Borough Council of King's Lynn & West Norfolk



Environment and Planning

Contaminated Land Inspection Report

Closed Landfill, Heacham Tip, Heacham, King's Lynn

April 2018

Reference no. CL17

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Please Note:

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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 Heacham as a site which requires detailed inspection.

This site is a former chalk quarry, part of which was used as a landfill. The remainder of the quarry is being used as a recycling centre and by a shooting club. 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 former chalk quarry.
- Part of the site was used as landfill by Docking Rural District Council.
- The landfill was filled with general household waste, cinders and sewage sludge.
- Information provided by Norfolk County Council indicates that a capping of 12 inches thickness has been placed across the landfill. The landfill capping is not anticipated to have been engineered.
- The remainder of the site is now being used as a recycling centre and a shooting range for Heacham Wildfowlers.
- Norfolk County Council have undertaken a Risk Assessment of the site and ground gas monitoring. The Risk Assessment indicated a Medium Risk to Surface water, including springs, and a High Risk from ground gas. The ground gas monitoring recorded Methane peaking at 0.3% in 1994 and then dropping to non-detectable by 2011. Carbon Dioxide was recorded in all boreholes throughout the monitoring program but had reduced from a maximum of 11% in 1994 to below 1% in 2011. This would indicate that ground gas is no longer considered to be a significant risk at the site and Norfolk County Council has subsequently ceased monitoring.
- No information has been provided by Norfolk County Council regarding the assessment of ground and surface water receptors. However, as the ground gas has reduced significantly since monitoring commenced it can be assumed that any leachable contamination from the unlined landfill would also have dissipated over time.

Following the initial assessment it is concluded that no additional information is required to characterise and categorise the site. The site in its current use is unlikely to pose a significant risk to human health or property. There is not a strong case for taking action under Part 2A EPA 1990 and the therefore the site has been classified into category 3 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.

1. Introduction

This report details a review of information and written statement about a former landfill at Heacham, 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's location is shown in Appendix B. The grid reference for the centre of the site is 568723, 336731 and the nearest postcode is PE31 7HU.

Initial Prioritisation Score

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

Previous Site Usage

The site (drawing CL17/101) was a chalk pit, part of which has been used as a landfill.

Present Site Usage

The landfill is an open area of vegetation. The remainder if the quarry comprises a household waste recycling depot and a shooting ground for the 'Norfolk Wildfowlers' shooting club. The site is also the location of two telecommunication masts.

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 varies between 30 and 40 meters above ordnance datum (maOD).

The bedrock geology is the West Melbury Marly Chalk Formation and Zig Zag Chalk Formation (undifferentiated).

No superficial geology is noted on 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, high vulnerability but is not within a Source Protection Zone (SPZ) (Environment Agency Website).

The Principle Aquifer comprises the West Melbury Marly Chalk Formation and Zig Zag Chalk Formation, which has a very high permeability allowing it transmit potential pollutants very easily.

Hydrology

Heacham River is approximately 510m north and east 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 500m.

Local Authority Pollution Prevention and Control Regulations

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 within a priority Waters Area and is vulnerable to Nitrate (Surface and Groundwater).
- The bedrock beneath the site is a Principal Aquifer.
- The groundwater has a high vulnerability at this location.
- The site is recorded as being a landfill.
 - The site was operated by Docking Rural District Council accepting, Inert, Commercial, Household and Sludge's/Liquids. No licence number is recorded. The site is recorded as operating between 30th August 1954 and 31st December 1993.
- No significant pollution incidents are recorded within 1km of the site.

MAGIC website records

MAGIC website records the following

- The site is covered by the MMO Marine Areas (England)
- Part of the site is covered by the Woodland Priority Habitat Network (High Spatial Priority).
- Part of the site is covered by Woodland Improvement (High Spatial Priority).
- The site is a Farm Wildlife Package Area (England).
- Part of the site is covered by Woodland Water Quality (England) of the Lower Spatial Priority.
- Part of the site is covered by the National Forest Inventory (Broadland).
- The site is covered by the Former Catchment Sensitive farming Priority Areas 2011-2015 (England) (Catchment Partnership).

- The site is designated as a Nitrate Vulnerable Zone for Surface and Groundwater.
- The site is designated as part of a Higher Level Stewardship Target (England).

Historic Maps

All historic maps discussed and the 1945 – 1946 MOD Aerial Photograph, 1999 Aerial Photograph and 2006-09 Aerial Photograph are presented in Appendix B.

E-map Explorer

Enclosure Map 1800 - 1850 - Not available.

Tithe map circa 1840– A pit is located in the centre of the quarry. The area landfilled has not been excavated at this time. A second pit is located to the south accessed by a road from the west. The quarry is surrounded by fields.

Ordnance Survey 1st Ed. 1879-1886 – The site is described as 'Chalk Pits', in the southern pit is shown to contain a 'Kiln'. The surrounding area remains the same with the exception of a field to the east which is indicated as being a wood with a gravel pit on the north-eastern boundary.

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

1843 – 1893: The site and surrounding area have not changed, with the exception that the chalk pits have expanded slightly and the area which became the landfill has started to be excavated. Presented in Appendix B.

1891 – 1912: The site was as depicted above, with the exception that the area which will be landfilled has been excavated further. Presented in Appendix B.

1904 – 1939: Not available.

1919 – 1943: The site and surrounding area are unchanged.

1945 – 1970: The landfill is now described as a refuse tip, but other than that remains the same.

1970 – 1996: Not available.

Aerial Photographs

1945 – 1946 MOD Aerial Photograph - The quarry is evident on site but there is no evidence of it being filled. There are some objects in the northeast corner of the site, but the photograph does not give enough detail to determine what they are.

1988 Aerial Photograph - The site and quarry are covered with vegetation, and as such has assumed to have stopped being landfilled. There are stockpiles of what is assumed to be rubbish at the entrance to the site, but this cannot be confirmed.

1999 Aerial Photograph – As above the site and quarry are covered with vegetation. A square of concrete is noted in the northwest corner of the quarry, which has a number of containers and cars on it, which is assumed to be the recycling centre. There are a number of tracks across the quarry, indicating that someone attends the site and cuts the grass back. The main focus of the tracks area a whiter patch in the south eastern corner which is the chalk face and a grey area in the north eastern corner where the telecommunication mast.

2006-09 Aerial Photograph – The site and quarry were generally as described above, except that two new structures have been developed in the north eastern corner of the quarry and are considered to be associated with the telecommunication mast and a mound has been built in the south eastern corner.

Planning History

Three planning application exist in the Borough Council records on or adjacent to the site. These are related to the siting of a portacabin, construction of a telecommunications antenna. Details of these applications are presented in Appendix D.

Borough Council Records

The borough council contains records which indicate that there were issues with the use of the site for the disposal of sewage sludge's and fire ash. The volume of sewage sludge's being deposited were over spilling the sumps developed for them and spreading onto agricultural land and the ash was being windblown across neighbouring fields.

Environment Agency Records

The environment Agency were contacted and they indicated that regardless of the age of the landfill and the assumed landfill material groundwater analysis should have been undertaken as part of the assessment of the landfill's potential impact on the Principal Aquifer.

Norfolk County Council Records

Seven planning application are recorded on the County Councils planning system. Unfortunately no information relating to these planning applications is available on their website. Details of these applications are presented in Appendix D.

Norfolk County Council provided Closed Landfill Site Risk Assessment dated 2001 and a record of ground gas monitoring which was undertaken from 1993 to 2011. The risk assessment and ground gas monitoring indicated that the landfill:

- Operated from 1956 to an undefined time.
- Was operated by Docking Rural District Council.
- Accepted Category 2b wastes (Household/Industrial/Commercial wastes) and sewage sludge's.
- Had no engineering cap.
- Was restored with 12" of Subsoil.
- Was originally 50ft deep.
- Was a dilute and disperse landfill.
- Groundwater Risk was evaluated as 'Medium Risk Site. A relatively small closed site, located in a Lower Chalk pit with few potential targets in the

vicinity. The main threat is potential contamination of the Heacham River and adjacent springs.'

- Three ground gas monitoring wells are positioned around the landfill and these were monitored on a monthly basis.
- Methane production had effectively ceased by 1996.
- Carbon Dioxide production has decreased from a maximum reading of just over 11% in 1993 to less than 4% in 2011.

Further conversation with Norfolk County Council indicated that no groundwater samples had been taken from the site. Although the risk to groundwater was assessed and it was concluded that the risk to groundwater was not significant.

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 11/01/2018 after agreeing entry with Heacham Parish Council and the following was noted. Photographs are presented in the Appendix A.

The site is located at the top of a hill to the south of a household recycling centre. The landfill was grassed over and had been planted with trees on the 5th March 2000 by Heacham Parish Council to form Millennium Wood. Several molehills were noted across the site, the soil in the molehills was dark brown gravelly clayey sand. Gravel fragments were noted top mostly be of natural origin with occasional fragments of anthropogenic material noted (plastic). The boundary to the south and west was formed by a raised bank in which some anthropogenic material was noted (Brick and concrete). A ground gas inspection borehole was noted on the southern boundary of the site. Whole and fragments of clay pigeons were noted across the site.

Beyond the boundary to the south was a field and depression which faced a chalk wall. To the east to the hill continued to slope upwards towards a shallow chalk face beyond which was a woods and a field. To the north was an area of cut grass and a portacabin which was being used by the 'Norfolk Wildfowlers' shooting club and a recycling site operated by Norfolk County Council. To the west was an agricultural field. No fly tipped waste was noted on the site or in the general area.

4. Assessment of Site Use

From the assessment of the site using County Council data, historic maps, aerial photography and a site walk over it has been possible to conclude that the site was part of a quarry which has been used for mineral extraction (Lime production). A section of the site was then used as a landfill which was capped and has been planted with trees to form a Millennium Wood while the remainder of the quarry is now being used as a recycling centre and a shooting arena by the Norfolk Wildfowlers.

Assessment of probability of a contamination event

The site was a part of a quarry which has ceased being used for mineral extraction. The site was then used as a landfill after which it was capped and restored.

Human health

The site has undergone landfilling with waste from the local area and has been restored. The site is in a remote location and occupation by humans is transient and infrequent. Given the limited human occupation of the site the area it is not considered likely that the probability of a contamination event effecting human health (via direct contact or inhalation) is considered UNLIKELY.

Property

Two portacabins are in the quarry around the site as well as two telecommunication masts and their associated structures. The portacabins are not fixed structures and as such do not have the potential for the accumulation of ground gases. The telecommunication structures are a recent addition to the site and as such should have been constructed with the knowledge that there was a landfill within the quarry and incorporated protective measures against the build-up of explosive or asphyxiating gases. Therefore the likelihood of a contamination event occurring is considered UNLIKELY.

Environment

The site and area do not contain any of the receptors stipulated in Table 1 of the Statutory Guidance and as such no contamination event could occur which could affect this receptor.

Controlled Water

Surface Water

The nearest surface water feature is the Heacham River which is 510m away. The probability of a contamination event occurring to the river at this distance is considered UNLIKELY.

Groundwater

The landfill was designed as a 'dilute and disperse' landfill over a principal aquifer but is not located within a Source Protection Zone. The landfill ceased filling at least by 1988 as observed in the aerial photograph indicating that the waste material has been in place for a minimum of 29 years. In the intervening time it is considered probable that any mobile contaminants would have leached from the waste and what is left would be generally immobile. Therefore the probability of a contamination event affecting groundwater is considered UNLIKELY

Assessment of Hazard

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

Human Health

The material permitted to be placed in the landfill is a mixture household, industrial, commercial waste and sewage sludges. The wastes have been present on site beneath a 12 inch cap for approximately 29 years. As such most of the

contaminants would have degraded or dispersed. Therefore it is assumed that the hazard to human health (via direct contact or inhalation) is considered LOW.

Property

The site has a portacabin and a telecommunication mast on it. As no properties exist on the landfill the only hazard is considered to be the migration of ground gases. Ground gas monitoring undertaken by Norfolk County Council indicates that there is a negligible volume of ground gas. For the above reasons the hazard to property on the site 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.

Controlled Water

Surface water

No surface waters are located within 500m of the site. Given the age of waste deposited in the landfill any leachable contaminants would already have dispersed. Therefore the hazard to surface water is considered to be LOW.

Groundwater

The site is a former quarry which has been used as a landfill under licence. The risks to groundwater were assessed prior to granting the licence, and have been further assessed by the 'closed landfill team of Norfolk County Council who did not record a significant risk to the Major Aquifer' (Appendix C). 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. The chosen contaminants are those which are considered most likely to be present within the anticipated waste streams which would have been placed in the landfill.

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

 Table 1: Preliminary conceptual site model

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 chalk and then part of the quarry was backfilled with waste material. The landfill was then restored in accordance with the licence (D/2/1954/1114, Appendix C). Subsequent assessment by Norfolk County Council indicates that there is not considered to be a risk to human health, controlled waters or the environment.

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

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

Human Health

Following the above assessment the site is assessed as Category 3: 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 possibility 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.

Further Action

This assessment is based on the sites current use and is valid providing no changes are made to the soil or vegetation cover material, to surface water conditions or the to the sites 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.

⁴ (Contaminated Land Statutory Guidance April 2016)

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

^{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

Appendix A Site Photographs









Appendix B Drawings





















NORFOLIS COUNTY COUNCE DEPARTMENT OF PLANNER	I. 47 AND TRANSI	ORTATION		
WASTE MANAGEMENT SEC	TION			
Site:	ПЕАСНАМ			
NGR:	'TH 688 36K			
Previous Cec:	CHALK PIT			
Status:	FORMER LAN	IDFILL SITE		
Site Owner:	PARISH COLP	юп.		
Site Operator:	NORFOLK CO	ENTY COLINCIL $/p_\ell$	crimin RDC	
Ĵæase Agreement:		· · ·		
Plunning Permission Ref.:	106 1114			
Licence Ref:				
Operational From:	1956	To:		
Surface Area:	3.27 ACRES	(13ha)		
Air Space:				
Depth of Fill:	Min:	Max	Average:	
Waste Categories:				
Input Rate:				
Delivered By:				
Operations:				
Cover Source:				
ENVERONMENTAL DATA				
Description of Original Site Ba	а: СПАІ.	π		
Solid Geology:				
Superficial Deposits:				
Geological Structure:				
Surface Water:				

Appendix C. Norfolk County Council Documents

	Groun	dwaters	Typical level m AOD:
			Flow Direction:
			Gradient:
	NRA A	quifer Classificatiion:	
	Previo	us SI Data:	
	Monito	oring Scheduje;	
	Nu. of	Water Muniforino Points	
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:	- SurJa	ee Water:	μ
	- Grou	ndwater:	D
	- Leael	bate:	٥
	Freque	ncy of Monitoring:	
	- Sorfa	re Water:	N/A
	- Grou	n/Iwater:	N/A
	- Least	uale:	ΝΔ
	No. of	Cas Monitoring Points:	4 .
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	Freque	acy of Monitoring:	NOR THE Y
	REINS	TATEMENT	(Work carried out in 1980)
	1.	Capping Material:	
		Thickness:	
	z.	Subsoil Depth:	12 INCHES
	3.	Topsoil Depth;	GRASS
	4.	Landscaping Scheme:	
	5.	Surface Drainage:	

Form G.D. 50. District Ref. No. 10,1114 NORFOLK COUNTY COUNCIL. Town and Country Planning, Act, 1947, NOTICE of CONSENT in respect of development by a statutory undertaker or by a local authority not being a local planning authority proposing to develop in their own area. The Clark to the Dicking Baral District Council. TO -PARTICULARS OF PROPOSED DEVELOPMENT: Boashem; Proposed Site for the Disposal of Refuse, Right Soil, and Compared Contents and Propision of Carage Building sto. (Outline Application). In pursuance of their powers under the above-mentioned Act, the Norfolk County Council as Local Planning Authority hereby permit the development as shown on the plan(*) and * particulars deposited with them on the **6th** day of **5uly** 19 54 subject to compliance with the condition(s) specified hereunders-(1) The initial permission hereby granted under Regulation 5(2) of the Town and Country Finning Constal Development Order, 1950, relates only to the subline application. (2) No development whetever shall take place until plans and descriptions of the proposed development, including plane and descriptions and descriptions of levent and drainage shall have been submitted to, and approved by, the local Planning Authority; and the development shall conform to such plans and descriptions as approved. Tipping must not take place from the bottom levels upwards, and, so far as is precticable, should be on a controlled basis as laid (3) down in the Ministry of Realth's memorandum. The reason(s) for the Council's decision to grant permission for the development, subject to compliance with the condition(s) hereinbefore specified to are:-(1) and (2). This permission relates only to an outline application. (3). To minimise indury to the visual and sural amonities of the Lecelity. Dated this MANTINA SOUNTY DOUNGI

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WASTE MANAGEMENT SECTION

Heacham Closed Landfill Site Risk Assessment

Site Details	Groundwater and	319	Landfill Gas	605	
	Surface water Risk		Risk Assessment		
	Assessment Value		Value		
Centroid (GR)	TF 688 368				
Use Prior To Landfill	Chalk Pit				
Landfill Operational (from - to)	1956 to ?				
Owner / Lease Details	Heacham Parish Council				
Operator	Docking RDC/ NCC				
Surface Area	1.3 ha				
Air Space	Unknown				
Maximum Depth Of Fill	Unknown				
Waste Type(s)	Cat. 2b, plus sewage sluc	lges			
Engineered Cap Construction	No engineered cap				
Restoration Soils	12" Subsoil				

Overview/Comments

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Table 1. Ground/Surface Water Data	3
Figure 2. Map Of Groundwater Observation Boreholes	4
Table 2. Groundwater and Surface Water Risk Assessment	5,6,7
Figure 3. Landfill Gas Risk Assessment Map	8
Table 3. Landfill Gas Risk Assessment	9 & 10
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Waste Management Closed Landfill Site Risk Assessment 2001	Page 1



Groun	d/Surface \	Water Abstract	ion Location (GR	() Classification	¹ Licence No./District Ref.
1. Rive	r Heacham,	Heacham	TF 690 375	SRAY IRR	EA/33/66/*S/050
			2.5	- 24	
EA GO	QA Grades	for rivers with	in 2K of site*: lo	ng-term Grade	1995 Grade
River	Heacham	Sedford Hall	Embankment	B/A	B
			-1111-142	22.5	
EA Gr	oundwater	Vulnerability S	Status": MaA.I	1	
	10.00020204005				
Environ	ament Agency	y (EA) Licenced A	bstractions Classifica	tions	
AMENT	TY	Amenity use			
COOLIN	IG	Cooling proces	55 115e		
DOMES	TIC	Domestic use	12 12		
GEN.AC	FRIC	General agricu	ltural use		
GENAG	DOM	General agricu	ltural and domestic use	8	
INDUST	RIAL	Industrial proc	ess use		
PWS		Public water su	ipply		
C&C W	ASHIDIC	Sand & grand	maching		
SPRAV	IRR	Spray irrigation	washing N		
	C-1278/75	-proj angado			
EA Ge	neral Onality	Assessment (GQA	A) Grading		
Very (Good, B Good	i, C Fairly Good, D	Fair <mark>,</mark> E Poor, F Bad		
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Table 2. Of build water and Sufface water Risk Assessment	Ta	ıble	2.	Groundwater	and	Surfacewater	Risk /	Assessment
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Source		Weighting	Score	Comments
Size by surface area	5Ha+	60		
-	3-5Ha	50		1
	2-3Ha	30		1
	1-2Ha	20	20	1
	<lha< td=""><td>10</td><td></td><td>1</td></lha<>	10		1
	Unknown	60		
Average rainfall	700mm+	3		
-	6-700mm	2		1
	<600mm	1	1	1
Depth of waste	15m+	20	20	Original depth of tip: approx. 50 ft
-	10-15m	16		
	5-10m	12		1
	≤m	8		1
	Unknown	20		1
Site type	Dilute and disperse	25	25	
	Containment	10		1
	Combination	25		1
	Unknown	25		1
	Raise or fill	10 or 15	15	1
Waste type	Cat.1 Concrete/hardcore/sand	5		
	Cat.2a Metal/wood/paper/cement	25		1
	Cat.2b Household/Ind/Commercial	25	25	
	Cat. 3 chemicals not special waste	25		1
	Cat. 4 special wastes	25		1
	Cat. 5 clinical wastes	25		1
	Liquids	25		1
	Unknown	25		1
Cover and capping	No cover	25		
	Topsoil, subsoil	20	20	1
	Clay	10		1
	Engineered cap	5		1
	Unknown	25		
Age	70's, 80's, 90's	6	6	
_	50's, 60's	4		1
	<50's	2]
	Unknown	6		
Ponding on site	Yes / No	20 ar 0	0	
Direction of surface run off			-	
Surface water discharge off site		6	-	
Source Sub Total	-		131	

Continued.....

Waste Management Closed Landfill Site Risk Assessment 2001

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Table 2. Continued

Pathway		Weighting	Score	Comments
Waste located in	Fluvio-glacial sand and gravels	25		(Score one only)
	Gravels within Lowestoft Till	20		
	Lowestoft Till	10		
	Norwich Crag	20		
	Upper, Middle, Lower Chalk	25	25	Sides and floor of pit in Lower
	Carstone, Sandringham Sands	15		Chalk
	Unknown	25		
Water table location	Above waste, unknown	25		
	Below waste	0	0	
Unsaturated zone thickness	0-5m	25		Ground level: approx. 35 mAOD
(estimated max from Hydro Map)	5-10m	15		Max depth of waste: approx. 15 m
	10m+	10	10	Chalk water table:approx.8 mAOD
	Unknown	25		Max unsat. zone thickness: approx.
				12 m
Groundwater level (mAOD)	-	-	-	Chalk: approx. 8 mAOD
Gradient direction	-	-	-	SW to NE (toward Heacham River)
Gradient	-	-	-	Approx. 1:50
Salinity (mg/l CI)	Saline	10		
	Non-saline/unknown	25	25	25-50 mg/l Cl
Pathway Sub Total			60	

Target (rating down or up gradient)		Weighting	Score	Comments
Source Protection Zone	-	-	-	
Main aquifer	Chalk or Sand and Gravel	40	40	Lower Chalk
	Crag, Carstone, Sandringham	20		
PWS Groundwater	<50m	50 or 50		
	50-100m	40 or 30		
	100-500m	30 or 20		
	500-1000m	20 or 10		
	1000-1500m	10 or 5		
PWS Surface water	<50m	50 or 50		
	50-100m	40 or 30		1
	100-500m	30 or 20		
	500-1000m	20 or 10		
	1000-1500m	10 or 5		
PWU Groundwater	<50m	50 or 50		
	50-100m	40 or 30		1
1	100-500m	30 or 20		1
	500-1000m	20 or 10		
	1000-1500m	10 or 5		
PWU Surface water	<50m	50 or 50		
	50-100m	40 or 30		1
	100-500m	30 or 20		
	500-1000m	20 or 10		
	1000-1500m	10 or 5		
Other uses of Groundwater	<50m	40 or 40		
	50-100m	30 or 20		1
	100-500m	20 or 10		
	500-1000m	10 or 5		
	1000-1500m	5 or 3		1
Other uses of Surface water	<50m	40 or 40		
	50-100m	30 or 20		1
1	100-500m	20 or 10		
	500-1000m	10 or 5	10	1
1	1000-1500m	5 or 3		

Continued.....

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	weighting	Sevie	
m	50 or 50		Springs noted in Heacham and
100m	40 or 30		along the valley side of Heacham
-500m	30 or 20	50	River, at the contact of the Carsto
-1000m	20 or 10		Sands with the Dersingham Beds
0-1500m	10 or 5		(clay)
m	30 or 30		
100m	20 or 15		
-500m	15 or 10		
-1000m	10 or 5		
0-1500m	5 or 3		
m	25 or 25		
100m	20 or 15		
-500m	15 or 10	15	Heacham River
-1000m	10 or 5		
0-1500m	5 or 3		
m	30 or 30		
100m	20 or 15	<u> </u>	
-500m	15 or 10		1
-1000m	10 or 5		1
0-1500m	Ser 3	3	Lake at Heacham Hall
m	30 or 30	-	And a Literation filler
100m	20 cr 15		
-500m	15 cr 10		
-1000m	10 or 5	<u> </u>	
0.1500m	5003		
-1500m	50 cr 50	<u> </u>	
100	30 df 30	<u> </u>	
500m	40 OF 30	<u> </u>	
-3000	30 or 20	10	
-1000m	20 or 10	10	
0-1500m	10 or 5		
m	30 or 30		
100m	20 or 15		
-500m	15 or 10		
-1000m	10 or 5		
0-1500m	5 or 3		
	-		
	-		Grass
		128	
	1	319	
mall closed site, located in ial contamination of the Head	a Lower Cha ham River a	llk pit nd adj	with few potential targets in t acent springs.
	0-1500m m 100m -500m -1000m 0-1500m m 1000m -500m -1000m 0-1500m m 1000m -500m -1000m 0-1500m m 1000m -500m -1000m 0-1500m m 1000m -500m -1000m 0-1500m m 1000m -500m -1000m 0-1500m m m 1000m -500m -1000m 0-1500m m m 1000m -500m -1000m 0-1500m m m 1000m -500m -1000m 0-1500m m m 1000m -500m -1000m 0-1500m m m 1000m -500m -1000m 0-1500m m m -1000m -11000m -1000 -1000m -1000m -1000 -1000 -1000 -1000 -1000 -1000 -1000 -1000 -1000	0-1500m 10 or 5 m 30 or 30 100m 20 or 15 -500m 15 or 10 -1000m 5 or 3 m 20 or 15 -01500m 5 or 3 m 20 or 15 100m 20 or 15 -1000m 20 or 15 -500m 15 or 10 -1000m 10 or 5 0-1500m 5 or 3 m 30 or 30 100m 20 or 15 -500m 15 or 10 -1000m 10 or 5 0-1500m 5 or 3 m 30 or 30 1000m 20 or 15 -500m 15 or 10 -1000m 10 or 5 0-1500m 5 or 3 m 50 or 50 100m 20 or 15 -500m 10 or 5 -1000m 20 or 15 -500m 30 or 30 100m 20 or 15 -500m 10 or 5 -1000m	0-1500m 10 or 5 m 30 or 30 100m 20 or 15 -500m 15 or 10 -1000m 5 or 3 m 25 or 25 100m 20 or 15 -500m 5 or 3 m 25 or 25 100m 20 or 15 -500m 15 or 10 -500m 5 or 3 m 30 or 30 100m 20 or 15 -500m 15 or 10 -15 or 10 15 or 10 -1000m 10 or 5 0-1500m 5 or 3 m 30 or 30 100m 20 or 15 -500m 15 or 10 -1000m 10 or 5 0-1500m 5 or 3 m 50 or 50 100m 40 or 30 -500m 10 or 5 0-1500m 5 or 3 m 30 or 30 100m 20 or 15 -500m 10 or 5 -1000m

Table 2. Continued



Table 3. Landfill Gas Risk Assessment

Source		Weighting	Score	Comments
Site surface area	>5 Hectares	50		
	3 - 5 Hectares	30		
	2 - 3 Hectares	15		
	1 - 2 Hectares	5	5]
	< 1 Hectare	0]
	Unknown	50		
Depth of waste	> 15 metres	45		Take maximum depth
	10 - 15 metres	30		
	5 - 10 metres	15	15	estimate
	0 - 5 metres	0]
	Unknown	45		
Age of waste	Since 1980	300		Take the youngest waste
	Before 1980	50	50	
	Before 1970	0]
	Unknown	300		
Types of waste	Cat. 1 Concrete/hardcore/sand	0		If several types take the highest
	Cat. 2a Metal/wood/paper/cement	50		weighted category
	Cat. 2b Household/Ind/Commercial	200]
	Cat. 3 chemicals not special waste	200]
	Cat. 4 special wastes	200]
	Cat. 5 clinical wastes	200]
	Unknown	200	200	
Cap material	Low permeability	35		e.g. concrete
(Take dominant cover)	Semi-permeable	25		e.g. clay topsoil
	Thin sandy topsoil	10	10	Less than 300mm
	Thick sandy topsoil	0		More than 300mm
	No cover/Unknown	45]
Source Sub Total			280	

Target (On Site)		Weighting	Score	Comments
Existing usage	Residential	350	0	If several uses take the highest
	Educational/Recreational	300		weighted category.
	Industrial	250	250	
	Open sided building	50		
	Wildlife/Conservation	40		
	Agricultural crops	30		
	Pasture	25		
	Woodland	20		
	Unused	0		
Public access	Often	35		
	Occasional	15		
	Rare	0		
Target (On Site) Sub Tota	1		250	

Continued....

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Table 3. Continued

Farget (Off Site)		Weighting	Score	Comments	
Buildings					
Residential	Within 25 metres	100/200/300		e.g. 1-5 houses give 100	
	25 - 50 metres	50/75/100		6-10 houses give 200	
	50 - 100 metres	30/40/50		more than 10 houses give 300	
	100 - 250 metres	25		Use corresponding figures	
	None	0	0	for other distances	
Educational/Recreational	Within 25 metres	85/100		e.g. 1-5 buildings give 85	
	25 - 50 metres	70/85		more than 5 buildings give 100	
	50 - 100 metres	55/70		Use corresponding figures	
	100 - 250 metres	15		for other distances	
	None	0		1	
industrial/Commercial	Within 25 metres	70/85		e.g. 1-5 buildings give 70	
	25 - 50 metres	55/70		more than 5 buildings give 85	
	50 - 100 metres	40/55		Use corresponding figures	
	100 - 250 metres	10	10	for other distances	
	none	0		1	
Open sided building	Within 25 metres	40/55		e.g. 1-5 buildings give 40	
	25 - 50 metres	25/40		more than 5 buildings give 55	
	50 - 100 metres	10		Use corresponding figures	
	100 - 250 metres	5		for other distances	
	none	0			
Adjacent land use	Amenity	25		If several uses take the highest	
	Ecologically sensitive	20		weighted category	
	Crops	15	15		
	Pasture	10		1	
	Woodland	5		1	
	Unused	0		1	
Surrounding geology	Sands & gravels	20			
00-00	Chalk	20	20	1	
	Clay	0		1	
Evidence of vegetation	On more than 50% of periphery	80			
Stress	On 20% - 50% of periphery	60		1	
	On 5% - 20% of periphery	40		1	
	On less than 5% of periphery	30		1	
	none	0			
Gas smell	Detected	60			
	Undetected	0	0	1	
Public highway proximity	Adjacent	30	30		
	Within 50 metres	20		1	
	Within 250 metres	5		1	
	none	0		1	
Public footpath/bridleway	Crossing the site	30			
	Adjacent to the site	20			
	within 50 metres	10		1	
	within 250 metres	5		1	
	none	0	0	1	
Sarget (Off Site) Sub Tate	1	Ň	75		
Assessment grand total	**	1	605		
ummary: There are three g A HWRC is on the	as monitoring boreholes within the e site.	site, which are n	nonitore	d monthly.	





Appendix D - Planning Permissions

Borough Council Planning History

- 08/00154/PREAPP INFORMAL REQUEST Siting a portacabin
- 05/01898/F Installation of 20m mast, 3no antenna, 1no 300mm and 1no 600mm dish antenna, radio equipment housing and ancillary works.
- 08/01951/F Siting of portacabin

Norfolk County Council Planning History

- C/2/2011/2001 Non-Material Amendment to Planning Permission C/92/2003 to amend the footprint of the perimeter bund. Application Approved
- L/2/2007/2001 Consultation on Waste Management Licence -EAWML/70516. Informative Decision
- C/2/1995/2013 Variation of condition no1 on pp C/92/2003 to allow the sale of recycled soil conditioner. Application Approved
- C/2/1993/2022 Amended hours of operation. Application Approved
- C/2/1992/2003 Household Waste Site. Application Approved
- D/2/1978/0837 Waste Transfer Station. Application Approved
- D/2/1954/1114 Outline PP for waste disposal. Application Approved.

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');
- Low: Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined

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

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

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			
	High Probability	Very High Risk	High Risk	Moderate Risk			
ability	Likely	Likely High Risk Moder		Moderate/Low Risk			
roba	Low Probability	Moderate risk	Moderate/Low Risk	Low Risk			
<u> </u>	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk			
Very High Risk	There is designate evidence happenir This risk, Urgent in	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 curre happening This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and					
High Risk	Harm is I	ion are likely to be ikely to be	e required. designated recept	or from an			
	identified	hazard.					
	Urgent in clarify the remedial	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 possi from an i any such is more li	It's possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely th any such harm would be severe, or if any harm were to occu is more likely that harm would be relatively mild.					
Moderate/Low ri	sk It is poss from an i it is more	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 poss from an i realised,	ible that harm cou dentified hazard, k would at worst no	Id arise to a desig out it is likely that t rmally be mild.	nated receptor his harm, if			
Very Low Risk	There is the even severe.	a low possibility th t of such harm bei	ity that harm could arise to a receptor. In being realised it is unlikely to be				

Appendix F. 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)	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	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
 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 	 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. 	 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	Significant harm	Significant
receptor	-	possibility of
		significant harm
Property in the form of:	For crops, a substantial diminution in	Conditions would exist
• Crops including	yield or other substantial loss in their	for considering that a significant possibility of
timber;	or other physical damage. For	significant harm exists to
	domestic pets, death, serious	the relevant types of
Produce grown	disease or serious physical damage.	receptor where the local
domestically, or on	For other property in this category, a	authority considers that
consumption:	from death disease or other serious	likely than not to result
concernption,	physical damage.	from the contaminant
 Livestock; 		linkage in question,
	The local authority should regard a	taking into account
Other owned or domesticated animals:	substantial loss in value as occurring	that type of contaminant
uomesticated aminais,	the animals or crops are dead or	linkage, particularly in
 Wild animals which 	otherwise no longer fit for their	relation to the
are the subject of	intended purpose. Food should be	ecotoxicological effects
shooting or fishing	regarded as being no longer fit for	of the contaminant.
ngnis.	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%	
	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".	
Property in the form of	Structural failure, substantial damage	Conditions would exist
purpose "building"	right of occupation. The local	significant possibility of
means any structure or	authority should regard substantial	significant harm exists to
erection, and any part of	damage or substantial interference	the relevant types of
a building including any	as occurring when any part of the	receptor where the local
part below ground level, but does not include plant	building ceases to be capable of being used for the purpose for which	authority considers that
or machinery comprised	it is or was intended.	likely than not to result
in a building, or buried		from the contaminant
services such as sewers,	In the case of a scheduled Ancient	linkage in question
water pipes or electricity	Monument, substantial damage	auring the expected
	when the damage significantly	building (or in the case of
	impairs the historic, architectural,	a scheduled Ancient
	traditional, artistic or archaeological	Monument the
	Interest by reason of which the	toreseeable future),
	monument was scheduled.	relevant information for
	In this Section, this description of	that type of contaminant
	significant harm is referred to as a	linkage.
	"building effect".	

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.