 – 1912: The site was as depicted above.

1904 – 1939: The site was as depicted above.

1919 – 1943: Not available.

1945 – 1970: The site is shown as containing seven houses with gardens running along the northern side of the Bexwell Road. The A10 is shown running approximately along the route of the former lane. Bexwell Road appears to have been widened and a roundabout is depicted at the junction of the two roads. The Reservoir is shown in its current location with an area of rough grassland and potentially associated plant buildings to the west of the reservoir.
Playing fields and a bowling green are shown in the south east of the site. The surrounding area shows extensive wartime and post-war development: a housing estate and school to the west and the airfield buildings are shown and labelled 'Airfield Farm' and 'depot'.

1970 – 1996: Not available.

Aerial Photographs and maps

Undated – An airfield record site plan (RSP) was obtained from The RAF Museum, Hendon and has been scanned and geo-corrected to align it to ordnance survey data. This allows a comparison of the airbase features to current mapping. The RSP shows that Zone C contained part of the perimeter track, a small area of runway, an aircraft dispersal point, Nissen Huts, two armament stores, a latrine, a balloon launching point, a fuzing point (ultra-heavy), respirator training chamber and four transformers.

1945 – 1946 MOD Aerial Photograph - The site is generally as depicted on the airfield record site plan. The taxiway is visible as are the Nissen Huts, transformers and the armament stores. Soft landscaping appears to consist of mown grass.

1988 Aerial Photograph – The site is similar to that depicted in the 1945 – 1970 maps. The seven residential dwellings are in existence along Bexwell Road and the covered reservoir and can be seen along with the playing field which appear to be lined to the north and east side with trees. The remainder of the site has been returned to agricultural fields or grassland.

1999 Aerial Photograph – The site is as depicted above.

2006 – 2009 Aerial Photograph – The western part of the site has mostly been developed into a residential housing estate with gardens and associated public open space. The remainder of Zone C is as depicted on the earlier aerial photograph.

2017 Aerial Photograph – The western part of the site has now been fully developed into a residential housing estate including previously open land in the centre and north of the estate. A surfaced yard and large barn or shed is shown to the rear of the houses in the east of Zone C along Bexwell Road.

Planning History
A number of planning application exist in the Borough Council records for the site. These are mostly related to the development of land for housing. Details of these applications are presented in Appendix D and further details are available on the Borough Council planning website.

Environment Agency Records
Not consulted as the site does not contain any operations within their remit.

Norfolk County Council Records
The only planning applications recorded on the County Councils planning system relate to Downham Market High School which is approximately 350m to the west of the site.

3. Site Walkover
A site walkover was carried out by an Environmental Quality Officer of the Borough Council of King's Lynn and West Norfolk in February 2020. The site is predominantly developed and appeared as shown on current OS mapping. No visible or olfactory signs of contamination were observed.

The area to the east of the A10 (photographs 1-7) consists of an open field and 5 houses with associated land and is bordered by Bexwell Road to the south. The field area was rough grassland as shown in photo 1 & 2. Photos 3 & 4 show an area of former taxiway consisting of concrete with a thin layer of tarmac. The base of a former building is situated on an area of hardstanding (possibly a sugar beet pad) close to the field gate (photo 5). This former building could not be matched to the RAF plan and is thought to be post-war. The 5 houses (photos 6 & 7) have substantial gardens at the front and rear and associated land. There is a large storage yard and barn to the rear of three of the properties. Surrounding land is in commercial or agricultural use.

The area to the west of the A10 (photographs 8-13) consists of housing (photo 8) with modest gardens, a small play area (photo 9), a rough track (photo 10) which

follows the line of the former taxiway, informal recreation area (photos 11 & 13) and a reservoir. All vegetation appeared healthy at the time of the walkover and the only visible remnants of former structures were some broken concrete (photo 12) forming a rough embankment along the east west line of poplar trees that form part of the boundary between the southern informal recreation area and the neighbouring arable field. The reservoir is grass covered, fenced and maintained for drinking water supply.

Location of receptors

Humans

Zone C is predominantly a residential area with people living on the site. There are informal recreation areas where there is evidence of frequent use by children, walkers and dog walkers. Residential garden areas are generally modest in size except for the properties along Bexwell Road which have substantial gardens at the front and rear.

Property

There are houses and open land both on and adjacent to the site, and extensive agricultural land to the north and south of the site. There are commercial properties to the east of the site.

Environment

There are no relevant types of ecological receptor as set out in Table 1 of the statutory guidance within 1 km of the site.

Controlled Water – Groundwater and Surface Water

The local geology is classed as a highly productive aquifer, but the site is not within a groundwater Source Protection Zone (SPZ). Surface deposits, consisting of the Lowestoft Formation, are a secondary aquifer of varying permeability. The Cut Off Channel is over 1 km to the west of the site. No surface water features were observed on site. The reservoir on site is purpose built and self-contained.

4. Contaminated Land Risk Assessment

Preliminary Risk Assessment

Preliminary risk assessment (PRA) is the first tier of risk assessment that develops the outline conceptual model (CM) and establishes whether there are any potentially unacceptable risks. The approach set out in CIRIA C552[2] and Land Contamination: Risk Management[3] has been used to assess the site in the following manner:

1. Identify the hazard - establish contaminant sources.
2. Assess the hazard - use a source-pathway-receptor (S-P-R) pollutant linkage approach to find out if there is the potential for unacceptable risk.
3. Estimate the risk - predict what degree of harm or pollution might result and how likely it is to occur by using the tiered approach to risk assessment.
4. Evaluate the risk - decide whether a risk is unacceptable.

Zone C of the former airfield site was a RAF base which contained multiple uses that could be a source of contamination. The probability of a contamination event occurring has been assessed dependent upon the specific uses identified from the RAF airfield record site plan (RSP) and the sensitive receptors located on the site.

Assessment of hazard

The assessment of the site using historic maps, aerial photography and a site walkover, shows that the site was a former RAF airfield which had runways, a technical centre, and associated barracks. When the site was vacated the majority of the site reverted back to the original owners and predominantly to agriculture. It is reported[4] that following closure of the airfield, the three concrete runways were dug up with much of the concrete used for the base of the A10 Downham Market bypass. The southwestern end of the airfield has been redeveloped into residential properties with domestic gardens (Zone C).

From historical maps and plans and other documentary sources, the following historical uses have been identified in Zone C:

- Perimeter track, runway and aircraft dispersal point – The hard surface runways were built along the centre of grass strips and connected together by a hard surface perimeter track. The aircraft dispersal area was a small area of hardstanding designed to prevent congestion on the main perimeter track. The dispersal area is also shown on the RAF plan as having contained a 70,000 gallon bulk aviation petrol installation.
- Nissen Huts, ‘gas chamber’, latrine - Metal-framed and clad Nissen hutting was universally used on many airfields from 1940. Later in 1942, the Interdepartmental Committee on Hutting designed and produced huts. Asbestos hutting designed by Uni-Seco Ltd (asbestos and plywood), Turners Asbestos (the curved asbestos hut), and the Universal Handcraft hut were all introduced at this time. It is understood that the majority of the huts at RAF Downham Market were corrugated steel structures bolted onto the concrete

[2] Contaminated land risk assessment. A guide to good practice (C552D), 2001, D J Rudland, R M Lancefield and P N Mayell, CIRIA
[3] Land Contamination: Risk Management, Environment Agency, 2020 https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks/stage-1-risk-assessment
[4] Strike Hard, A bomber airfield at War, John B Hilling, 1995, Alan Sutton Publishing

slab. The ‘gas chamber’ was for the training of airmen in the correct use of respirators against tear-gas. The latrine may have been connected to foul drainage or could have been of the earth or chemical closet type.

- Two armament stores, a balloon launching point - Bomber stations had extensive storage facilities for bombs, fuses and other ammunition. These were in separate groups, sited remote from other structures. The balloon launching point is understood to have been for meteorological purposes.
- Four transformers; step-up transformers were sited around the airfield and dispersed sites to maintain a constant voltage. These were fed from the distribution units located in the intake sub-station.
- Fuzing point - Bombs would have been transported around the site on bomb carts from the remote bomb store in woodland in the north east of the airfield. The bombs would then be taken to the Ultra Heavy Fusing point building. This building could accommodate a bomb cart 'train' of high explosive bombs under cover where the fuses were added, having been collected from the Component stores. This method was used to safely store the components of the bomber armament.

Potential sources of contamination

1. The movement of fuel around the site and storage and fuelling operations could have given rise to **petroleum hydrocarbon** contamination from spillages and leaks, especially in the vicinity of the former bulk aviation petrol installation.
2. The former electricity transformers could result in contamination due to spillage or leakage of oils containing **polychlorinated biphenyls** (PCBs).
3. Buildings and pipework may have used **asbestos materials** which could enter soils following demolition.

Petroleum hydrocarbons & polychlorinated biphenyls

Free petroleum hydrocarbon product and PCBs which may have leaked from historic fuelling operations and electrical transformers would either be impeded by the concrete hardstanding or flow through cracks and downwards under gravity. As the soils and bedrock are coarse grained sands and gravels in this area, it is likely that a great degree of migration could have occurred. PCBs are less volatile, have a low water solubility, can adsorb onto soil particles and can present a hazard to eco-systems and transfer along the food chain. However, the airfield was in operation for a limited time and considerable time has elapsed since operations ceased, in which time natural processes could degrade hydrocarbon contamination. The hazard is judged as MINOR for petroleum hydrocarbons and LOW for PCBs.

Asbestos materials

As the airfield site was dismantled to enable ownership to be returned to the previous owners for agricultural use, the site clearance in Zone C is assumed to have been overseen by the RAF with any hazardous materials removed from site. The presence of asbestos materials in soils was not reported during construction of the residential area. Therefore, the hazard is judged as LOW

Assessment of probability of contamination event

From the information gathered it is considered that there is low or minor potential hazard from the sources of contamination identified in the desk study and site walkover.

Human Health

Much of the site is in residential use and contains a significant amount of hard cover. The houses generally have modest gardens and do not appear to have substantial areas for growing vegetables. The older houses with larger gardens are at the edges of the former airfield in locations where potential sources of contamination have not been identified. Informal recreation in Zone C consists of walking and dog walking and an equipped children's play area. These uses do not involve a high level of contact with exposed soils.

Consideration was given to taking soil samples from within the location of the former transformers and fuel tank. However, as much of this location is now covered by a road and car-parking, it is by no means certain that even over a longer period of time, contact with any potential ground contamination would take place and it is less likely in the short term. No evidence of contamination was reported during construction of the houses. The small grassland does not include any exposed soil and is in a location where potential sources of contamination have not been identified. The probability of a contamination event occurring is considered to be LOW.

Property

The only property on site are the houses and crops which are grown in the neighbouring fields. From observations during the site walkover and from aerial photographs, no vegetative stress was noted in any of the natural or cultivated vegetation. No contaminants have been identified which are likely to attack building materials. Therefore, the likelihood of contamination affecting property is considered to be LOW.

Environment

There are no relevant types of ecological receptor as set out in Table 1 of the statutory guidance within 1 km of the site. No contamination event could occur which could affect this receptor.

Controlled water - Groundwater

The local geology is classed as a highly productive aquifer, but the site is not within a groundwater Source Protection Zone (SPZ). There have been no reports of pollution of sensitive water resources as a result of spills or leaks from the site and no evidence has been found of any continuing source of contamination. Therefore, even though there is a potential pollutant linkage, the likelihood of a pollution event to groundwater is considered to be LOW.

Controlled water - Surface water

No surface water features were observed on site and the closest major water feature is over 1 km for the site. The reservoir on site is purpose built and self-contained. Therefore, a contaminant linkage is not present and the likelihood of a pollution event to surface water is UNLIKELY

Conceptual site model

The conceptual site model (Table 1) shows the sources, exposure pathways and receptors identified and the subsequent risk classification. As the 'ecological' receptor is not present, this is not considered further.

Table 1: Preliminary conceptual site model - Zone C

Source	Pathway	Receptor	Probability	Hazard	Risk
Petroleum hydrocarbons	Direct contact Inhalation	Humans	LOW	MINOR	VERY LOW RISK
	Direct contact	Property	LOW	MINOR	VERY LOW RISK
	Direct contact	Groundwater	LOW	MINOR	VERY LOW RISK
	Direct contact	Surface water	LOW	MINOR	VERY LOW RISK
Polychlorinated biphenyls	Direct contact Inhalation	Humans	LOW	LOW	LOW RISK
	Direct contact	Property	LOW	LOW	LOW RISK
	Direct contact	Groundwater	LOW	LOW	LOW RISK
	Direct contact	Surface water	UNLIKELY	LOW	VERY LOW RISK
Asbestos materials	Inhalation	Humans	LOW	LOW	LOW RISK
Notes *Low risk - 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.* *Very low risk - 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. Further explanation is provided in Appendix D Risk Assessment Methodology.*					

Risk Estimation and Outcome of Preliminary Risk Assessment

No significant pollutant linkage was identified. Risk at this site is classified as LOW or VERY LOW as no contaminant linkage has been identified which gives rise to a level of risk sufficient to determine the land as contaminated land. Therefore, further investigation is not considered necessary.

5 Outcome of Preliminary Risk Assessment

Conclusion – risk evaluation

From the documentary information gathered and observations made during the site walkover, it is known that the site was agricultural land, then an RAF airfield which was in operation during WW2 for approximately 4 years. Following closure of the airfield, the land within Zone C was returned to agriculture before being redeveloped for housing.

There was no evidence 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 or inhalation), Property, Environmental Receptors or Controlled Water as defined in the statutory guidance. Risk at this site is classified as LOW or VERY LOW. CIRIA C552 suggests that where risk is low, that any harm, if realised would at worst be mild.

Human Health & Property

No evidence of significant harm to buildings or crops was identified. The site is assessed as Category 4: Human Health as set out in the Statutory Guidance, and no further assessment is considered necessary with regards to the risk to human health or property.

Controlled Waters

No further inspection is required with regards to controlled waters as it is considered that there is no reasonable possibility that a significant contaminant linkage exists as set out in the Statutory Guidance.

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

Statutory Guidance states that 'If the authority considers there is little reason to consider that the land might pose an unacceptable risk, inspection activities should stop at that point.' In such cases the authority should issue a written statement to that effect. This report forms that written statement.

Based on its assessment, the authority has concluded that the land does not meet the definition of contaminated land under Part 2A and is not considered contaminated land.

Further Action

This assessment is based on the site's current use and is valid providing no changes are made to the site's use.

No further assessment of the site is considered necessary under Part 2A unless additional information is discovered or if changes are made to the site. Any redevelopment would require an assessment of contamination as part of the application for planning permission.

Appendices

Appendix A Site Photographs

Photograph 1. Rough grassland

Photograph 2. Rough grassland

Photograph 3. Former taxiway

Photograph 4. Former taxiway

Photograph 5. Footprint of a former building

Photograph 6. Houses east of the A10

Photograph 7. Houses east of the A10

Photograph 8. Housing west of the A10

Photograph 9. Small play area

Photograph 10. Rough track west of the A10

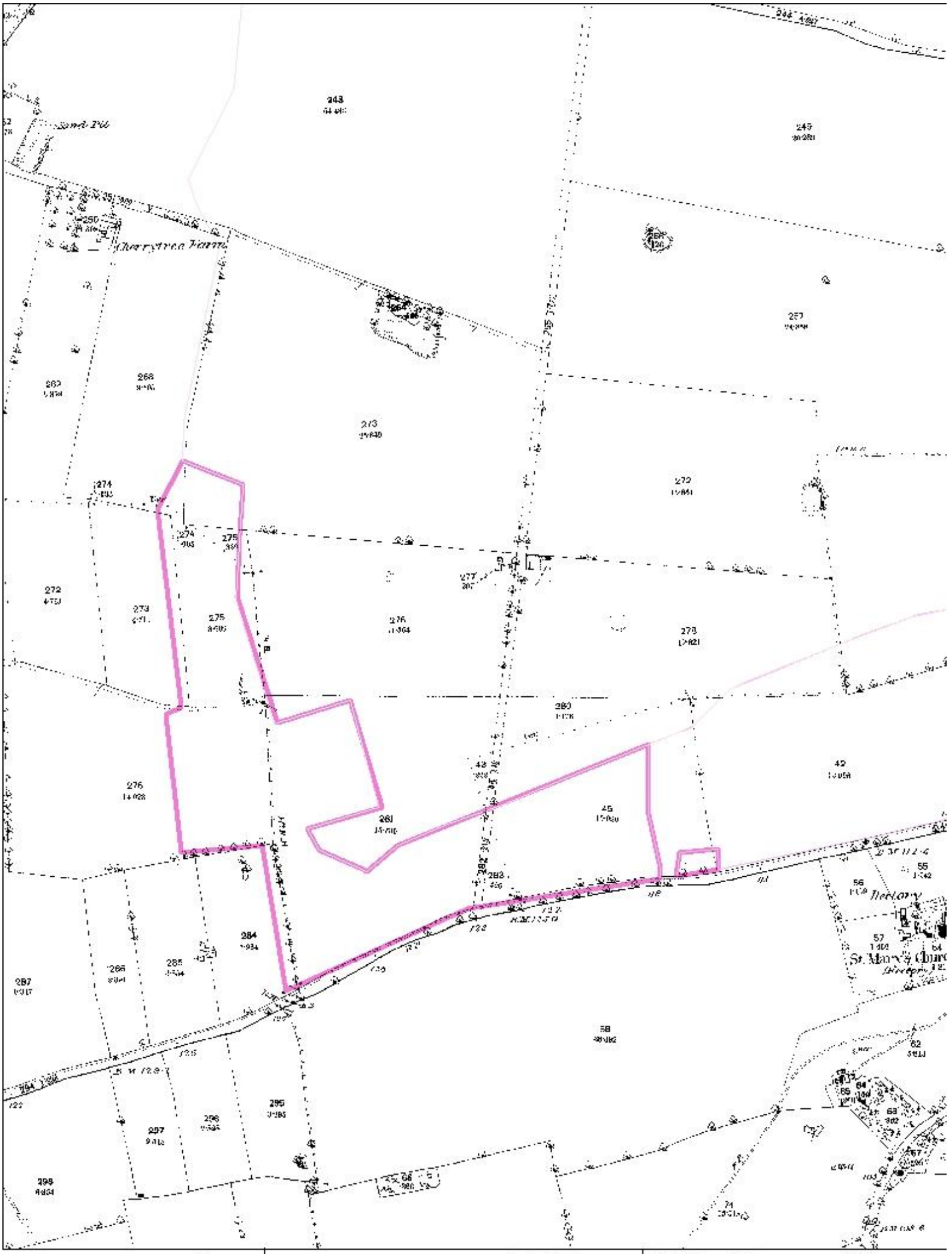
Photograph 11. Informal recreation area

Photograph 12. Broken concrete structure on the boundary of the recreation area

Photograph 13. Informal recreation area

Appendix B Drawings

Borough Council of King's Lynn & West Norfolk	Title: RAF Downham Market Zone C	Project / Details: Part 2A	Drawn by: FAP; Date: Feb 2020; Scale: 1:3,500; Drawing / Reference Number: 101: Location Plan	N W E S



Borough Council of
King's Lynn &
West Norfolk

Title

OS Mapping
1843 - 1893

Project / Details

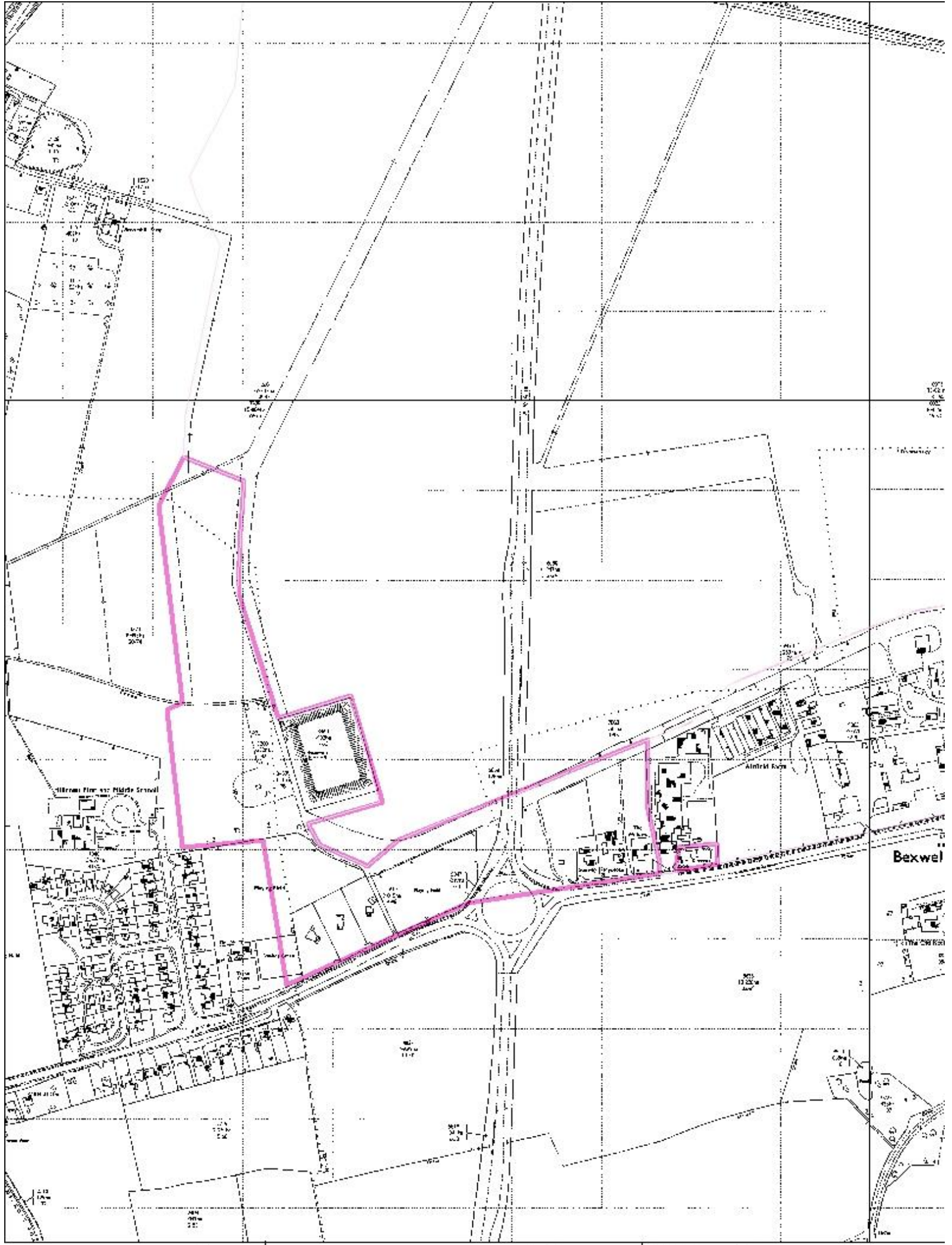
Downham Market
Zone C

Drawn by
FAP

Date
February 2020

Scale
1:5,000

Drawing / Reference Number
102



Borough Council of
King's Lynn &
West Norfolk

Title

OS Mapping
1945 - 1970

Project / Details

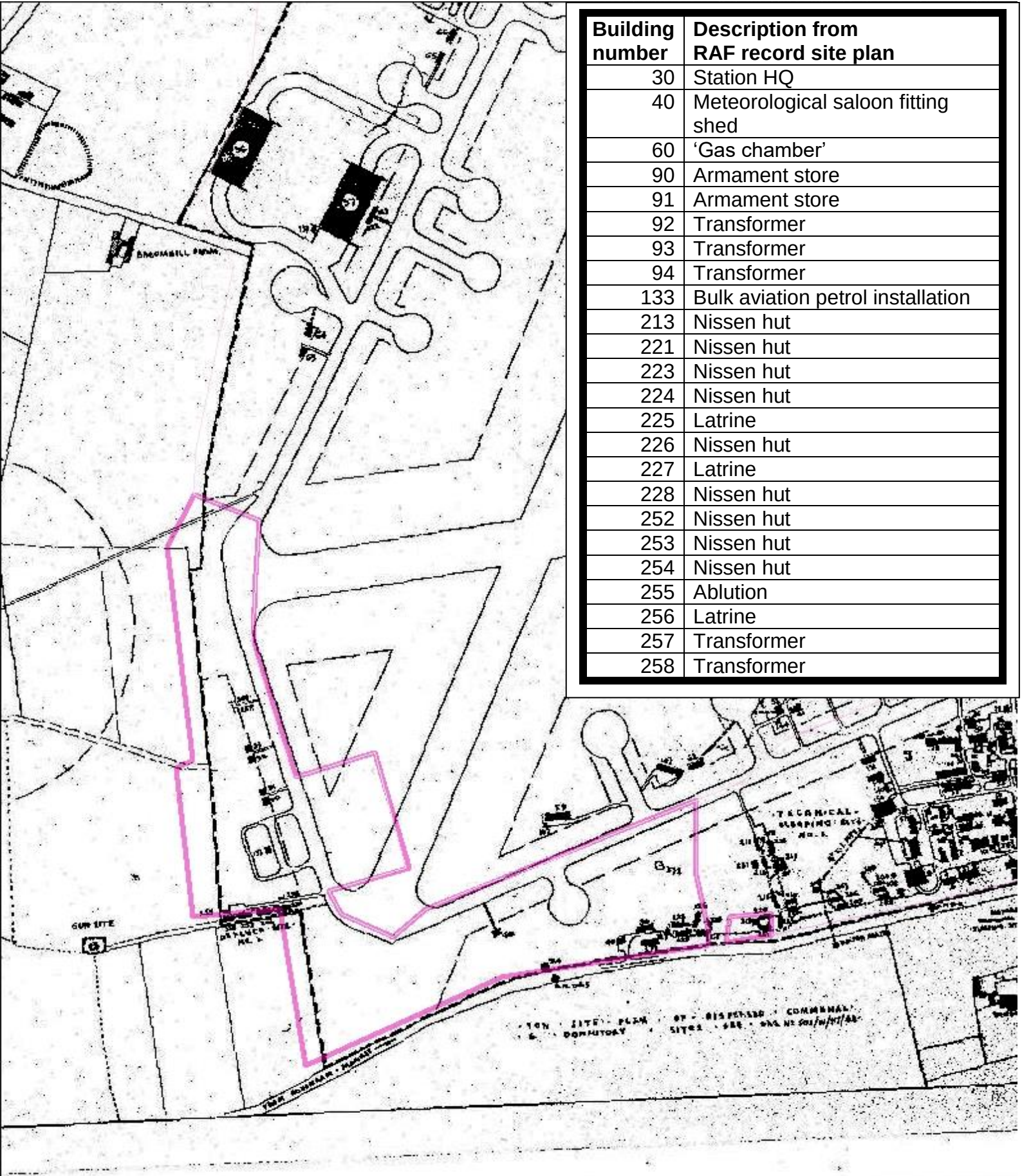
Downham Market
Zone C

Drawn by FAP

Date February 2020

Scale 1:5,000

Drawing / Reference Number
103



Building number	Description from RAF record site plan
30	Station HQ
40	Meteorological saloon fitting shed
60	'Gas chamber'
90	Armament store
91	Armament store
92	Transformer
93	Transformer
94	Transformer
133	Bulk aviation petrol installation
213	Nissen hut
221	Nissen hut
223	Nissen hut
224	Nissen hut
225	Latrine
226	Nissen hut
227	Latrine
228	Nissen hut
252	Nissen hut
253	Nissen hut
254	Nissen hut
255	Ablution
256	Latrine
257	Transformer
258	Transformer

Borough Council of King's Lynn & West Norfolk

Title: RAF Museum Airfield Record Site Plan

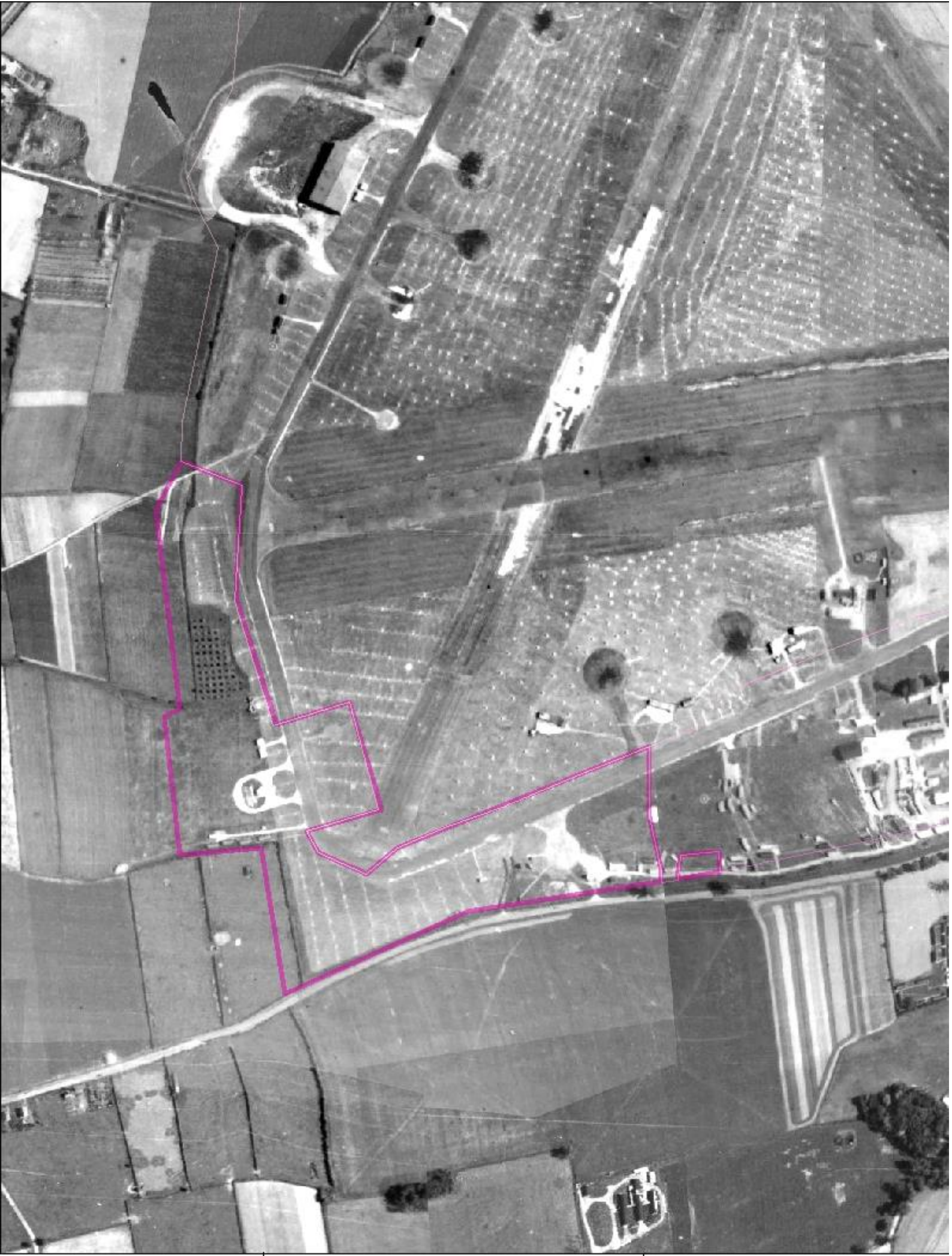
Project / Details: Downham Market Zone C

Drawn by: FAP

Date: February 2020

Scale: 1:5,000

Drawing / Reference Number: 104



Borough Council of
King's Lynn &
West Norfolk

Title

Aerial Photography
1940s

Project / Details

Downham Market
Zone C

Drawn by	Date	Scale
FAP	February 2020	1:5,000

Drawing / Reference Number

105

N
W E
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Borough Council of
King's Lynn &
West Norfolk

Title

Aerial Photography
1999

Project / Details

Downham Market
Zone C

Drawn by	Date	Scale
FAP	February 2020	1:5,000

Drawing / Reference Number

106

N
W E
S

Borough Council of
King's Lynn &
West Norfolk

Title

Aerial Photography
2007

Project / Details

Downham Market
Zone C

Drawn by	Date	Scale
FAP	February 2020	1:5,000

Drawing / Reference Number

107

Borough Council of
King's Lynn &
West Norfolk

Title

Aerial Photography
2018

Project / Details

Downham Market
Zone C

Drawn by	Date	Scale
FAP	February 2020	1:5,000

Drawing / Reference Number

108

N
W E
S

Appendix C - Planning Permissions

Borough Council Planning History

- 2/90/2766/O - Site for residential development with associated roads parking and incidental open space. Withdrawn
- 2/99/0477/O - Site for residential development (14.9 ha). Permitted
- 2/99/0946/O - Site for construction of 50 dwellings. Withdrawn
- 2/01/1452/D - Construction of 84 dwelling houses including temporary storm water reservoir. Permitted
- 2/02/0292/F - Variation of condition 8 of planning permission 2/99/0477/0 to allow 150 dwellings to be temporarily served by a single access. Permitted
- 2/02/0829/F - Construction of bungalow and garage. Permitted
- 2/03/0121/D - Construction of 80 dwellings estate roads and ancillary works. Permitted
- 2/03/1928/F - Construction of dwelling (amended design). Permitted
- 2/03/2065/F - Variation of condition 1 attached to planning permission number 2/99/0477/O to extend period for submission of reserved matters. Permitted
- 2/04/0580/F - Construction of dwelling (amended design) Permitted
- 05/02436/F - Two storey extension to dwelling. permitted
- 07/00624/PREAPP - INFORMAL REQUEST - Construction of one dwelling following demolition of existing buildings. Likely to refuse
- 07/02049/FM - Erection of 78 affordable dwellings. Refused
- 08/00122/DISC_A - DISCHARGE OF CONDITIONS 15: Construction of 69 affordable dwellings. Discharged
- 08/00122/FM - Construction of 69 affordable dwellings. Permitted
- 14/00028/PREAPP - Pre-application enquiry: Development of land suiting a number of potential uses, subject to advice. Likely to refuse.
- 14/00030/PD - Single storey rear extension which extends beyond the rear wall by 4 metres with a maximum height of 3.14 metres and a height of 2.25 metres to the eaves. GPDCE
- 14/01031/OM - OUTLINE APPLICATION SOME MATTERS RESERVED: Development of A3/A5 - restaurant and takeaway. Permitted
- 17/00660/F - Two storey and single storey extensions to main house and single storey rear extension to the annexe. Permitted

Appendix D. Risk Assessment Methodology

The Model Procedures for the Management of Land Contamination (CLR11[5]) 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 practice[6] 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');
- 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.

[5] https://www.gov.uk/guidance/land-contamination-risk-management
[6] https://www.brebookshop.com/samples/142102.pdf

- Minor: Harm, though not necessarily significant harm, which may result in financial loss, to expenditure to resolve. Non-permanent human health effects (easily prevented by use of PPE). Easily repairable effects of damage to buildings, structure and services.

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	Minor
Probability	High Probability	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low Probability	Moderate risk	Moderate/Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk	Very Low Risk

Very High Risk	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 This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. 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.
Moderate risk	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.
Moderate/Low risk	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.
Low Risk	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.
Very Low Risk	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.

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

Human Health

Category	
1	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. Land should be deemed to be a Category 1: Human Health case where: (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	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.
3	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.

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
Any ecological system, or living organism forming part of such a system, within a location which is: • 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.	The following types of harm should be considered to be significant harm: • 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. 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.	Conditions would exist for considering that a significant possibility of significant harm exists to a relevant ecological receptor where the local authority considers that: • 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. 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.

Property effects

Relevant types of receptor	Significant harm	Significant possibility of significant harm
Property in the form of: • 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.	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. 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. In this section, this description of significant harm is referred to as an "animal or crop effect".	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.
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.	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. 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. In this Section, this description of significant harm is referred to as a "building effect".	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.

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: (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.