

PHASE 1 ENVIRONMENTAL REPORT
of a site at
HAMPTON QUAY, LITTLEHAMPTON
for
STOLON STUDIOS LTD



**Contaminated
Land
Solutions**

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1 EXECUTIVE SUMMARY

Details	Summary	
Proposed Development	Residential & commercial with communal soft landscaping	
Current Site Use	The site is currently vacant.	
Site History	Historical mapping shows that the south of the site has previously been works.	
Surrounding Area	The nearby surrounding area is generally commercial.	
Environmental Setting	Geology	Superficial: Raised Marine Deposits Bedrock: White Chalk Group
	Hydrogeology	Superficial: Secondary A Aquifer Bedrock: Principal Aquifer
		Source Protection Zone: NA
Potential Contamination Sources	The site walkover, historical mapping and environmental searches have identified the following potential sources of contamination. • Made Ground, slipway, works. tanks and filter beds (On Site) • Made Ground petrol filling station, sheet metal work, printers and works (Off Site) • Nearby former landfill • Imported hardcore & demolition debris (asbestos)	
Risk Assessment Findings	Risk ratings of moderate or greater indicate potentially complete source-pathway-receptor linkages that can require further investigation and remedial measures. The following moderate or greater risks have been identified at the site. • Site users, and workers in direct contact with contaminated soil • Site users, neighbours and workers inhaling contaminated dust • Direct contact of soil with building materials • Site users, and workers inhaling hazardous gases • Migration, build up in buildings and explosion of hazardous gases • Site users, neighbours and workers inhaling fibres (asbestos)	
Recommendations	Some preliminary intrusive environmental site investigation is recommended prior to construction to determine if either contamination and, or, landfill gas are present on the property. A reinforced barrier water supply pipe may be required by the water supply company. It is considered that provided the recommendations of this report are implemented there is no increased risk to human health from redevelopment of the site for the proposed use.	

Risk Summary

Very Low	Low	Moderate / Low	Moderate	High
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		Receptors					
		Site Users	Ground Workers	Neighbours	Proposed Building	Aquifer	Watercourse
Sources	Made Ground, works. tanks and filter beds (On Site)						
	Slipway (On Site)						
	Made Ground petrol filling station, sheet metal work, printers and works (Off Site)						
	Nearby former landfill						
	Demolition debris within the made ground (asbestos)						

2 BRIEF

Ms Emma Kingman of Stolon Studios Ltd requested a phase 1 environmental desk top study for a site at Hampton Quay, Littlehampton.

The purpose of this report is to assess the risks to sensitive receptors both on and off-site due to soil and groundwater contamination as a result of the proposed development. It is based upon information provided by the client, a site visit and walk over and a Landmark Envirocheck, historical aerial photographs and maps.

A request for information was sent to the local authority however a response had not been received at time of writing this report.

This report is based upon available factual data for the site obtained only from the sources described in the text and related to the site on the basis of the location information provided by the Client. The desk study information is not necessarily exhaustive and further information relevant to the site may be available from other sources.

3 SITE VISIT

The site was visited on 2 July 2019 the weather was clear and dry. A visual inspection was undertaken, access was generally available to all areas of the site although towards the southern end access was limited due to the vegetation. A photographic record was made during the visit and this is contained in appendix B.

The client's confidentiality was maintained at all times during discussion with third parties.

4 SITE LOCATION

The site is situated on the banks of the River Arun and lies west of the junction of the A259 and the B2187 Refer to Figure 1.

The National Grid Reference for the approximate site centre is 50 1540, 102670

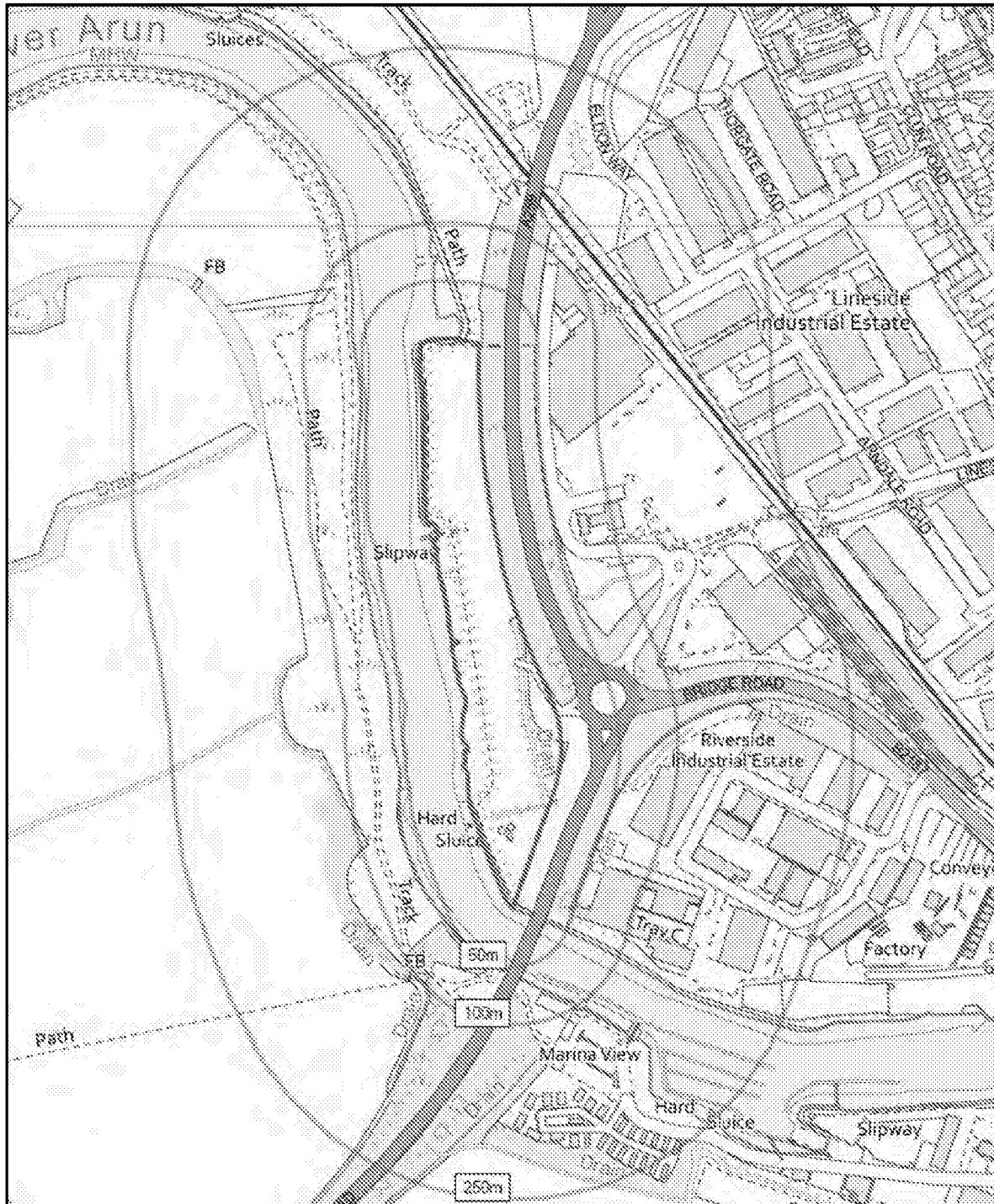


Figure 1: Site Location Plan

5 SITE DESCRIPTION

The site comprises a strip of land on the east bank of the River Arun which occupies 2.74ha. The site is divided into two areas, the northern area which is unprotected from fluvial flooding and the southern area which is protected by defences installed by the Environment Agency.



Photograph 1: View of the Northern Area from the central berm

Northern Area

The northern area is approximately rectangular in shape. The west boundary is formed by the River Arun and the east by the fence at the toe of the embankment to the A259. The north and south boundaries are defined by berms, at its west end the southern berm runs north for approximately one third of the length of the northern area, along the river. The west part of the area mud and gives the appearance of being regularly under water. The east part of the area is slightly higher and covered with grass and other low growing vegetation.

There are the remains of a winch for the former slipway. What appeared to be an exposed section of a buried cable was noted near the northeast corner. Just inside the east boundary are two inspection chamber covers labelled traffic signals street lighting.



Photograph 2: View of the Southern Area from the central berm

Southern Area

The southern area continues to a point at the south end where the A259 crosses the River Arun. The west boundary is formed by a berm and the muddy foreshore along the River Arun and the east by the toe of the embankment to the A259. The north boundary is defined by the berm dividing the northern and southern areas. At the south end of the west boundary the flood defences are augmented by a sheet piles which rise approximately 1m above the top of the berm. The site is covered in vegetation, mostly grasses at the north of the area with bushes and some trees at the south end.

Vehicular access is by means of an asphalt surfaced road from the roundabout on the A259. The access road leaves the roundabout, turns north down the embankment and turns west entering the site via a concrete bridge over a drainage channel.

A drainage channel enters the site on the east boundary from under the embankment, this then runs south along the east boundary before turning west to run under the west boundary berm through a sluice into the River Arun. To the south of the drainage channel is a disused sewage treatment plant. It is understood this was installed for a former campsite.

The nearby surrounding area is generally commercial to the east and south. To the north the river foreshore continues. To the west, beyond the river the area is undeveloped, it is understood there are proposals for this to be developed for residential use.

No visual or olfactory evidence of contamination was noted during the visit.

6 GROUND CONDITIONS

6.1 Geology

Reference to the geological survey of Great Britain indicates that beneath made ground, the area generally is underlain by superficial deposits comprising Clay, Silt, Sand and Gravel which is described as Raised Marine Deposits.

The superficial deposits are underlain by bedrock comprising Chalk described as Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation (Undifferentiated). These are form the White Chalk Subgroup.

6.2 Hydrogeology

The Environment Agency maps show the site to be located over a Secondary A Aquifer in the superficial or drift deposits, in the bedrock they show the site to be over a Principal Aquifer.

Principal Aquifers comprise layers of rock or drift deposits that have either high intergranular or fracture permeability, meaning they usually provide a high level of water storage. They may support either water supply or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary A Aquifers comprise permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

The soils overlying the aquifers are assumed to have a high leaching potential (U) and a worst case vulnerability classification (H) is assumed due to a lack of data available for restored workings and urban areas.

The Environment Agency maps show the site is not located within a source protection zone of a borehole abstraction point.

The Environment Agency define a zone according to how the groundwater behaves in that area. From this a model of the groundwater environment is developed on which to define the zones.

Groundwater source catchments are divided into three zones:

SPZ1 – Inner protection zone

Defined as the 50 day travel time from any point below the water table to the source. This zone has a minimum radius of 50 metres.

SPZ2 – Outer protection zone

Defined by a 400 day travel time from a point below the water table. This zone has a minimum radius of 250 or 500 metres around the source, depending on the size of the abstraction.

SPZ3 – Source catchment protection zone

Defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source. In confined aquifers, the source catchment may be displaced some distance from the source. For heavily exploited aquifers, the final Source Catchment Protection Zone can be defined as the whole aquifer recharge area where the ratio of groundwater abstraction to aquifer recharge (average recharge multiplied by outcrop area) is >0.75 .

6.3 Hydrology

The main water course of significance to the site would appear to be the River Arun which borders the west of the site. It is considered there is the possibility for this to be impacted by the site.

The site lies within flood plain zone 3 of the River Arun.

The British Geological Society data shows the site lies in an area with potential for groundwater flooding to occur at surface.

Copy of extracts from the Landmark report are contained in appendix C.

6.4 Ground Stability Hazards

No areas of artificial ground, including made ground, worked ground, in-filled ground, landscaped ground or disturbed ground have been identified either on site or in the vicinity.

According to data from the British Geological Survey, the ground beneath the site has been identified as having the following potential risks associated with ground stability:

Source	Hazard Potential
Collapsible Ground	Very low
Compressible Ground	No hazard
Ground Dissolution	Very low
Landslide Ground	Low
Running Sand Ground	Very low
Shrinking or Swelling Clay Ground	No hazard

These risks would be expected to manifest themselves as excessive settlement in the buildings on the site. However, the risks identified are considered unlikely to be of concern to any new buildings, as the foundation design will be based upon geotechnical information obtained from a site-specific intrusive investigation.

6.5 Mining Activities

Reference to the Coal Authority data indicates that the site is not within an area of known coal mining. There is no other known mining in the area.

6.6 Radon Gas

The Landmark Envirocheck Data also advises that the site lies within an area where between 1 and 3% of properties are above the Action Level, however radon is not generally of concern and protective measures are unlikely to be required.

6.7 Sensitive Land Use

Environmentally Sensitive Areas include Nitrate Sensitive Areas, Sites of Special Scientific Interest (SSSI's), Areas of Outstanding Natural Beauty (AONB), National Parks, National Nature Reserves, Special Areas of Conservation, Special Protection Areas and RAMSAR sites.

The site is located within the Climping beach SSSI impact zone.

7 SITE HISTORY

Copies of the Historical Ordnance Survey maps that have been obtained from The Landmark information group are contained in appendix D.

The maps have been reviewed and items of interest and potential sources of contamination, both on the site and within the surrounding area up to 250 metres from the site boundary are noted hereunder.

Site Usage

First seen	Last seen	Description
1876	1959	The site is part of two fields, there is an embankment and salting in the west of the site bordering the River Arun and an access road in the south of the site.

First seen	Last seen	Description
1959	1965	There is a slipway in the centre west of the site and a winch east of it. South of this there is rectangular structure and the south of the site is labelled as a camp site. Further south of this there are drains and the site appears to be part of the neighbouring precast concrete works.
1965	1977	There is a drain, filter beds and tank in the south of the site. The embanked bridge road now separates the site from the neighbouring works. The rest of the site remains unchanged.
1977	1994	The site is now labelled as Wick Farm and no longer labelled as Camp site. It appears largely unchanged.
1994	Present	The rectangular structures are no longer present however, the filter beds and tanks to the south remain. The site is not labelled.

Surrounding Area

First seen	Last seen	Name	Direction	Distance (m)
1876	Present	Railway	NE	125
1876	1898	Old Lime Kiln	N	29
1959	1977	Coal Yard	207	207
1959	1982	Precast Concrete Works/ Works	207	207
1965	1993	Warehouse	NE	256
1977	1993	Warehouse	NE	153

8 PROPOSED DEVELOPMENT

The proposal comprises residential units, moorings and retail and commercial space.

There will be areas of communal hard and soft landscaping.

The salt marsh habitat is to be retained along areas of the west and north edges of the site.

9 POTENTIAL CONTAMINATION

9.1 General

From observations made during the site visit, review of the historical maps and the Landmark information, potential sources of on-site contamination and off-site contamination have been identified.

Previous investigations have taken place on site and of the surrounding area in 2010 and 2012. The report covers the site as well as the river banks to the south, the relevant area is referred to as Reach 6A with Reach 6B covering the works to the south of the site and beyond. The relevant extracts of the Halcrow Updated Geo-Environmental Risk Assessment can be found in Appendix E.

No significant potential sources of contamination have been identified beyond a 250 metre boundary which are considered likely to have any impact on the site. Where there are similar industries and activities in the same direction, only the nearest has been listed.

Copies of the relevant extracts are contained in appendix C.

The legislative framework for the regulation of contaminated land is embodied in Part IIA of the Environmental Protection Act 1990, implemented in the Contaminated Land (England) Regulations 2000. This legislation allows for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment. The approach adopted by UK contaminated land policy is that of “suitability for use” which implies that the land should be suitable for its current use and made suitable for any proposed future use.

In this preliminary contamination assessment, the site has been modelled using the Source-Pathway-Receptor approach to produce a site specific conceptual model.

- **Source** - substances or potential contaminants which may cause harm
- **Pathway** - a linkage or route between a source and receptor
- **Receptor** - humans, plant life, groundwater etc., which could be harmed by a contaminant

Geological records indicate that the site is underlain by an aquifer in the superficial stratum and therefore there is a potential for contaminants to be transported both to and from site in the groundwater.

9.2 Off Site Contamination

Description	Direction	Distance (m)
Discharge Consents:		
Operator: Tarmac Concrete Ltd Property Type: MAKING OF GLASS/ CERAMICS/ CEMENT/ CUTTING STONE Location: River Side Works, Littlehampton Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: S02642 Permit Version: 1 Effective Date: 3rd April 1970 Issued Date: 3rd April 1970 Revocation Date: 20th March 1996 Discharge Type: Unknown Discharge Environment: Freshwater Stream/ River Receiving Water: Freshwater River Status: Pre National Rivers Authority Legislation where issue date < 01/ 09/ 1989	SE	211
Operator: N A P Rannard Esq Property Type: Not Given Location: LITTLEHAMPTON , West Sussex Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: 62/ 1/ 1046 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 7th February 1972 Revocation Date: Not Supplied Discharge Type: Surface Water Discharge Environment: Saline Estuary Receiving Water: Not Supplied Status: Not Supplied	S	244

Description	Direction	Distance (m)
Local Authority Pollution Prevention & Controls:		
Name: Littlehampton Welding Ltd Location: Unit S Riverside Works, Riverside Industrial Estate, Bridge Road, LITTLEHAMPTON, West Sussex, BN17 5DF Authority: Arun District Council, Environmental Health Department Permit Reference: 1876 Dated: 20th December 1993 Process Type: Local Authority Air Pollution Control Description: PG6/ 34 Respraying of road vehicles Status: Authorisation revoked	SE	83
Name: Tesco Stores Ltd Petrol Station Location: Broad Piece, LITTLEHAMPTON, West Sussex, BN17 5RA Authority: Arun District Council, Environmental Health Department Permit Reference: 1907 Dated: 11th May 1998 Process Type: Local Authority Air Pollution Control Description: PG1/ 14 Petrol filling station Status: Permitted	NE	108
Category 1 and 2 Pollution Incidents to Controlled Waters:		
None identified.		
Prosecutions Relating to Authorised Processes:		
None identified.		
Substantiated Category 1 and 2 Pollution Incidents:		
None identified.		
Control of Major Accident Hazards Sites (COMAH) & Planning Hazardous Substance Consents		
None identified.		
Landfill and Other Waste Sites:		

Description	Direction	Distance (m)
Site Name: Ferry Rd Location: LITTLEHAMPTON, West Sussex Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/ A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Good	W	64
Local Authority Recorded Landfill Sites Location: Littlehampton Marina, Ferry Road, Bn17 5ds Reference: CM/ 29/ 80 Authority: West Sussex County Council, Environment & Development Last Reported Status: Unknown Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	S	123
Licensed waste Management Facilities Licence Number : 101116 Location: Units 15/ 16, Arndale Road, Lineside Ind Est, Littlehampton, West Sussex, BN17 7HD Operator Name: S R C L Ltd Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Clinical Waste Transfer Station License Status: Modified Issued: 23rd December 2009 Last Modified: 4th January 2019 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied	E	196
Historical and Current Land Uses:		

Description	Direction	Distance (m)
Historical Landfill Sites License Holder: Not Supplied Location: Littlehampton, Sussex Name: Ferry Road North Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD20024 First Input Date: 31st December 1946 Last Input Date: 31st December 1975 Specified Waste Type: Deposited Waste included Inert, Industrial, Commercial and Household Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 3800/8113 BGS Ref: 23 Other Ref: WD27/48a, WD27/148a	W	51
Historical Landfill Sites License Holder: Not Supplied Location: Littlehampton, Sussex Name: Littlehampton Ferry Road South Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD20377 First Input Date: 31st December 1946 Last Input Date: 31st December 1975 Specified Waste Type: Deposited Waste included Inert, Commercial and Household Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: WD27/148b	S	56
Historical Landfill Sites License Holder: Not Supplied Location: Littlehampton, Sussex Name: Wick Farm Operator Location: Not Supplied Boundary Accuracy: As Supplied	N	91

Description	Direction	Distance (m)
Provider Reference: EAHLD20022 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Not Supplied EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: WD27/ 152		
Historical Landfill Sites License Holder: Littlehampton Marina Limited Location: Littlehampton, Sussex Name: Littlehampton Marina Extension Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD20376 First Input Date: 1st June 1981 Last Input Date: 5th August 1981 Specified Waste Type: Deposited Waste included Industrial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 3800/ 8114 BGS Ref: Not Supplied Other Ref: WD27/ 149, WD13/ 47	S	152
Filofax Manufacturing & Logistics Unit N2, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Printers Inactive	SE	83
Cryogenesis Unit N1-N2, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Blast Cleaning Equipment Manufacturers Active	SE	86

Description	Direction	Distance (m)
Charnock'S Automotive Unit N3, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Garage Services Active	SE	87
Bay Studio Unit N4, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Screen Process Printers Active	SE	92
Maidment Tankers Unit N8, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Commercial Vehicle Bodybuilders & Repairers Active	SE	104
H S L Tank Services Ltd Unit N8, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Tanks, Vats & Cisterns Active	SE	104
Tesco Filling Station Broad Piece, Littlehampton, BN17 5RA Petrol Filling Stations Active	NE	108
Fd Electronics Ltd Unit U1, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Electronic Equipment - Manufacturers & Assemblers Inactive	SE	152

Description	Direction	Distance (m)
Excellon (Uk) U3-U4, Unit, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Printed Circuit Services Inactive	SE	153
A E Haxton Ltd Unit U6, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Manufacturers Active	SE	153
Urbane Performance Technologies Ltd Riverside Ind Est, Bridge Rd, Littlehampton, West Sussex, BN17 5DF Engine Rebuilding & Reconditioning Inactive	SE	185
Matchboard Ltd Unit 24-25, Eldon Way, Wick, Littlehampton, West Sussex, BN17 7HE Wood Products, Except Furniture - Manufacturers Active	NE	159
Currys Pc World Unit 2, Broad Piece, Littlehampton, West Sussex, BN17 5RA Electrical Goods Sales, Manufacturers & Wholesalers Active	E	173
Merlin Flexible Circuits Unit F-h, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Printed Circuit Manufacturers Inactive	SE	182

Description	Direction	Distance (m)
Southern Manufacturing Services Ltd Unit F, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Sheet Metal Work Active	SE	183
Medata Systems Ltd Unit U2, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Electronic Equipment - Manufacturers & Assemblers Inactive	SE	191
Fuller Unit P4, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Blacksmiths & Forgemasters Inactive	SE	191
Arun Grinding Services Unit R6, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Tool Sharpening, Repairing & Servicing Inactive	SE	199
T W S Temperature Measurements Unit R5, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Temperature Monitoring Systems Manufacturers Active	SE	200
Riverside Precision Unit R3-R4, Riverside Industrial Estate, Bridge Road, LITTLEHAMPTON, West Sussex, BN17 5DF Precision Engineers Active	SE	200

Description	Direction	Distance (m)
Advanced Materials Ltd Unit 17, Arndale Road, Wick, LITTLEHAMPTON, West Sussex, BN17 7HD Rubber & Plastic Products - Manufacturers Active	NE	194
Lascon Fabrications Ltd Unit 18 Arndale Rd, Wick, Littlehampton, West Sussex, BN17 7HD Sheet Metal Work Inactive	NE	212
P C Electronics Ltd Unit 18/ 19, Arndale Road, Wick, Littlehampton, West Sussex, BN17 7HD Printed Circuit Manufacturers Inactive	NE	230
SI Protech Uk Ltd Unit 20-23, Eldon Way, Wick, Littlehampton, West Sussex, BN17 7HE Plastics - Injection Moulding Active	NE	230
Tyre Factory Unit D3-D4, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Tyre Dealers	SE	207
Merlin Artetch Ltd Unit D3-D4, Riverside Industrial Estate, Bridge Road, LITTLEHAMPTON, West Sussex, BN17 5DF Printed Circuit Manufacturers Inactive	SE	208
Willcox & King Engineering Ltd Unit D1-D2, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Car Customisation & Conversion Specialists Inactive	SE	217

Description	Direction	Distance (m)
Printline Unit C3, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Printers Inactive	SE	236
Auto Repairs & Recovery Unit C1, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Garage Services Active	E	247
Fencourt Printers Ltd Unit K, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Printers Inactive	SE	217
Bay Print Unit K, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Printers Inactive	SE	217
R S F Container Sales & Hire Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Blacksmiths & Forgemasters Inactive	SE	217
R P Aero Systems Unit W, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Glass Fibre Moulding, Materials & Manufacturers Inactive	SE	225

Description	Direction	Distance (m)
Acell Technology Unit 15-16, Arndale Road, Wick, LITTLEHAMPTON, West Sussex, BN17 7HD Door Manufacturers - Domestic Inactive	NE	224
Sussex & Surrey Dairy Unit 27 And Unit 28, Eldon Way, Littlehampton, BN17 7HE Freight Forwarders Active	N	236
Tesco Littlehampton Broadpiece , , Littlehampton, West Sussex, BN17 5RA TESCO Hypermarket Open	NE	85
Tesco Littlehampton Broadpiece, Littlehampton, BN17 5RA Personal, Consumer and other Services Vehicle Cleaning Services	E	75
Car Wash Broadpiece, Littlehampton, West Sussex, BN17 5RA Personal, Consumer and other Services Vehicle Cleaning Service	NE	85
Tank BN17 Industrial Features Tanks (Generic)	SE	148
Tank BN17 Industrial Features Tanks (Generic)	NE	167
Sluice BN17 Water Weirs, Sluices and Dams	S	15
Artificial Ground and Made Ground:		
None identified.	-	-

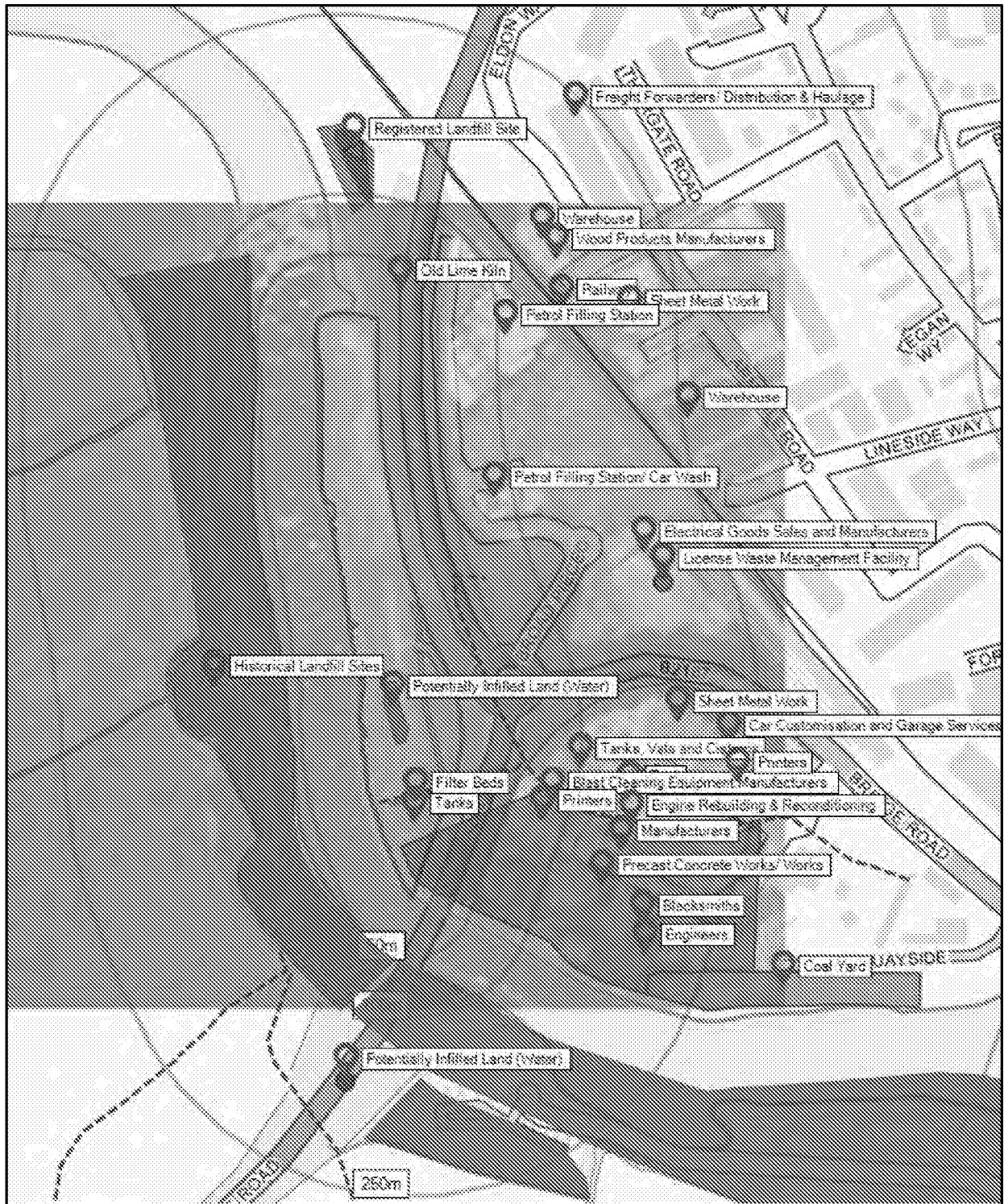


Figure 2: Potential sources of contamination within 250m of the site

Potentially contaminating commercial activities have been identified in the vicinity. The general topography is flat however the river flows to the south, this is assumed to be the general direction of the hydraulic gradient. Therefore, sources to the north and within the near vicinity are considered to have the most potential to impact the site. These include a landfill, petrol filling station, sheet metal work, printers and works.

The embanked A529 to the east of the site does not appear to have any significant impact on site.

Credible pathways for ground gas exist from the historical landfill located to the west and to the north as well as from alluvial river deposits.

9.3 On Site Contamination

Description	Direction	Distance (m)
Discharge Consents:		
None identified.	-	-
Local Authority Pollution Prevention & Controls:		
None identified.		
Category 1 and 2 Pollution Incidents to Controlled Waters:		
None identified.		
Prosecutions Relating to Authorised Processes:		
None identified.		
Substantiated Category 1 and 2 Pollution Incidents:		
None identified.		
Control of Major Accident Hazards Sites (COMAH) & Planning Hazardous Substance Consents		
None identified.		
Landfill and Other Waste Sites:		
None identified.		
Historical and Current Land Uses:		
Tank BN17 Industrial Features Tanks (Generic)		
Filter Beds BN17 Infrastructure and Facilities Waste Storage, Processing and Disposal		
Artificial Ground and Made Ground:		
None identified.	-	-

There is potential contamination of the site from its use as a works and from the tanks and filter beds located on site. Also, it is possible that anti-fouling treatments from the underside of craft using the slipway could have impacted the site.

The previous investigations found benzo(a)pyrene and zinc exceedances of the adopted assessment criterion as well as bacteriological pathogens within the soil on site.

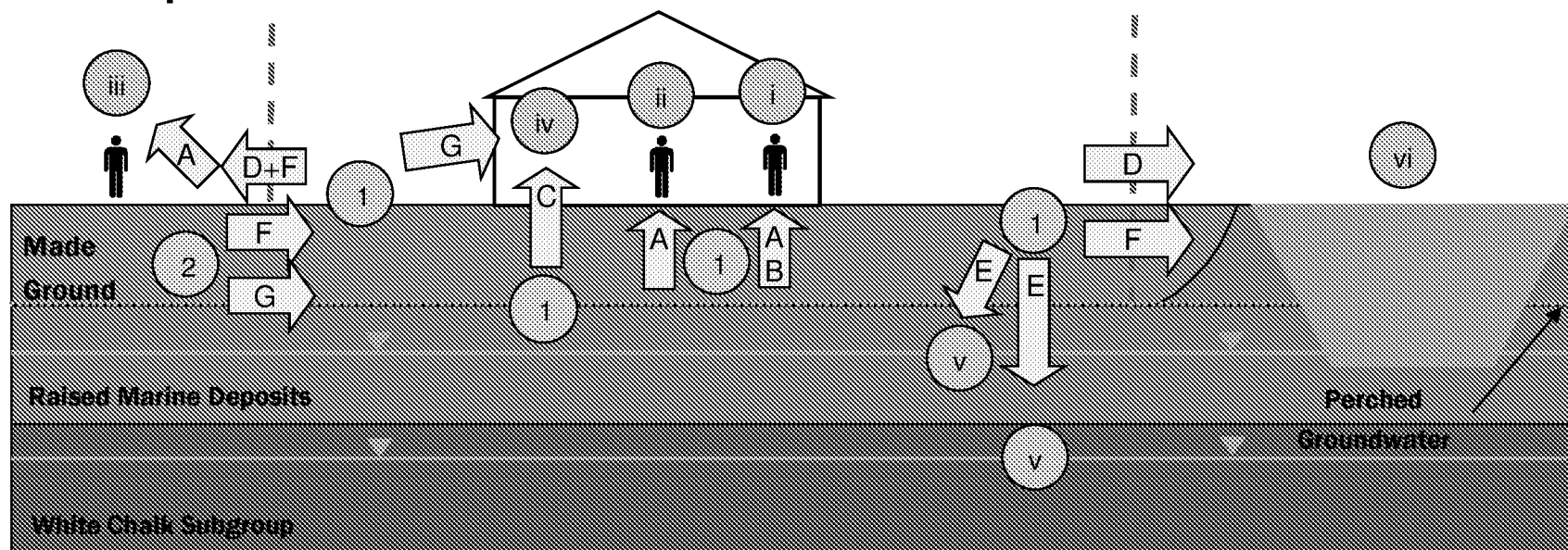
The site has previously been developed, there is the possibility that the subsequent demolition if these could have resulted in asbestos within the made ground.

No olfactory or visual evidence of contamination was noted on site.

9.4 Preliminary Conceptual Model

		Potential pathways												
		Inhalation of contaminated vapour	Inhalation of contaminated dust	Direct Soil Ingestion	Direct dermal contact	Inhalation of asbestos	Drinking contaminated water supply	Direct contact of soil with building materials	Surface water run-off	Surface water percolation to groundwater	Migration via groundwater	Build-up of ground gas	Comments on discounted pathways	
Receptors	Site Users	Y	Y	Y	Y	Y	Y					Y		
	Ground Workers	Y	Y	Y	Y	Y						Y		
	Neighbours	Y	Y			Y			Y		Y	Y		
	Proposed Building							Y				Y		
	Watercourse								Y		Y			
	Aquifer									Y				

Schematic Conceptual Model



Sources	Pathways	Receptors
1 Made Ground, slipway, works tanks and filter beds (On Site)	A Inhalation, ingestion, dermal contact, vapours	i Site Users
2 Made Ground landfill, petrol filling station, sheet metal work, printers and works (Off Site)	B Drinking contaminated water supply	ii Ground Workers
	C Direct contact of soil with building materials	iii Neighbours
	D Surface water run-off	iv Proposed Building
	E Surface water percolation to groundwater	v Groundwater
	F Migration via groundwater	vi Surface water
	G Vertical and lateral migration of soil gases	

10 RISK ASSESSMENT

The level of information provided by the Landmark report and historic Ordnance Survey maps, together with the other information within the report is considered suitable to provide the data for a satisfactory risk assessment for the site. While there will always be uncertainties due to known or unknown gaps in information it is considered that sufficient information is available to reduce those uncertainties to within acceptable limits for the nature of the site under review.

An asbestos survey of existing structures and infrastructure (as defined under Section 5(a) of the Control of Asbestos Regulations 2012) was beyond the brief of this report. The risk assessment has been undertaken on the basis that should asbestos be identified within buildings or infrastructure, these materials will be removed appropriately by licensed contractors and asbestos materials disposed of in accordance with legal requirements prior to demolition or other works in order to avoid contaminating soils at the site.

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Made Ground, works. tanks and filter beds (On Site)	Metals Hydrocarbons PAHs	Site Users	Dermal contact	Mild	Likely	Moderate/ Low risk	Contamination testing.
			Inhalation of vapours, indoors and outdoors	Mild	Likely	Moderate/ Low risk	
			Soil Ingestion and Home Produce Consumption	Mild	Low likelihood	Low risk	
			Inhalation of contaminated dust	Mild	Likely	Moderate/ Low risk	
			Drinking of water from supply impacted by contaminated soil	Mild	Likely	Moderate/ Low risk	Upgraded water supply pipe may be required by water supply company. It is recommended that this report is provided to the water supplier with a request for the testing, if any, that they require.

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Made Ground, works. tanks and filter beds (On Site)	Metals Hydrocarbons PAHs	River	Run-off & lateral percolation to surface water	Medium	Likely	Moderate risk	All works within 20m of any surface water feature will proceed in line with Pollution Prevention Guidelines Note 5 – Works in, near or over water courses: prevent pollution.
Made Ground, works. tanks and filter beds (On Site)	Metals Hydrocarbons PAHs	Ground Workers	Dermal contact	Mild	Likely	Moderate/ Low risk	Information to be contained in site Health & Safety Plan and File. Use of appropriate PPE and normal good hygiene measures. Appropriate dust control measures during construction.
			Inhalation of vapours, indoors and outdoors	Mild	Likely	Moderate/ Low risk	
			Soil Ingestion	Mild	Likely	Moderate/ Low risk	
			Inhalation of contaminated dust	Mild	Likely	Moderate/ Low risk	

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Made Ground, works. tanks and filter beds (On Site)	Metals Hydrocarbons PAHs	Neighbours	Inhalation of vapours, indoors and outdoors	Mild	Likely	Moderate/ Low risk	Contamination testing.
			Inhalation of contaminated dust (during construction)	Mild	Likely	Moderate/ Low risk	Appropriate dust control measures during construction.
			Inhalation of contaminated dust (after construction)	Mild	Likely	Moderate/ Low risk	Contamination testing.
Made Ground, works. tanks and filter beds (On Site)	Metals Hydrocarbons PAHs	Aquifer	Vertical percolation to groundwater via Foundations & Drainage	Mild	Low likelihood	Low risk	Foundations and drainage should be designed in such a way that they do not create a pathway for surface water percolation.
			Vertical percolation to groundwater via soft landscaped and permeable areas	Mild	Likely	Moderate/ Low risk	Contamination testing

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Slipway (On Site)	TBT	Site Users	Dermal contact	Medium	Low likelihood	Moderate/ Low risk	Contamination testing.
			Inhalation of vapours, indoors and outdoors	Medium	Low likelihood	Moderate/ Low risk	
			Soil Ingestion and Home Produce Consumption	Medium	Low likelihood	Moderate/ Low risk	
			Inhalation of contaminated dust	Medium	Low likelihood	Moderate/ Low risk	
			Drinking of water from supply impacted by contaminated soil	Medium	Low likelihood	Moderate/ Low risk	Upgraded water supply pipe may be required by water supply company. It is recommended that this report is provided to the water supplier with a request for the testing, if any, that they require.

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Slipway (On Site)	TBT	River	Run-off & lateral percolation to surface water	Medium	Likely	Moderate risk	It is considered that as there are numerous slipways and associated shipping facilities along the river the impact from TBT entering the waterways from this site alone is not significant.
Slipway (On Site)	TBT	Ground Workers	Dermal contact	Medium	Likely	Moderate	Information to be contained in site Health & Safety Plan and File. Use of appropriate PPE and normal good hygiene measures. Appropriate dust control measures during construction.
			Inhalation of vapours, indoors and outdoors	Medium	Likely	Moderate	
			Soil Ingestion	Medium	Likely	Moderate	
			Inhalation of contaminated dust	Medium	Likely	Moderate	

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Slipway (On Site)	TBT	Neighbours	Inhalation of vapours, indoors and outdoors	Medium	Low likelihood	Moderate/ Low risk	Contamination testing.
			Inhalation of contaminated dust (during construction)	Medium	Low likelihood	Moderate/ Low risk	Appropriate dust control measures during construction.
			Inhalation of contaminated dust (after construction)	Medium	Low likelihood	Moderate/ Low risk	Contamination testing.
Slipway (On Site)	TBT	Aquifer	Vertical percolation to groundwater via Foundations & Drainage	Medium	Low likelihood	Moderate/ Low risk	Foundations and drainage should be designed in such a way that they do not create a pathway for surface water percolation.
			Vertical percolation to groundwater via soft landscaped and permeable areas	Medium	Likely	Moderate	Contamination testing

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Nearby former landfill	Methane & carbon dioxide	Structures & other confined spaces	Migration via permeable strata & build up in buildings & other confined spaces	Medium	Likely	Moderate risk	If significant organic containing material is identified within the made ground, then monitoring of potential ground gases, over a suitable period of time, will be required in order to determine the requirement for gas mitigation measures. Information to be contained in site Health & Safety Plan.
		Ground Workers		Medium	Low likelihood	Moderate/ Low risk	
		Site Users		Medium	Low likelihood	Moderate/ Low risk	
Made Ground petrol filling station, sheet metal work, printers and works (Off Site)	Metals Hydrocarbons PAHs	Site Users	Dermal contact	Mild	Likely	Moderate/ Low risk	Contamination testing.
			Inhalation of vapours, indoors and outdoors	Mild	Likely	Moderate/ Low risk	
			Soil Ingestion and Home Produce Consumption	Mild	Low likelihood	Low risk	
			Inhalation of contaminated dust	Mild	Likely	Moderate/ Low risk	

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
		Ground Workers	Dermal contact	Mild	Likely	Moderate/ Low risk	Information to be contained in site Health & Safety Plan and File. Use of appropriate PPE and normal good hygiene measures. Appropriate dust control measures during construction
			Inhalation of vapours, indoors and outdoors	Mild	Likely	Moderate/ Low risk	
			Soil Ingestion	Mild	Likely	Moderate/ Low risk	
			Inhalation of contaminated dust	Mild	Likely	Moderate/ Low risk	
Naturally occurring contaminants	Sulphates pH	Proposed Building	Direct contact of soil with building materials	Medium	Likely	Moderate Risk	As the protection of concrete is normally resolved in the building design process, the designer of the foundations should determine the requirement to undertake any investigation.

Sources	Potential pollutant	Receptor	Pathway	Hazard severity	Likelihood of occurrence	Risk / Significance	Comment & control measures
Demolition debris within the made ground	Asbestos	Site Users	Inhalation	Severe	Low likelihood	Moderate risk	Contamination testing
		Ground Workers		Severe	Likely	High risk	Any debris from earlier demolition found during site strip is to be inspected for asbestos by a suitably experienced contractor. Information to be contained in site Health & Safety Plan and File. Use of appropriate PPE and normal good hygiene measures. Appropriate dust control measures during construction
		Neighbours		Severe	Low likelihood	Moderate risk	Contamination testing

Any visual or olfactory evidence of contamination noted during works should be investigated by a suitably qualified person and their recommendations implemented.

11 SITE WORK

11.1 Investigations

11.1.1 In order to determine if the former usage of the property is a potential cause of contamination it is recommended that some site investigation should be undertaken based upon the requirements of BS 10175 which is the code of practice for the investigation of potentially contaminated sites. This may need to be phased with a preliminary investigation to determine if any further, or more detailed investigation is required. It is proposed that soil samples be taken from representative locations around the site and tested for a typical range of determinands, comprising asbestos, heavy metals, pH, speciated aromatic and aliphatic hydrocarbons and speciated PAHs.

11.1.2 Due to the former landfills to the north and west monitoring for landfill gas should be undertaken, in accordance with BS 8576, in order to determine if gas has migrated to the property. Furthermore, if the site has been filled in the past monitoring will determine if landfill gas is being generated by the fill material. If monitoring is not undertaken then gas protection measures should be installed.

11.2 Site Preparation

During the works a watching brief should be maintained by an experienced person. Should any visual or olfactory evidence of contamination be noted during the works GO Contaminated Solution Ltd and the local authority Environmental Health Officer (EHO) should be contacted. GO Contaminated Solution Ltd shall assess if further intrusive investigation and remediation is required. Proposals will be issued to the EHO for comment prior to undertaking the additional investigation or implementing the remediation strategy.

The form of investigation proposed in 11.1.1 will indicate if there is any contamination present and if it is necessary will enable remedial works to be formulated.

If any potentially contaminated spoil is to be removed from site, the Waste Acceptance Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported. It is recommended that consideration is given to this testing as part of the phase 2 investigation. Guidance can be obtained from Environment Agency document *Waste Sampling and Testing for Disposal to Landfill*.

11.3 External Works

In regard to water supply reference should be made to the UK Water Industry Research (UKWIR) publication "*Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites*" (Ref 10/WM/03/21; the '*UKWIR Guidance*'). This document provides guidance to ensure that water quality is safeguarded by identifying suitable pipe materials and components to be used below ground in potentially contaminated sites. An upgraded water supply pipe may be required by the water supply company. It is recommended that this report is provided to the water supplier with a request for the testing, if any, that they require.

12 SITE DEVELOPMENT CONSIDERATIONS

During the course of the site visit and preparation of this report the following items, whilst not within the scope of this report, have come to our attention and should be considered. This is not necessarily an exhaustive list.

12.1 An intrusive geotechnical investigation may be required to provide detailed information about the engineering nature of the ground, in order to allow the most suitable foundations in terms of economy and performance to be designed. This should follow the recommendations of BS 5930, the Code of Practice for site investigations with tests carried out to satisfy the requirements of BS 1377, the Code of Practice for methods of tests for soils for civil engineering purposes. It is recommended that this includes testing for sulphates.

12.2 As redevelopment of the site is proposed it is recommended that a full topographical survey is undertaken, if one is not available. This should identify all relevant features, boundaries and levels relating to the site and should also include ground levels on the adjacent properties and roads.

12.3 If it is proposed to make use of the existing drainage system, or any existing connections to the mains sewers. A CCTV survey should be considered in order to determine both the general condition and suitability for the proposed use.

12.4 If any excavation works are proposed, it is recommended that all the relevant utility companies are contacted to ascertain what pipes, cables, wires, lines and other apparatus exist close to where the work is to take place.

12.5 An asbestos survey of existing structures and infrastructure (as defined under Section 5(a) of the Control of Asbestos Regulations 2012) was beyond the brief of this report. Advice should be sought regarding the potential presence and management of asbestos within existing structures and infrastructure.

12.6 There are water courses near to the property and the Environment Agency indicative flood plain is shown to flood zone 3.

13 CONCLUSIONS

Based upon the information currently available, there would appear to be a moderate risk of potentially significant contamination on site. The following should be considered at this stage. It is considered that provided the recommendations of this report are implemented there is no increased risk to human health from redevelopment of the site for the proposed residential use.

13.1 There is potential contamination of the site from its use as a works and also from the nearby industries. This is confirmed by the previous investigation which did find some slightly elevated levels of contaminants.

13.2 Study of the historical maps indicate that there has been some development and subsequent demolition on site.

13.3 The site walkover identified a disused sewage treatment plant to be present on site from its former use as a campsite.

13.4 It is recommended that some preliminary intrusive environmental site investigation is undertaken prior to construction to determine if either contamination and, or, landfill gas are present on the property.

13.5 A reinforced barrier water supply pipe may be required by the water supply company. It is recommended that this report is provided to the water supplier with a request for the testing, if any, that they require.

13.6 A full Scope of Works document may be required to be prepared and agreed with the local authority, prior to undertaking any intrusive investigation. A sampling plan should be devised based on previous investigations and this report.

13.7 Should any visual or olfactory evidence of contamination be noted during the works this should be investigated by a suitably qualified person and their recommendations implemented.

13.8 If any potentially contaminated spoil is to be removed from site, the Waste Acceptance Criteria (WAC) testing should be agreed with the facility to which the spoil is being transported.

13.9 It is recommended that soils re-use is facilitated by use of the CL:AIRE Definition of Waste Code of Practice.

14 REFERENCES

- Card, G. B., Wilson, S., & Mortimer, S. (2012). *A Pragmatic Approach to Ground Gas Risk Assessment*. London, UK: Contaminated Land: Applications in Real Environments.
- Department of the Environment, Food and Rural Affairs and Environment Agency. (2004). *CLR 11: Model procedures for the management of land contamination*. Environment Agency. (2013). *Groundwater protection: principles and practice (GP3)*. Bristol: Environment Agency.
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- Health and Safety Executive in the United Kingdom. (2012). *The Control of Asbestos Regulations 2012*.
- NHBC and Environment Agency. (2008). *Guidance for the Safe Development of Housing on Land Affected by Contamination*. NHBC and Environment Agency.
- UK Water Industry Research Ltd. (2010). *Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites*. UKWIR.
- Wilson, S., Oliver, S., Mallet, H., Hutchings, H., & Card, G. (2007). *CIRIA Report C665. Assessing risks posed by hazardous gases to buildings*. London, UK: Construction Industry Research and Information Association.

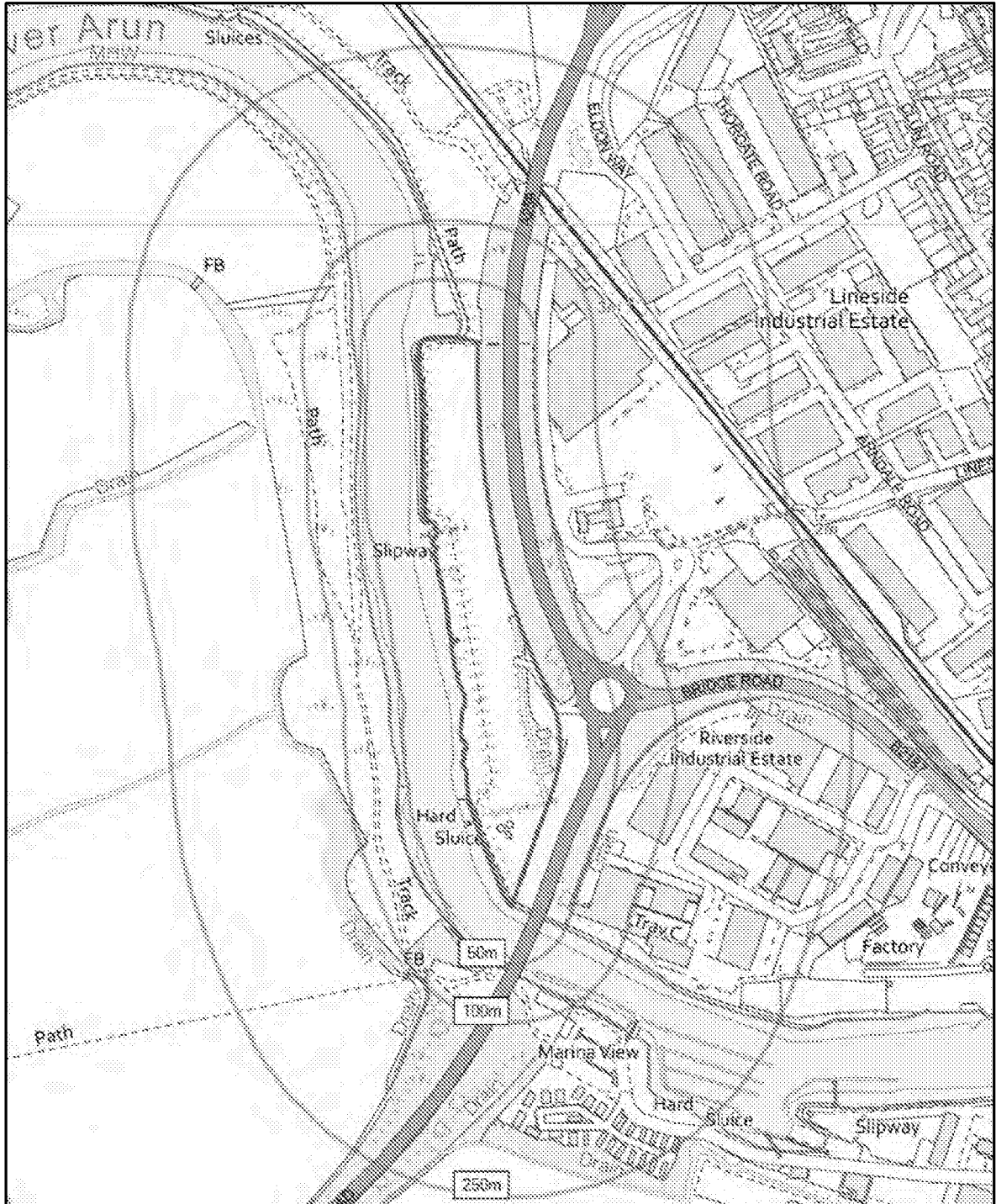
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Appendix A – Site Location Plan

1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



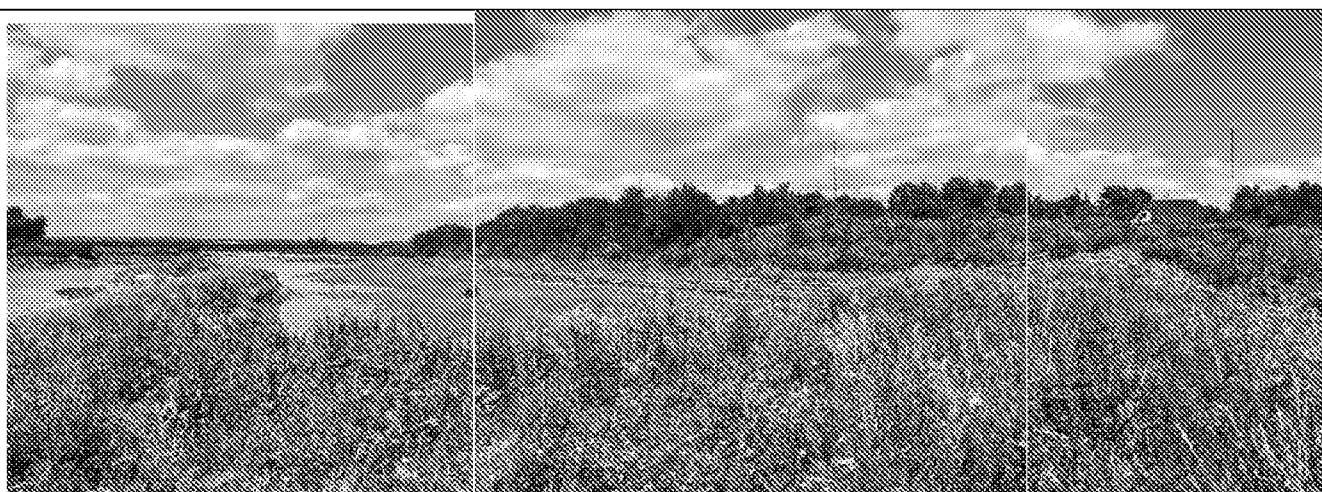
1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



Appendix B – Photographs



View from A259



View from Central Berm



View from Central Berm (Cont.)



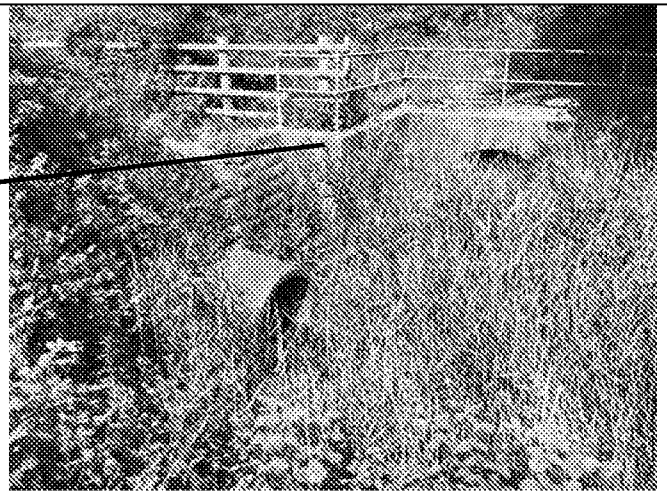
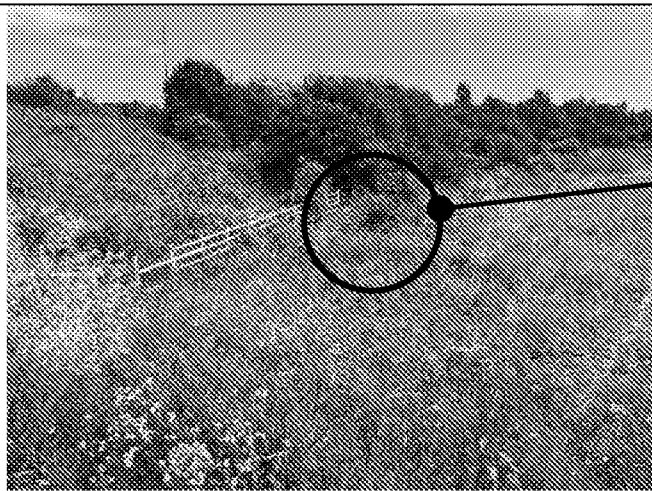
View across Site from Northeast Corner



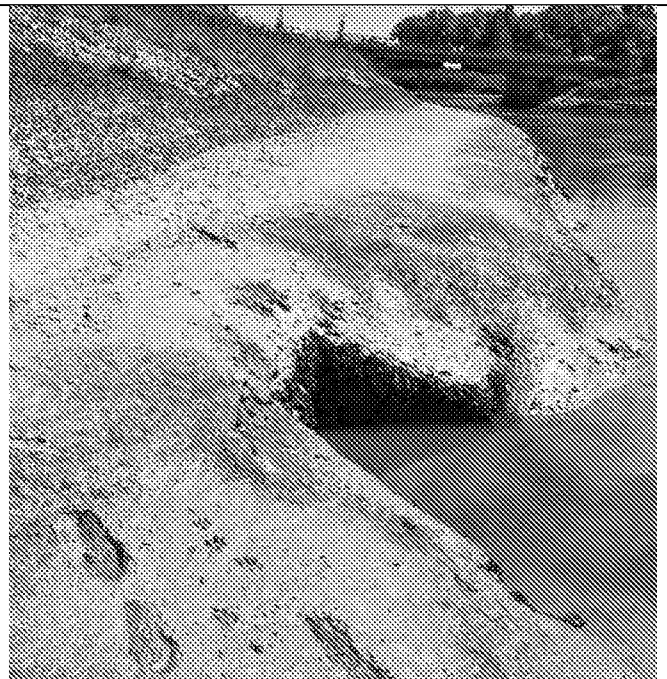
View across Site from point near South end of West Boundary



View across Site from point near South end of West Boundary (Cont.)

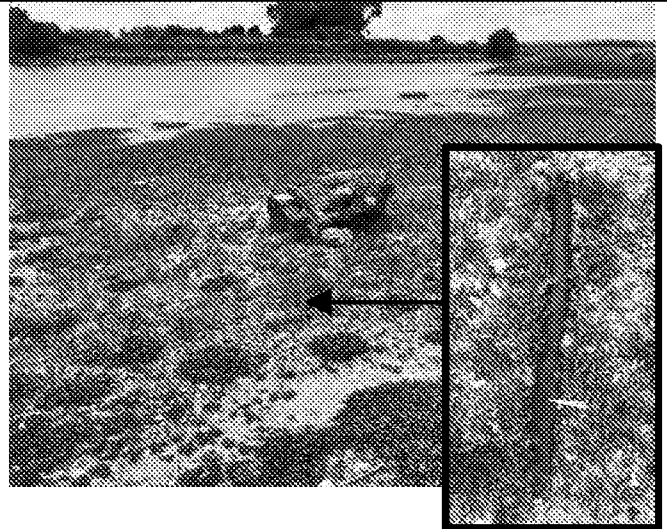
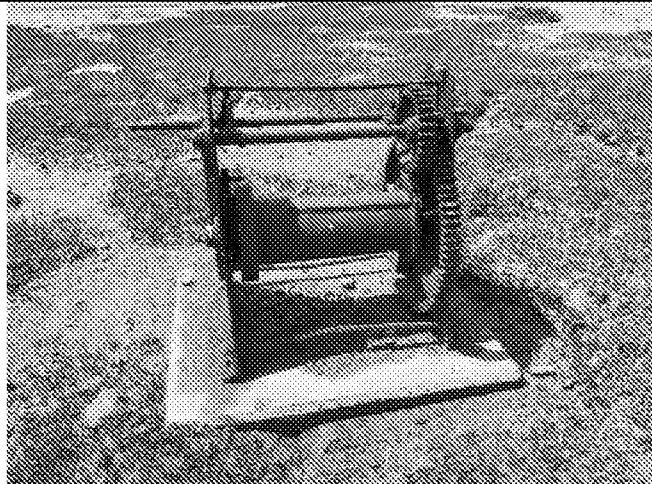


Drains entering site on East Boundary



Drain viewed from Western Berm

Exit to River Arun from Sluice



Remains of Winch from Former Slipway

Possible cable on Northern Area



Appendix C – Landmark Report Extracts

Where the overview indicates that no data has been found the relevant detail report sections may have been omitted.

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NOR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (N)	0	1	501533 102705
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (N)	0	1	501544 102605
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6NE (E)	0	1	501535 102550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13SW (N)	0	1	501543 102665
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (E)	0	1	501550 102665
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A6NE (S)	1	1	501500 102505
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6NE (S)	10	1	501500 102455
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6NE (SE)	29	1	501550 102550
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6NW (S)	49	1	501500 102455
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SW (S)	118	1	501544 102300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SE (S)	101	1	501535 102300
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A130E (NE)	167	1	501700 102950
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SW (S)	181	1	501535 102255
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NE (N)	209	1	501530 103100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6NE (SE)	223	1	501535 102400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SW (S)	242	1	501450 102200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SW (S)	316	1	501405 102150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SW (S)	326	1	501350 102100
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A6SW (SE)	396	1	501500 102200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	Discharge Consents Operator: Tarmac Concrete Ltd Property Type: MAKING OF GLASS/CERAMICS/CEMENT/CUTTING STONE Location: River Side Works, Littlehampton Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: 002542 Permit Version: 1 Effective Date: 3rd April 1970 Issued Date: 3rd April 1970 Revocation Date: 25th March 1996 Discharge Type: Unknown Discharge: Freshwater Stream/River Environment: Receiving Water: Freshwater River Status: Pre National Rivers Authority Legislation where issue date < 01/05/1989 Positional Accuracy: Located by supplier to within 100m	ABNE (SE)	211	2	501810 102470
2	Discharge Consents Operator: N A P Ramnaray Esq Property Type: Not Given Location: LITTLEHAMPTON, West Sussex Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: 00111046 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 7th February 1972 Revocation Date: Not Supplied Discharge Type: Surface Water Discharge: Saline Estuary Environment: Receiving Water: Not Supplied Status: Not Supplied Positional Accuracy: Located by supplier to within 100m	ABSE (S)	244	2	501790 102310
3	Discharge Consents Operator: Mr G Ford, Manufacturing Manager Property Type: REAL ESTATE ACTIVITIES/BUYING/SELLING/RENTING Location: Limeside Industrial Estate, Fort Road, Littlehampton, West Sussex Authority: Environment Agency, Southern Region Catchment Area: Not Supplied Reference: 002005 Permit Version: 1 Effective Date: 10th June 1971 Issued Date: 10th June 1971 Revocation Date: 11th May 1995 Discharge Type: Discharge Of Other Water-Surface Water Discharge: Freshwater Stream/River Environment: Receiving Water: Freshwater River Status: Pre National Rivers Authority Legislation where issue date < 01/05/1989 Positional Accuracy: Located by supplier to within 10m	A13SE (E)	287	2	501830 102745
4	Discharge Consents Operator: Southern Water Services Ltd (H) Property Type: Not Given Location: Left Bank Of River Arun, West Sussex Authority: Environment Agency, Southern Region Catchment Area: Not Given Reference: PPA/35/117/0417 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 21st June 1979 Revocation Date: Not Supplied Discharge Type: Unknown Discharge: Freshwater Stream/River Environment: Receiving Water: Not Supplied Status: Not Supplied Positional Accuracy: Located by supplier to within 100m	A13SE (NE)	340	2	501680 102910



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	Local Authority Pollution Prevention and Controls Name: Littlehampton Welding Ltd Location: Unit 3 Riverside Works, Riverside Industrial Estate, Bridge Road, LITTLEHAMPTON, West Sussex, BN17 5DF Authority: Arun District Council, Environmental Health Department Permit Reference: 1575 Dated: 25th December 1992 Process Type: Local Authority Air Pollution Control Description: PG5/34 Respraying of road vehicles Status: Authorisation revoked Positional Accuracy: Automatically positioned to the address	ASNE (SE)	83	3	501656 102412
29	Local Authority Pollution Prevention and Controls Name: Tasso Stores Ltd/Petrol Station Location: Broad Piece, LITTLEHAMPTON, West Sussex, BN17 5RA Authority: Arun District Council, Environmental Health Department Permit Reference: 1807 Dated: 11th May 1992 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station Status: Permitted Positional Accuracy: Automatically positioned to the address	A135E (NE)	108	3	501648 102355
30	Local Authority Pollution Prevention and Controls Name: Tarmac Southern Ltd Location: Quayside, LITTLEHAMPTON, West Sussex, BN17 5DN Authority: Arun District Council, Environmental Health Department Permit Reference: 1555 Dated: 24th February 1992 Process Type: Local Authority Air Pollution Control Description: PG3/15 Mineral drying and roadstone coating processes Status: Permitted Positional Accuracy: Manually positioned to the address or location	ASNW (SE)	348	3	501633 102399
31	Local Authority Pollution Prevention and Controls Name: Littlehampton Marina Location: Mera Workshop, Ferry Road, Littlehampton, BN17 5ds Authority: Arun District Council, Environmental Health Department Permit Reference: 3369 Dated: 14th March 2005 Process Type: Local Authority Air Pollution Control Description: PG1/1Waste oil burners, less than 3.4MW net rated thermal input Status: Authorisation revoked Positional Accuracy: Manually positioned to the address or location	ASSE (SE)	377	3	501653 102163
32	Local Authority Pollution Prevention and Controls Name: Hanson Quarry Products Europe Ltd Location: Quayside, Bridge Road, LITTLEHAMPTON, West Sussex, BN17 5DN Authority: Arun District Council, Environmental Health Department Permit Reference: 1882 Dated: 4th December 1992 Process Type: Local Authority Air Pollution Control Description: PG3/15 Blending, packing, loading and use of bulk cement Status: Authorisation revoked Positional Accuracy: Manually positioned to the address or location	ASNW (SE)	381	3	501656 102352
33	Local Authority Pollution Prevention and Controls Name: Precast Foundry Ltd Location: Unit 3 Lineside Way, Lineside Industrial Estate, Littlehampton, West Sussex, BN17 5EJ Authority: Arun District Council, Environmental Health Department Permit Reference: 7156 Dated: 31st March 2006 Process Type: Local Authority Air Pollution Control Description: PG3/5 Aluminium and aluminium alloy processes Status: Permitted Positional Accuracy: Manually positioned to the address or location	A142W (E)	428	3	501669 102636
34	Local Authority Pollution Prevention and Control Enforcement Location: Unit 3 Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Type: Air Pollution Control Enforcement Notice Reference: EPA/12/93 Date issued: 1st October 1996 Enforcement Date: Not Supplied Details: Not Supplied Positional Accuracy: Manually positioned to the address or location	ASNE (SE)	82	3	501654 102411



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
35	Local Authority Pollution Prevention and Control Enforcement Location: Quayside, Littlehampton, BN17 5DD Type: Air Pollution Control Enforcement Notice Reference: Not Given Date Issued: 2nd December 1999 Enforcement Date: Not Supplied Details: Enforcement Served Due To The Breach Of Conditions 7 And 15 Of The Licence Agreement Positional Accuracy: Manually positioned to the road within the address or location	ASNW (SE)	345	3	501915 102355
	Nearest Surface Water Feature	ASNW (SW)	5	-	501533 102544
36	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Other Location: A252 Road Bridge, LITTLEHAMPTON Authority: Environment Agency, Southern Region Pollutant: Oils - Diesel (Including Agricultural) Note: Oil On River Arun; Water Company Sewage: Surface Water Outfall Incident Date: 18th December 1995 Incident Reference: 1525 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Oils/Related Products Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 150m	ASNE (S)	35	2	501600 102490
36	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Surface Water Outfall Location: A252 Road Bridge Authority: Environment Agency, Southern Region Pollutant: Oils - Unknown Note: Liquid Oil River Arun - Possibly Fuel Incident Date: 23rd January 1996 Incident Reference: 1562 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Water Company Surface Water Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 150m	ASNE (S)	27	2	501600 102395
37	Pollution Incidents to Controlled Waters Property Type: Industrial: Other Location: Stream, Riverside Ind Est, LITTLEHAMPTON Authority: Environment Agency, Southern Region Pollutant: Oils - Waste Oil Note: Oil Incident Date: 23rd April 1996 Incident Reference: 1635 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Industrial - Other Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 150m	ASNE (SE)	39	2	501700 102550
38	Pollution Incidents to Controlled Waters Property Type: Industrial: Other Location: Ditch Upstream A259 At, LITTLEHAMPTON Authority: Environment Agency, Southern Region Pollutant: Oils - Other Oil Note: Oil; Sediment Incident Date: 28th October 1993 Incident Reference: 759 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Oils/Related Products Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 150m	A135E (E)	131	2	501700 102700
38	Pollution Incidents to Controlled Waters Property Type: Oil Industry (Not Garages) Location: Moored Tankers, LITTLEHAMPTON Authority: Environment Agency, Southern Region Pollutant: Oils - Diesel (Including Agricultural) Note: Oil Leak From Tank Incident Date: 2nd October 1996 Incident Reference: 1887 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Oils/Related Products Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 150m	ASNE (E)	142	2	501700 102600



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
39	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Inside Industrial Estate, LITTLEHAMPTON Authority: Environment Agency, Southern Region Pollutant: Rubber/Liter Of Solids Note: Oil Incident Date: 26th July 1992 Incident Reference: 454 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Miscellaneous/Other Pollution Type Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	ASNE (E)	156	2	501755 102655
40	Pollution Incidents to Controlled Waters Property Type: Miscellaneous/Premises: Other Location: Drainage Ditches, Near Tesco Authority: Environment Agency, Southern Region Pollutant: Oils - Diesel (Including Agricultural) Note: Oil Petrol Incident Date: 23rd January 1997 Incident Reference: 1592 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Oils/Related Products Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A120E (E)	164	2	501755 102755
41	Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Surface Water Outfall Location: Under Railway Track, E End Of Footbridge, Littlehampton Station, LITTLEHAMPTON Authority: Environment Agency, Southern Region Pollutant: Oils - Unknown Note: Oil In A Cuvet Incident Date: 18th March 1996 Incident Reference: 1603 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Water Company Surface Water Overflow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	ASNN (E)	232	2	501905 102695
42	Pollution Incidents to Controlled Waters Property Type: Landfill/Waste Disposal Site Location: Ferry Road, LITTLEHAMPTON Authority: Environment Agency, Southern Region Pollutant: Miscellaneous - To Leachate Note: Excavation To Landfill, Liquid Waste In River Incident Date: 24th November 1998 Incident Reference: 2853 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Deliberate Disposal To Drain Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	ASNN (S)	422	2	501605 102805
43	Pollution Incidents to Controlled Waters Property Type: Industrial: Other Location: Arun Road Bridge, A259, LITTLEHAMPTON Authority: Environment Agency, Southern Region Pollutant: Chemicals - Unknown Note: Green Ditch Incident Date: 13th March 1992 Incident Reference: 314 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Industrial Chemicals Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A145W (E)	427	2	502030 102690
44	Pollution Incidents to Controlled Waters Property Type: Waste Management Facilities Location: FORD PRISON STW Authority: Environment Agency, Southern Region Pollutant: Organic Chemicals / Mixed / Undertified / Waste Mineral & Synthetic Oils Note: Not Supplied Incident Date: 28th October 1995 Incident Reference: 3607 Catchment Area: Arun Receiving Water: Potentia River Cause of Incident: Other Cause Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A120E (NW)	481	2	501630 102200



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
50	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Farming Role Authority: Environment Agency, Southern Region Pollutant: Oils - Other Oil Note: ON On Farming Role Incident Date: 14th May 1992 Incident Reference: 384 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Oils/Fuel/Oil Products Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier so within 100m	A17NE (N)	556	2	501290 103600
	River Quality Name: Not Supplied GOA Grade: Unclassified Total River Reach: Not Supplied Estimated Distance (km): Not Supplied Flow Rate: Not Supplied Flow Type: Not Supplied Year: 1995	A135W (W)	58	2	501422 102670
51	Water Abstractions Operator: Mr J L Baird Licence Number: 1041411015 Permit Version: 100 Location: Ryebank Role And Elmer Role Authority: Environment Agency, Southern Region Abstraction: General Agriculture/ Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of weepoints. Source: Surface Daily Rate (m3): 1081 Yearly Rate (m3): 27372 Details: See Licence Map Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 01 December 2005 Permit End Date: Not Supplied Positional Accuracy: Located by supplier so within 10m	A02E (S)	250	2	501710 102210
52	Water Abstractions Operator: James D Baird (Home Farm) Ltd Licence Number: 1041411016 Permit Version: 101 Location: Ryebank Role Authority: Environment Agency, Southern Region Abstraction: General Agriculture/ Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of weepoints. Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: See Licence Map Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 1st April 2016 Permit End Date: Not Supplied Positional Accuracy: Located by supplier so within 10m	A02E (S)	297	2	501725 102160
53	Water Abstractions Operator: Am Ltd (Solent Aggregates Ltd) Licence Number: 1041411021 Permit Version: 100 Location: River Aron Estuary - Tidal Authority: Environment Agency, Southern Region Abstraction: Construction: General Washing/Process Washing Abstraction Type: Water may be abstracted from a single point. Source: Tidal Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: See Licence Map Authorised Start: 01 January Authorised End: 31 September Permit Start Date: 1st April 2016 Permit End Date: Not Supplied Positional Accuracy: Unknown	A0NW (SE)	351	2	501910 102330

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Confined: Secondary Superficial Aquifer - High vulnerability Classification: High Confined Vulnerability: High Confined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: High Bedrock Flow: Well Connected Fractures Dilution: 300-550 mm/year Baseflow Index: ~70% Superficial: ~90% Patchiness: ~15m Superficial Thickness: Medium Superficial Recharge: Medium	A133W (W)	3	4	501544 102556
	Groundwater Vulnerability - Soluble Rock Risk Classification: Significant Risk - Problems Unlikely	A133W (W)	3	4	501544 102556
	Bedrock Aquifer Designations Aquifer Designation: Principal Aquifer	A133W (W)	3	4	501544 102556
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A133W (W)	3	4	501544 102556
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial/Tidal Models Boundary Accuracy: As Supplied	A133W (W)	3	2	501544 102556
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NE (SE)	3	2	501545 102516
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (S)	3	2	501544 102536
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133W (W)	3	2	501535 102556
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133W (NW)	3	2	501525 102556
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (S)	3	2	501545 102575
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (S)	3	2	501545 102485
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NE (SE)	5	2	501615 102575
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133E (NE)	17	2	501605 102595
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (S)	47	2	501525 102395
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (S)	49	2	501544 102375

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNNW (S)	51	2	501315 102401
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	ASNNW (SW)	51	2	501475 102545
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	ASNNW (S)	52	2	501515 102405
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	ASNNW (SW)	53	2	501475 102545
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	ASNNW (S)	54	2	501550 102565
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	ASNNW (S)	54	2	501495 102445
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133NW (NW)	55	2	501435 102737
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	ASNNW (SW)	55	2	501465 102515
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNNW (SW)	57	2	501465 102575
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNNW (SW)	58	2	501465 102597
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNNW (S)	59	2	501505 102405
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	ASNNW (S)	59	2	501485 102465
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNNW (SW)	60	2	501455 102597
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNNW (W)	60	2	501455 102533
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A133NW (NW)	60	2	501435 102733
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133NW (W)	61	2	501445 102581



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	ASNW (SW)	61	2	501455 102561
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	ASNW (W)	61	2	501455 102555
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNW (S)	62	2	501486 102550
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNW (S)	62	2	501478 102473
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NW)	64	2	501435 102725
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (W)	65	2	501446 102673
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (W)	65	2	501435 102705
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (W)	68	2	501445 102666
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (W)	69	2	501445 102651
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (NW)	75	2	501425 102935
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NW)	79	2	501425 102947
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	ASNW (SW)	87	2	501445 102485
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNW (SW)	88	2	501445 102495
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNW (S)	89	2	501495 102365
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (NW)	84	2	501435 102935
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ASNW (SW)	94	2	501445 102473



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	ABNW (SW)	54	2	501438 102501
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	ABNW (S)	55	2	501485 102355
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ABNW (SW)	56	2	501425 102525
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A132W (NW)	56	2	501402 102533
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	ABNW (S)	59	2	501474 102301
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A132W (NW)	100	2	501395 102505
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	ABNW (S)	100	2	501475 102373
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ABNW (S)	101	2	501482 102355
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ABNW (S)	101	2	501475 102375
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ABNW (S)	105	2	501452 102355
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	ABNW (S)	107	2	501462 102389
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	ABNW (SW)	110	2	501418 102529
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A132W (W)	111	2	501355 102725
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ABNW (S)	112	2	501455 102395
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ABNW (S)	113	2	501445 102415
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	ABNW (SW)	113	2	501415 102545

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13NW (N)	113	2	501436 102016
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (W)	114	2	501385 102717
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (W)	114	2	501380 102701
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NW)	115	2	501383 102933
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (W)	115	2	501384 102577
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (S)	115	2	501445 102405
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (SW)	115	2	501438 102425
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (W)	118	2	501395 102555
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (W)	118	2	501398 102549
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (NW)	120	2	501375 102753
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (W)	120	2	501398 102633
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (SW)	120	2	501408 102553
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (SW)	121	2	501406 102555
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (W)	121	2	501398 102597
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (W)	122	2	501398 102545
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (NW)	123	2	501374 102935

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133W (NW)	124	2	501379 102795
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133W (NW)	124	2	501379 102805
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (SW)	124	2	501401 102557
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A133W (NW)	125	2	501365 102521
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A133W (NW)	130	2	501365 102521
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13NW (N)	131	2	501415 103505
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (W)	134	2	501355 102521
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133W (NW)	134	2	501351 102533
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133W (NW)	134	2	501358 102555
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A133W (NW)	135	2	501355 102557
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133W (NW)	140	2	501353 102575
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (SW)	141	2	501365 102555
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (W)	142	2	501378 102515
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (SW)	144	2	501378 102577
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A133W (NW)	145	2	501345 102505
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (W)	146	2	501375 102603

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A2NW (W)	147	2	501373 102605
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A2NW (SW)	149	2	501375 102595
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NW)	149	2	501342 102905
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (SW)	150	2	501346 102935
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NW)	153	2	501342 102933
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (NW)	155	2	501335 102921
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13NW (N)	164	2	501475 103065
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13NW (N)	175	2	501395 103045
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8SW (S)	182	2	501485 102255
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8SW (S)	185	2	501485 102253
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8SW (S)	193	2	501482 102345
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8SW (S)	200	2	501475 102341
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8SW (S)	207	2	501475 102235
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13NW (N)	208	2	501536 103111
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8SW (S)	215	2	501455 102225
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8SW (S)	230	2	501455 102215



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6CW (S)	234	2	501455 102213
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A6SW (S)	245	2	501445 102205
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13NW (N)	247	2	501415 102135
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6SW (S)	248	2	501445 102201
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial/Tidal Models Boundary Accuracy: As Supplied	A13SW (W)	0	2	501544 102595
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A6NW (S)	0	2	501545 102575
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A6NW (S)	0	2	501544 102535
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (W)	0	2	501535 102655
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A6NW (S)	0	2	501545 102495
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A6NE (SE)	0	2	501585 102615
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NW)	0	2	501525 102685
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A6NE (SE)	5	2	501615 102575
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SE (NE)	17	2	501605 102685
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A6NW (S)	47	2	501525 102385
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A6NW (S)	48	2	501544 102375
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A6NW (S)	51	2	501515 102401

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (SW)	51	2	501475 102585
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (S)	52	2	501515 102405
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (SW)	53	2	501475 102585
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (S)	54	2	501485 102445
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (S)	54	2	501550 102365
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NE (S)	55	2	501562 102361
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (SW)	55	2	501486 102575
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NW)	55	2	501435 102737
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (SW)	55	2	501455 102615
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (SW)	55	2	501456 102597
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (S)	56	2	501506 102405
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (SW)	56	2	501466 102597
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (NW)	58	2	501438 102733
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (S)	58	2	501485 102485
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (W)	60	2	501458 102633
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (S)	61	2	501436 102452

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (SW)	51	2	501455 102551
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (W)	51	2	501455 102555
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (W)	51	2	501445 102551
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (S)	52	2	501475 102473
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (W)	54	2	501445 102573
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NW)	54	2	501435 102725
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (W)	55	2	501435 102705
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (W)	59	2	501445 102555
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (W)	59	2	501445 102551
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (NW)	75	2	501425 102335
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NW)	79	2	501425 102541
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A8NW (SW)	87	2	501445 103455
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (SW)	88	2	501445 103455
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (S)	88	2	501455 103355
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SW (NW)	94	2	501395 102525
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A8NW (SW)	94	2	501445 103473



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A8NW (SW)	94	2	SD1438 102501
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A8NW (S)	95	2	SD1438 102393
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Partial Models Boundary Accuracy: As Supplied	A8NW (SW)	96	2	SD1438 102525
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A8NW (S)	99	2	SD1474 102351
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A8NW (S)	100	2	SD1475 102373
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Partial Models Boundary Accuracy: As Supplied	A8NW (S)	101	2	SD1492 102395
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Partial Models Boundary Accuracy: As Supplied	A8NW (S)	101	3	SD1475 102375
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Partial Models Boundary Accuracy: As Supplied	A8NW (S)	106	2	SD1465 102385
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A8NW (S)	107	2	SD1462 102389
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A8NW (SW)	110	2	SD1415 102529
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A132W (W)	111	2	SD1356 102725
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Partial Models Boundary Accuracy: As Supplied	A8NW (S)	112	2	SD1485 102395
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Partial Models Boundary Accuracy: As Supplied	A8NW (S)	113	2	SD1445 102415
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Partial Models Boundary Accuracy: As Supplied	A8NW (SW)	113	2	SD1415 102545
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Partial Models Boundary Accuracy: As Supplied	A132W (W)	114	2	SD1355 102717
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A132W (W)	114	2	SD1395 102731

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133W (W)	115	2	501394 102677
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A132W (NW)	115	2	501382 102653
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A26W (E)	115	2	501446 102405
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A26W (SW)	115	2	501439 102425
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A133W (W)	118	2	501396 102665
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A26W (W)	118	2	501398 102645
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A133W (NW)	120	2	501376 102753
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A26W (SW)	120	2	501406 102553
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A26W (W)	120	2	501398 102632
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A26W (SW)	121	2	501405 102555
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A133W (W)	121	2	501386 102697
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A26W (W)	122	2	501396 102645
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A133W (NW)	123	2	501374 102935
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A26W (SW)	124	2	501402 102557
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133W (NW)	124	2	501375 102785
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A133W (NW)	124	2	501372 102686

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A132W (NW)	128	2	501363 102813
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A135W (NW)	130	2	501358 102850
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A138W (N)	131	2	501415 103005
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A2NW (W)	134	2	501356 102821
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A135W (NW)	134	2	501362 102933
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A135W (NW)	134	2	501353 102855
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A135W (NW)	135	2	501355 102857
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A135W (NW)	135	2	501358 102935
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A135W (NW)	140	2	501350 102875
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A2NW (SW)	141	2	501356 102565
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A2NW (W)	142	2	501378 102616
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A2NW (SW)	142	2	501378 102577
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A2NW (W)	145	2	501372 102508
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A132W (NW)	146	2	501345 102935
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A2NW (W)	147	2	501374 102605
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A2NW (SW)	149	2	501375 102595

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A135W (NW)	148	2	501342 102936
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A132W (NW)	153	2	501342 102933
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A132W (NW)	158	2	501335 102921
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A131NW (N)	154	2	501475 103065
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A132E (NE)	155	2	501735 102905
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A131NW (N)	175	2	501395 103045
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A83W (S)	182	2	501455 102255
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A83W (S)	185	2	501455 102253
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A83W (S)	193	2	501482 102245
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A83W (S)	200	2	501475 102241
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A83W (S)	207	2	501472 102235
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A131NW (N)	208	2	501525 103111
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A83W (S)	215	2	501455 102229
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A83W (S)	235	2	501455 102215
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A83W (S)	234	2	501455 102213
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Total Models Boundary Accuracy: As Supplied	A83W (S)	245	2	501455 102205



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plan Type: Total Models Boundary Accuracy: As Supplied	A13NW (N)	247	2	501416 103130
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plan Type: Partial Models Boundary Accuracy: As Supplied	A8SW (S)	248	2	501445 102231
	Areas Benefitting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences Type: Flood Defences Reference: Not Supplied	A13SW (N)	5	2	501528 102933
	Flood Defences Type: Flood Defences Reference: Not Supplied	A13SW (W)	8	2	501536 102555
	Flood Defences Type: Flood Defences Reference: Not Supplied	A13SW (N)	2	2	501538 102934
	Flood Defences Type: Flood Defences Reference: Not Supplied	A8NW (W)	52	2	501451 102643
56	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 14.7 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A8NE (S)	0	5	501553 102493
57	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 45.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A8NE (S)	0	5	501585 102591
58	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A8NE (E)	0	5	501598 102505
59	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 152.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A8NE (E)	0	5	501572 102557
60	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 71.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A8NE (S)	1	5	501601 102502



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
51	Q5 Water Network Lines Watercourse Form: Tidal river Watercourse Length: 54.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASNW (C)	1	5	501538 102485
52	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASNE (C)	1	5	501601 102505
53	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 6.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASNE (S)	1	5	501601 102505
54	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 52.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A135E (E)	1	5	501576 102662
55	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 55.5 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASNE (C)	5	5	501603 102506
56	Q5 Water Network Lines Watercourse Form: Tidal river Watercourse Length: 355.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Arun Catchment Name: Rother and Arun Priority: 1	ASNW (C)	26	5	501506 102476
57	Q5 Water Network Lines Watercourse Form: Tidal river Watercourse Length: 1934.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Arun Catchment Name: Rother and Arun Priority: 1	ASNW (W)	29	5	501432 102644
58	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 114.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASNE (SE)	48	5	501603 102512
59	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 5.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASNE (SE)	51	5	501657 102519



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
70	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 77.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Primacy: 1	A13SE (E)	63	5	501625 102630
71	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 205.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Primacy: 1	AGNE (SE)	55	5	501683 102548
72	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Primacy: 1	AGNE (SE)	58	5	501662 102519
73	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 9.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Primacy: 1	AGNE (SE)	57	5	501664 102520
74	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Primacy: 1	AGNE (SE)	68	5	501674 102523
75	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 68.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Primacy: 1	AGNE (SE)	58	5	501696 102540
76	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 141.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Primacy: 1	AGNW (EW)	96	5	501485 102542
77	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 129.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Primacy: 1	AGNW (S)	101	5	501471 102360
78	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 154.7 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Primacy: 1	AGNE (SE)	113	5	501723 102570



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
79	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 55.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASNW (SW)	113	5	501431 102412
80	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 51.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASNW (W)	127	5	501392 102532
81	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 112.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 2	ASSE (S)	133	5	501539 102295
82	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 576.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A132W (NW)	145	5	501353 102534
83	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 467.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASNW (SW)	157	5	501369 102551
84	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 300.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A132W (NW)	167	5	501333 102595
85	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 17.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASDW (S)	177	5	501459 102271
86	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 2	ASDW (S)	191	5	501465 102255
87	OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 67.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	ASDW (S)	191	5	501465 102255

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
88	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 570.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 2	A83W (S)	193	5	501467 102254
89	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 315.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A83W (S)	236	5	501543 102212
90	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A83W (S)	230	5	501512 102204
91	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 110.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A83W (S)	221	5	501510 102204
92	Q5 Water Network Lines Watercourse Form: Tidal river Watercourse Length: 5.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ryebank Rife Catchment Name: Not Supplied Priority: 1	A83E (SE)	245	5	501741 102241
93	Q5 Water Network Lines Watercourse Form: Tidal river Watercourse Length: 27.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ryebank Rife Catchment Name: Not Supplied Priority: 1	A83E (SE)	245	5	501803 102285
94	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 31.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ryebank Rife Catchment Name: Rother and Arun Priority: 1	A83E (SE)	247	5	501736 102236
95	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 47.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Ryebank Rife Catchment Name: Rother and Arun Priority: 1	A83E (S)	254	5	501730 102206
96	Q5 Water Network Lines Watercourse Form: Inland river Watercourse Length: 418.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rother and Arun Priority: 1	A83E (S)	264	5	501730 102206



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
216	BGS Recorded Landfill Site Site Name: Ferry Rd Location: LITTLEHAMPTON, West Sussex Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Good	A132W (W)	64	2	501435 102755
217	Historical Landfill Site Licence Holder: Not Supplied Location: Littlehampton, Sussex Name: Ferry Road North Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLS20024 First Input Date: 31st December 1946 Last Input Date: 31st December 1975 Specified Waste: Deposited Waste included inert, industrial, commercial and household waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 38059113 BGS Ref: 23 Other Ref: WD27/44a, WD27/44a	A8NW (W)	51	2	501453 102556
218	Historical Landfill Site Licence Holder: Not Supplied Location: Littlehampton, Sussex Name: Littlehampton Ferry Road South Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLS20077 First Input Date: 31st December 1946 Last Input Date: 31st December 1975 Specified Waste: Deposited Waste included inert, commercial and household waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: WD27/44b	A2NE (S)	56	2	501564 102591
219	Historical Landfill Site Licence Holder: Not Supplied Location: Littlehampton, Sussex Name: Wyck Farm Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLS20022 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste: Not Supplied Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: WD27/152	A132W (N)	51	2	501536 102593
220	Historical Landfill Site Licence Holder: Littlehampton Marina Limited Location: Littlehampton, Sussex Name: Littlehampton Marina Extension Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLS20376 First Input Date: 1st June 1981 Last Input Date: 31st August 1981 Specified Waste: Deposited Waste included industrial waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 38059114 BGS Ref: Not Supplied Other Ref: WD27/149, WD13/47	A8SE (S)	52	2	501576 102265

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
226	Licensed Waste Management Facilities (Locations) Licence Number: 101145 Location: Unit 15/16, Arndale Road, Lineside Ind Est, Littlehampton, West Sussex, BN17 7HQ Operator Name: S.R.C.L Ltd Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Clinical Waste Transfer Station Licence Status: Modified Issued: 20th December 2009 Last Modified: 4th January 2019 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A130E (E)	196	2	501775 102585
227	Licensed Waste Management Facilities (Locations) Licence Number: 10147 Location: Unit A, Fort Road Industrial Estate, Littlehampton, West Sussex, BN17 7QU Operator Name: Medisort Ltd Operator Location: Not Supplied Authority: Environment Agency - South East Region, Solent & South Downs Area Site Category: Clinical Waste Transfer Stations Licence Status: Modified Issued: 5th July 2006 Last Modified: 17th January 2014 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A9NW (E)	489	2	502082 102645
	Local Authority Landfill Coverage Name: Arun District Council - Has no landfill data to supply		0	8	501544 102655
	Local Authority Landfill Coverage Name: West Sussex County Council - Has supplied landfill data		0	7	501676 102674
228	Local Authority Recorded Landfill Sites Location: Littlehampton Marina, Ferry Road, BN17 6ds Reference: CM/23/85 Authority: West Sussex County Council, Environment & Development Last Reported Status: Unknown Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A80E (S)	123	7	501682 102255
229	Local Authority Recorded Landfill Sites Location: Ford Prison Tip Site Reference: Not Supplied Authority: West Sussex County Council, Environment & Development Last Reported Status: Unknown Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Located by supplier to within 100m Boundary Quality: Not Applicable	A125W (W)	754	7	500700 102800
230	Local Authority Recorded Landfill Sites Location: Countess Lane, Littlehampton Reference: LU/59/05 Authority: West Sussex County Council, Environment & Development Last Reported Status: Unknown Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Located by supplier to within 100m Boundary Quality: Not Applicable	A17NE (NW)	891	7	501100 103700



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
231	Local Authority Recorded Landfill Site Location: Brook Barn Farm Landfill Site, Courtwell Lane, Littlehampton Reference: LU2393/54, LU2398/7 Authority: West Sussex County Council, Environment & Development Last Reported Status: Unknown Type of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Manually positioned within the geographical locality Boundary Quality: Not Applicable	A17NE (N)	982	7	501130 102653
232	Potentially Infilled Land (Non-Water) Bearing Ref: E Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1962	A8NE (E)	922	-	502530 102458
233	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A6NE (S)	0	-	501684 102536
334	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A8NE (S)	5	-	501553 102536
235	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A130E (E)	29	-	501686 102669
336	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A130W (N)	84	-	501521 102957
237	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A8NE (SE)	113	-	501718 102494
238	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A6NW (E)	147	-	501458 102371
239	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A6NW (S)	115	-	501469 102393
340	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A6SW (E)	154	-	501514 102363
241	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A6SW (SW)	238	-	501573 102291
342	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A8SE (SE)	292	-	501756 102191
243	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A6SW (S)	307	-	501373 102188
244	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A7SE (SW)	410	-	501190 102202
245	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A8SE (S)	432	-	501709 102097
246	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A6SW (SW)	458	-	501218 102122
247	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A3NE (S)	477	-	501727 101966
248	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A6SW (SE)	480	-	501979 102167
249	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A3NE (S)	495	-	501725 101957



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
250	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A3NW (S)	525	-	501272 101584
251	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A3NW (E)	542	-	501252 102027
252	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A7SE (SW)	552	-	501027 102280
253	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A3NW (S)	591	-	501452 101637
254	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A2NE (S)	595	-	501635 101872
255	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A4NW (SE)	648	-	502030 101951
256	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A4NW (SE)	715	-	502028 101866
257	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A5NE (E)	722	-	502325 102631
258	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A4NW (SE)	725	-	502158 101876
259	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A3SW (S)	902	-	501247 101674
260	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1979	A19NW (N)	912	-	501928 103724
261	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A2SE (S)	956	-	501192 101538
262	Registered Landfill Sites Licence Holder: L H Hutchins Licence Reference: 50A/75 Site Location: Wick Farm (Os 60), Empty Pond Between River Arun & Railway, Littlehampton, West Sussex Licence Easting: 501520 Licence Northing: 103040 Operator Location: 36 Lynnhart Road, Littlehampton, West Sussex Authority: Environment Agency - Southern Region, Sussex Area Site Category: Landfill Max Input Rate: Unlimited Waste Source: No known restriction on source of waste Restrictions: Status: Licence issued/extended/refused/not applicable/surrendered/Cancelled Dated: 12th March 1979 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorized Waste: Excavated Natural Materials & Prohibited Waste: Construction And Demolition Wastes, Contaminated Soil, Hazardous And Rubble	A13NW (N)	137	2	501520 103040



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Wye Chalk Subgroup	A13SW (W)	0	1	501544 102656
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.5 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (W)	0	1	501544 102656
271	BGS Recorded Mineral Sites Site Name: Littlehampton Quay Location: Littlehampton, West Sussex Source: British Geological Survey, National Geoscience Information Service Reference: 10486 Type: Wharf Status: Ceased Operator: Solent Aggregates Ltd Operator Location: Not Supplied Periodic Type: Quaternary Geology: Marine Deposits Commonly: Marine Sand And Gravel Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	452	1	502040 102345
271	BGS Recorded Mineral Sites Site Name: Railway Wharf Location: Littlehampton, West Sussex Source: British Geological Survey, National Geoscience Information Service Reference: 10534 Type: Wharf Status: Dormant Operator: Tarmac (A Gm Company) Operator Location: Not Supplied Periodic Type: Not Available Geology: Quarry (Hard Rock) Commonly: Cracked Rock Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	507	1	502050 102345
272	BGS Recorded Mineral Sites Site Name: Littlehampton Brick Works Location: Littlehampton, West Sussex Source: British Geological Survey, National Geoscience Information Service Reference: 107621 Type: Opencast Status: Ceased Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Quaternary Geology: River Terrace Deposits (Undifferentiated) Commonly: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A10NW (E)	958	1	502650 102415
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapse/Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	0	1	501544 102656
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	0	1	501544 102656
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	0	1	501544 102656

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A2NW (SW)	5	1	501533 102659
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A3NE (SE)	5	1	501612 102655
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (NE)	5	1	501582 102661
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	5	1	501544 102666
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	4	1	501577 102671
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	5	1	501544 102666
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	5	1	501544 102666
	Radon Potential - Radon Affected Areas Affected Area: The property is in an intermediate probability radon area (1 to 3% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	5	1	501544 102667
	Radon Potential - Radon Affected Areas Affected Area: The property is in a lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	5	1	501544 102666
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions. Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	5	1	501544 102667
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions. Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	5	1	501544 102666



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
273	Contemporary Trade Directory Entries Name: Ptolex Manufacturing & Logistics Location: Unit N2, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNE (SE)	83	-	501682 102457
273	Contemporary Trade Directory Entries Name: Cryogenisis Location: Unit N1-N2, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Boat Cleaning Equipment Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	ASNE (SE)	86	-	501688 102455
273	Contemporary Trade Directory Entries Name: Charnock's Automotive Location: Unit N3, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	ASNE (SE)	87	-	501688 102484
273	Contemporary Trade Directory Entries Name: Bay Studio Location: Unit N4, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Classification: Screen Process Printers Status: Active Positional Accuracy: Automatically positioned to the address	ASNE (SE)	92	-	501690 102481
273	Contemporary Trade Directory Entries Name: Macthem Tankers Location: Unit N5, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Classification: Commercial Vehicle Bodybuilders & Repairers Status: Active Positional Accuracy: Automatically positioned to the address	ASNE (SE)	104	-	501712 102522
273	Contemporary Trade Directory Entries Name: H S L Tank Services Ltd Location: Unit N6, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Tanks, Vats & Cisterns Status: Active Positional Accuracy: Automatically positioned to the address	ASNE (SE)	104	-	501712 102522
273	Contemporary Trade Directory Entries Name: Streakley Outdoor & Equestrian Location: Unit N10-N11, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Waterproof Clothing & Rainwear Status: Active Positional Accuracy: Automatically positioned to the address	ASNE (SE)	109	-	501718 102535
274	Contemporary Trade Directory Entries Name: Tesco Filling Station Location: Broad Place, Littlehampton, BN17 5PA Classification: Petrol Filling Stations Status: Active Positional Accuracy: Automatically positioned to the address	A130E (NE)	108	-	501648 102655
275	Contemporary Trade Directory Entries Name: Tesco Petrol Filling Station Location: Broad Place, Littlehampton, West Sussex, BN17 5PA Classification: Petrol Filling Stations Status: Inactive Positional Accuracy: Manually positioned to the road within the address or location	A130E (E)	108	-	501650 102658
276	Contemporary Trade Directory Entries Name: Ed Electronics Ltd Location: Unit U1, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Electronic Equipment - Manufacturers & Assemblers Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNE (SE)	132	-	501754 102488
276	Contemporary Trade Directory Entries Name: Excellon (UK) Location: U3-U4, Unit, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Printed Circuit Services Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNE (SE)	132	-	501745 102484

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
275	Contemporary Trade Directory Entries Name: A.E. Haxton Ltd Location: Unit U5, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address.	ASNE (SE)	153	-	501745 102454
276	Contemporary Trade Directory Entries Name: Urbans Performance Technologies Ltd Location: Riverside Ind Est, Bridge Rd, Littlehampton, West Sussex, BN17 5DF Classification: Engine Repairing & Reconditioning Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	ASNE (SE)	153	-	501775 102454
277	Contemporary Trade Directory Entries Name: Motoboard Ltd Location: Unit 24-25, East Way, Wick, Littlehampton, West Sussex, BN17 7HE Classification: Wood Products, Except Furniture - Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address.	A13SE (NE)	152	-	501692 102547
278	Contemporary Trade Directory Entries Name: Gurney Po World Location: Unit 2, Broad Piece, Littlehampton, West Sussex, BN17 5RA Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Active Positional Accuracy: Automatically positioned to the address.	A13SE (E)	173	-	501753 102682
278	Contemporary Trade Directory Entries Name: Gurney Location: Unit 2, Broad Piece, Littlehampton, West Sussex, BN17 5RA Classification: Electrical Goods Sales, Manufacturers & Wholesalers Status: Inactive Positional Accuracy: Automatically positioned to the address.	A13SE (E)	173	-	501753 102682
279	Contemporary Trade Directory Entries Name: Merit Flexible Circuits Location: Unit F-4, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Printed Circuit Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address.	ASNE (SE)	152	-	501793 102552
279	Contemporary Trade Directory Entries Name: Southern Manufacturing Services Ltd Location: Unit P, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Classification: Sheet Metal Work Status: Active Positional Accuracy: Automatically positioned to the address.	ASNE (SE)	153	-	501793 102552
280	Contemporary Trade Directory Entries Name: Medata Systems Ltd Location: Unit U2, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Electronic Equipment - Manufacturers & Assemblers Status: Inactive Positional Accuracy: Automatically positioned to the address.	ASNE (SE)	154	-	501762 102395
280	Contemporary Trade Directory Entries Name: Fisher Location: Unit P4, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Blacksmiths & Forgemasters Status: Inactive Positional Accuracy: Automatically positioned to the address.	ASNE (SE)	154	-	501762 102395
280	Contemporary Trade Directory Entries Name: Adam Grinding Services Location: Unit R6, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Tool Sharpening, Repairing & Servicing Status: Inactive Positional Accuracy: Automatically positioned to the address.	ASNE (SE)	193	-	501762 102397
280	Contemporary Trade Directory Entries Name: Adam Grinding Services Ltd Location: Unit R6, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Tool Sharpening, Repairing & Servicing Status: Inactive Positional Accuracy: Automatically positioned to the address.	ASNE (SE)	193	-	501762 102397

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
280	Contemporary Trade Directory Entries Name: T W G Temperature Measurements Location: Unit R5, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Temperature Monitoring Systems Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	ABNE (SE)	200	-	501755 102372
280	Contemporary Trade Directory Entries Name: Riverside Precision Location: Unit R3-R4, Riverside Industrial Estate, Bridge Road, LITTLEHAMPTON, West Sussex, BN17 5DF Classification: Precision Engineers Status: Active Positional Accuracy: Automatically positioned to the address	ABNE (SE)	200	-	501755 102381
280	Contemporary Trade Directory Entries Name: Phoenix Frozen Foods Location: Unit R1, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Frozen Food Processors & Distributors Status: Active Positional Accuracy: Automatically positioned to the address	ABNE (SE)	201	-	501777 102404
281	Contemporary Trade Directory Entries Name: Advanced Materials Ltd Location: Unit 17, Armdale Road, Wick, LITTLEHAMPTON, West Sussex, BN17 7HD Classification: Rubber & Plastic Products - Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A130E (NE)	194	-	501734 102586
281	Contemporary Trade Directory Entries Name: Olson Extrusions Ltd Location: Unit 17, Armdale Road, Wick, Littlehampton, West Sussex, BN17 7HD Classification: Hose, Tubing & Fittings Status: Inactive Positional Accuracy: Automatically positioned to the address	A130E (NE)	194	-	501734 102586
281	Contemporary Trade Directory Entries Name: Lason Fabrications Ltd Location: Unit 15 Armdale Rd, Wick, Littlehampton, West Sussex, BN17 7HD Classification: Sheet Metal Work Status: Inactive Positional Accuracy: Manually positioned to the address or location	A132E (NE)	210	-	501752 102595
281	Contemporary Trade Directory Entries Name: P C Electronics Ltd Location: Unit 15/19, Armdale Road, Wick, Littlehampton, West Sussex, BN17 7HD Classification: Printed Circuit Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A132E (NE)	230	-	501770 102595
281	Contemporary Trade Directory Entries Name: S J Protech UK Ltd Location: Unit 23-23, Exton Way, Wick, Littlehampton, West Sussex, BN17 7HE Classification: Plastics - Injection Moulding Status: Active Positional Accuracy: Automatically positioned to the address	A130E (NE)	230	-	501757 102535
281	Contemporary Trade Directory Entries Name: S J Protech (UK) Ltd Location: Unit 23-23, Exton Way, Wick, Littlehampton, West Sussex, BN17 7HE Classification: Plastics - Injection Moulding Status: Inactive Positional Accuracy: Automatically positioned to the address	A130E (NE)	230	-	501757 102535
282	Contemporary Trade Directory Entries Name: Tyre Factory Location: Unit D3-D4, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Classification: Tyre Dealers Status: Active Positional Accuracy: Automatically positioned to the address	ABNE (SE)	207	-	501817 102527
282	Contemporary Trade Directory Entries Name: Merit Anotech Ltd Location: Unit D3-D4, Riverside Industrial Estate, Bridge Road, LITTLEHAMPTON, West Sussex, BN17 5DF Classification: Printed Circuit Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	ABNE (SE)	208	-	501817 102527

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
282	Contemporary Trade Directory Entries Name: Wilcox & King Engineering Ltd Location: Unit D1-D2, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Car Customisation & Conversion Specialists Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNE (SE)	217	-	501628 102546
282	Contemporary Trade Directory Entries Name: Printline Location: Unit C3, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNE (SE)	236	-	501644 102543
282	Contemporary Trade Directory Entries Name: Auto Repairs & Recovery Location: Unit C1, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	ASNE (E)	247	-	501657 102538
282	Contemporary Trade Directory Entries Name: Auto Repairs & Recovery Location: Unit C1, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNE (E)	247	-	501657 102538
282	Contemporary Trade Directory Entries Name: Auto Repairs & Recovery Location: Unit C1, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNE (E)	247	-	501657 102538
282	Contemporary Trade Directory Entries Name: Auto Repairs & Recovery Location: Unit C1, Riverside Industrial Estate, Bridge Road, LITTLEHAMPTON, West Sussex, BN17 5DF Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNE (E)	247	-	501657 102538
282	Contemporary Trade Directory Entries Name: Auto Repairs & Recovery Location: Unit C1, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNE (E)	247	-	501657 102538
282	Contemporary Trade Directory Entries Name: Pump Engineering Ltd Location: Unit B1, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Classification: Pumps - Sales, Servicing & Repairs Status: Active Positional Accuracy: Automatically positioned to the address	ASNE (E)	255	-	501668 102533
282	Contemporary Trade Directory Entries Name: R W Masters Location: Unit A1-A2, Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Classification: Car Body Repairs Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNW (SE)	284	-	501692 102512
283	Contemporary Trade Directory Entries Name: Percourt Printers Ltd Location: Unit K, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	ASNE (SE)	217	-	501616 102464

Industrial Land Use

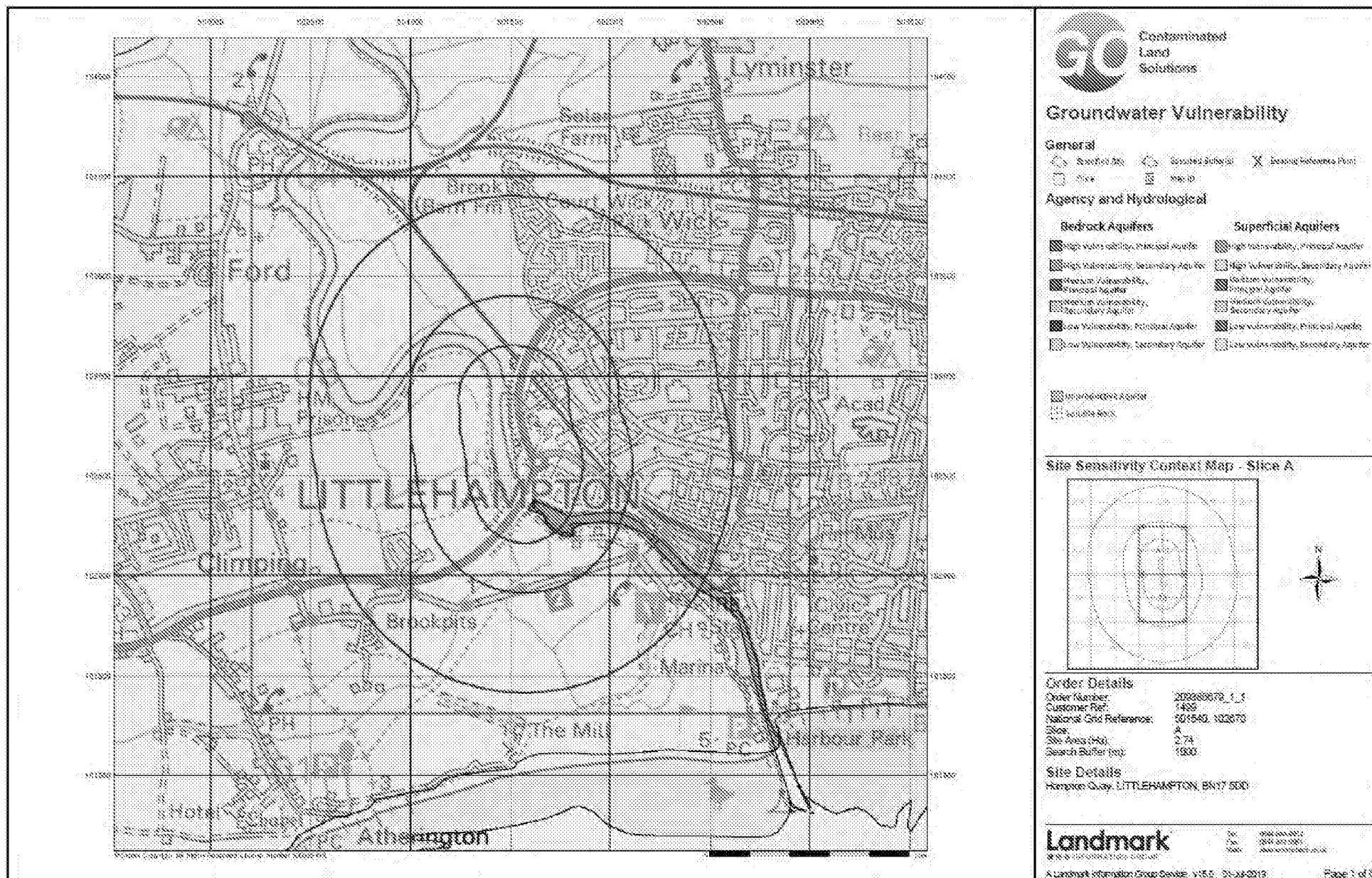
Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
253	Contemporary Trade Directory Entries Name: Say Print Location: Unit K, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NE (SE)	217	-	501816 102464
253	Contemporary Trade Directory Entries Name: R & F Container Sales & Hire Location: Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Blacksmiths & Forgemasters Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NE (SE)	217	-	501816 102464
253	Contemporary Trade Directory Entries Name: Percout Printers Location: Unit K, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NE (SE)	217	-	501816 102464
253	Contemporary Trade Directory Entries Name: R P Aero Systems Location: Unit W, Riverside Industrial Estate, Bridge Road, Littlehampton, West Sussex, BN17 5DF Classification: Glass Fibre Moulding, Materials & Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NE (SE)	225	-	501817 102441
254	Contemporary Trade Directory Entries Name: Accl Technology Location: Unit 15-16, Amble Road, Wick, LITTLEHAMPTON, West Sussex, BN17 7HD Classification: Door Manufacturers - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SE (NE)	234	-	501766 102539
255	Contemporary Trade Directory Entries Name: Transcool Systems Location: 35 Eldon Way, Wick, Littlehampton, West Sussex, BN17 7HE Classification: Ventilators & Ventilation Systems Status: Active Positional Accuracy: Manually positioned to the address or location	A13NE (NE)	225	-	501723 103032
255	Contemporary Trade Directory Entries Name: Mendon Medical Ltd Location: Unit 1, Thorngate Road, Wick, Littlehampton, West Sussex, BN17 7LU Classification: Medical Equipment Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A13NE (NE)	258	-	501772 103038
255	Contemporary Trade Directory Entries Name: Parker Hannifin Location: Unit 3-5, Thorngate Road, Wick, Littlehampton, BN17 7LU Classification: Marine Engineering Equipment Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A13NE (NE)	257	-	501754 103042
255	Contemporary Trade Directory Entries Name: Hestover Ltd Location: Unit 3, Thorngate Road, Wick, Littlehampton, West Sussex, BN17 7LU Classification: Powder Coatings Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (NE)	257	-	501754 103026
255	Contemporary Trade Directory Entries Name: Parker Kithiake Location: Unit 3-5, Thorngate Road, Wick, Littlehampton, West Sussex, BN17 7LU Classification: Testing, Inspection & Calibration Equipment Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (NE)	257	-	501754 103042
256	Contemporary Trade Directory Entries Name: Sussex & Surrey Dairy Location: Unit 27 And Unit 28, Eldon Way, Littlehampton, BN17 7HE Classification: Freight Forwarders Status: Active Positional Accuracy: Automatically positioned to the address	A13NE (N)	236	-	501756 103057

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
339	Contemporary Trade Directory Entries Name: A.M.S. Location: 35, River Road, Littlehampton, West Sussex, BN17 5BC Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A90E (SE)	978	-	503483 102086
340	Fuel Station Entries Name: Tesco Littlehampton Location: Broadplace, Littlehampton, West Sussex, BN17 5RA Brand: TESCO Premises Type: Hypermarket Status: Open Positional Accuracy: Manually positioned to the address or location	A132E (NE)	85	-	501536 102742
341	Points of Interest - Commercial Services Name: Tesco Littlehampton Location: Broadplace, Littlehampton, BN17 5RA Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A132E (NE)	75	9	501533 102745
341	Points of Interest - Commercial Services Name: M&M - and Clean Car Centres Location: Car Wash Tesco Stores Ltd, Broad Place, Littlehampton, BN17 5RA Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A132E (NE)	75	9	501533 102745
341	Points of Interest - Commercial Services Name: Car Wash Location: Broadplace, Littlehampton, West Sussex, BN17 5RA Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A132E (NE)	85	9	501533 102745
342	Points of Interest - Commercial Services Name: Charnock's Automotive Location: Unit N1-N2 Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NE (SE)	55	9	501528 102495
343	Points of Interest - Commercial Services Name: Southern Manufacturing Services Ltd Location: Unit F Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Category: Construction Services Class Code: Metalworkers including Blacksmiths Positional Accuracy: Positioned to address or location	A8NE (SE)	153	9	501733 102562
343	Points of Interest - Commercial Services Name: S & C Autostyle Ltd Location: Unit D2, Riverside Ind Est, Bridge Rd, Littlehampton, West Sussex, BN17 5DF Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A8NE (SE)	246	9	501527 102545
343	Points of Interest - Commercial Services Name: S & C Autostyle Location: Unit D1-D2 Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A8NE (SE)	247	9	501528 102546
343	Points of Interest - Commercial Services Name: Auto Repairs & Recovery Location: Unit C1 Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NE (E)	247	9	501527 102538
343	Points of Interest - Commercial Services Name: Auto Repairs & Recovery Location: Unit C1 Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A8NE (E)	247	9	501527 102538

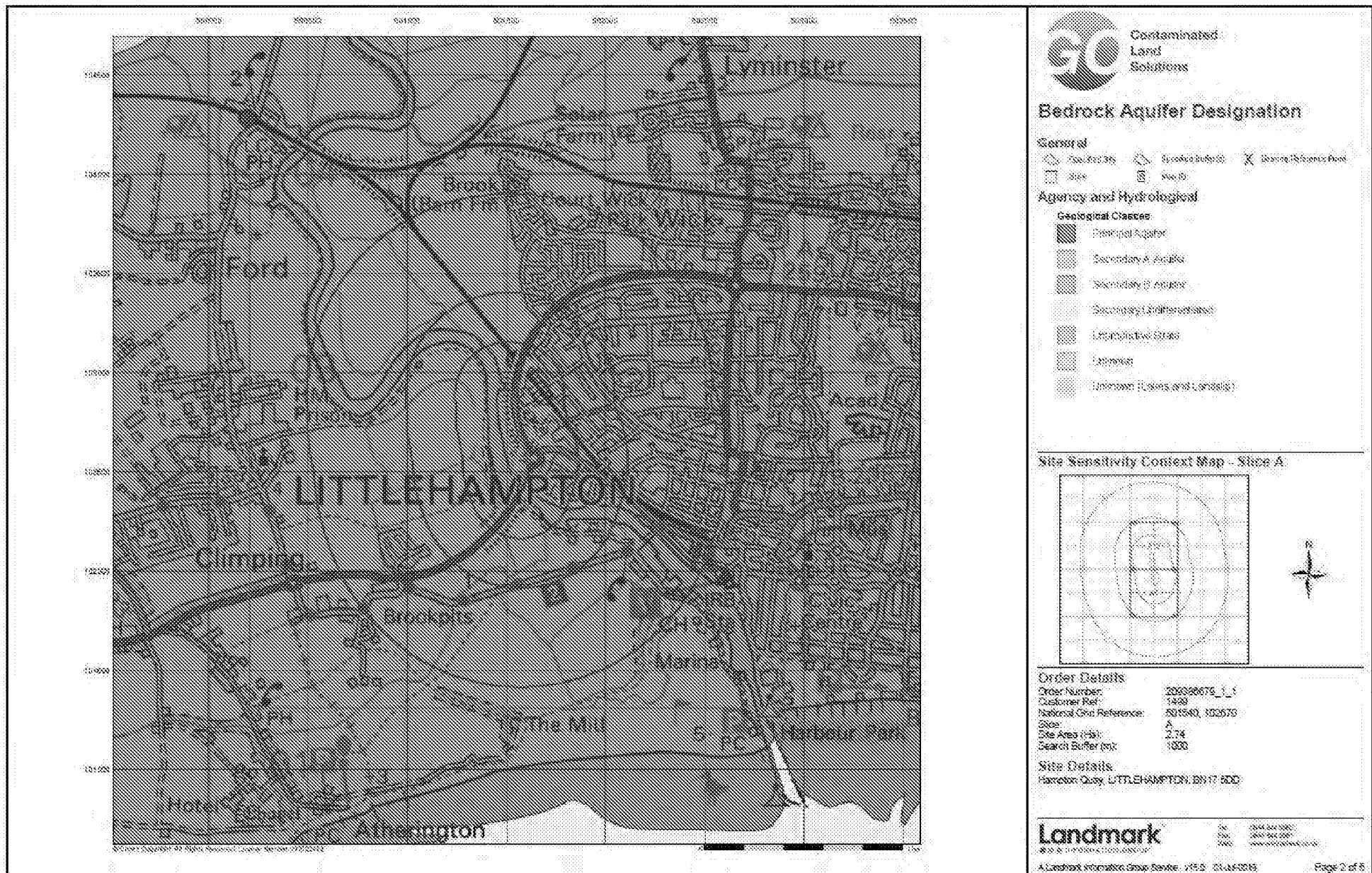
Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
343	Points of Interest - Commercial Services Name: R W Masters Location: Unit A1-A2 Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	ASNW (SE)	254	9	501892 102512
343	Points of Interest - Commercial Services Name: R W Masters Location: Unit A1-A2 Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	ASNW (SE)	254	9	501892 102512
344	Points of Interest - Commercial Services Name: Downland Dairy Location: Unit 27 Edon Way, Wick, Littlehampton, BN17 7HE Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A13NE (N)	226	9	501888 103061
344	Points of Interest - Commercial Services Name: Braeforce Ltd Location: Unit 27 Edon Way, Wick, Littlehampton, BN17 7HE Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A13NE (N)	226	9	501888 103061
344	Points of Interest - Commercial Services Name: Sussex & Surrey Dairy Location: Unit 25 Lakeside Industrial Estate, Edon Way, Wick, Littlehampton, BN17 7HE Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A13NE (N)	229	9	501783 103060
345	Points of Interest - Commercial Services Name: G R Autos Location: Unit M5 Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	ASNE (SE)	269	9	501843 102584
345	Points of Interest - Commercial Services Name: Riverside Sheet Metal & Fabrication Ltd Location: Unit L2 Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Category: Construction Services Class Code: Metalworkers including Blacksmiths Positional Accuracy: Positioned to address or location	ASNW (SE)	300	9	501895 102442
345	Points of Interest - Commercial Services Name: Riverside Sheet Metal & Fabrication Ltd Location: Unit L2 Riverside Industrial Estate, Bridge Road, Littlehampton, BN17 5DF Category: Construction Services Class Code: Metalworkers including Blacksmiths Positional Accuracy: Positioned to address or location	ASNW (SE)	300	9	501895 102442
345	Points of Interest - Commercial Services Name: Autospeed Location: Unit 12 Forsters Yard, Quayside, Littlehampton, BN17 5DF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	ASNW (SE)	351	9	501954 102393
345	Points of Interest - Commercial Services Name: Auto Speed Location: Unit 12 Forsters Yard, Quayside, Littlehampton, BN17 5DF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	ASNW (SE)	351	9	501954 102393
345	Points of Interest - Commercial Services Name: Paul Turner Location: Unit 14 Forsters Yard, Quayside, Littlehampton, BN17 5DF Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	ASNW (SE)	352	9	501958 102432
346	Points of Interest - Commercial Services Name: Jevic Location: Unit 6d, Armdale Road, Wick, Littlehampton, BN17 7HD Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A13SE (NE)	347	9	501887 102517

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
358	Points of Interest - Commercial Services Name: Automotive Services Location: 35 River Road, Littlehampton, BN17 5EZ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A9SE (SE)	978	9	502490 102066
359	Points of Interest - Commercial Services Name: S & N Auto Services Location: 7 Gun Road, Littlehampton, BN17 7DX Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A10NW (E)	599	9	502806 102596
360	Points of Interest - Manufacturing and Production Name: Tank Location: BN17 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8NE (E)	8	9	501573 102477
361	Points of Interest - Manufacturing and Production Name: Tank Location: BN17 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8NE (SE)	148	9	501782 102496
361	Points of Interest - Manufacturing and Production Name: Riverside Industrial Estate Location: BN17 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A8NE (SE)	181	9	501776 102461
362	Points of Interest - Manufacturing and Production Name: Tank Location: BN17 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A13SE (NE)	167	9	501737 102502
363	Points of Interest - Manufacturing and Production Name: Linseed Industrial Estate Location: BN17 Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to an adjacent address or location	A13SE (NE)	289	9	501828 102526
363	Points of Interest - Manufacturing and Production Name: Tank Location: BN17 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A13SE (NE)	343	9	501883 102566
364	Points of Interest - Manufacturing and Production Name: Works Location: BN17 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	338	9	501914 102575
364	Points of Interest - Manufacturing and Production Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	341	9	501918 102575
364	Points of Interest - Manufacturing and Production Name: Tank Location: BN17 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	376	9	501945 102636
364	Points of Interest - Manufacturing and Production Name: Works Location: BN17 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A9NW (SE)	487	9	501986 102656

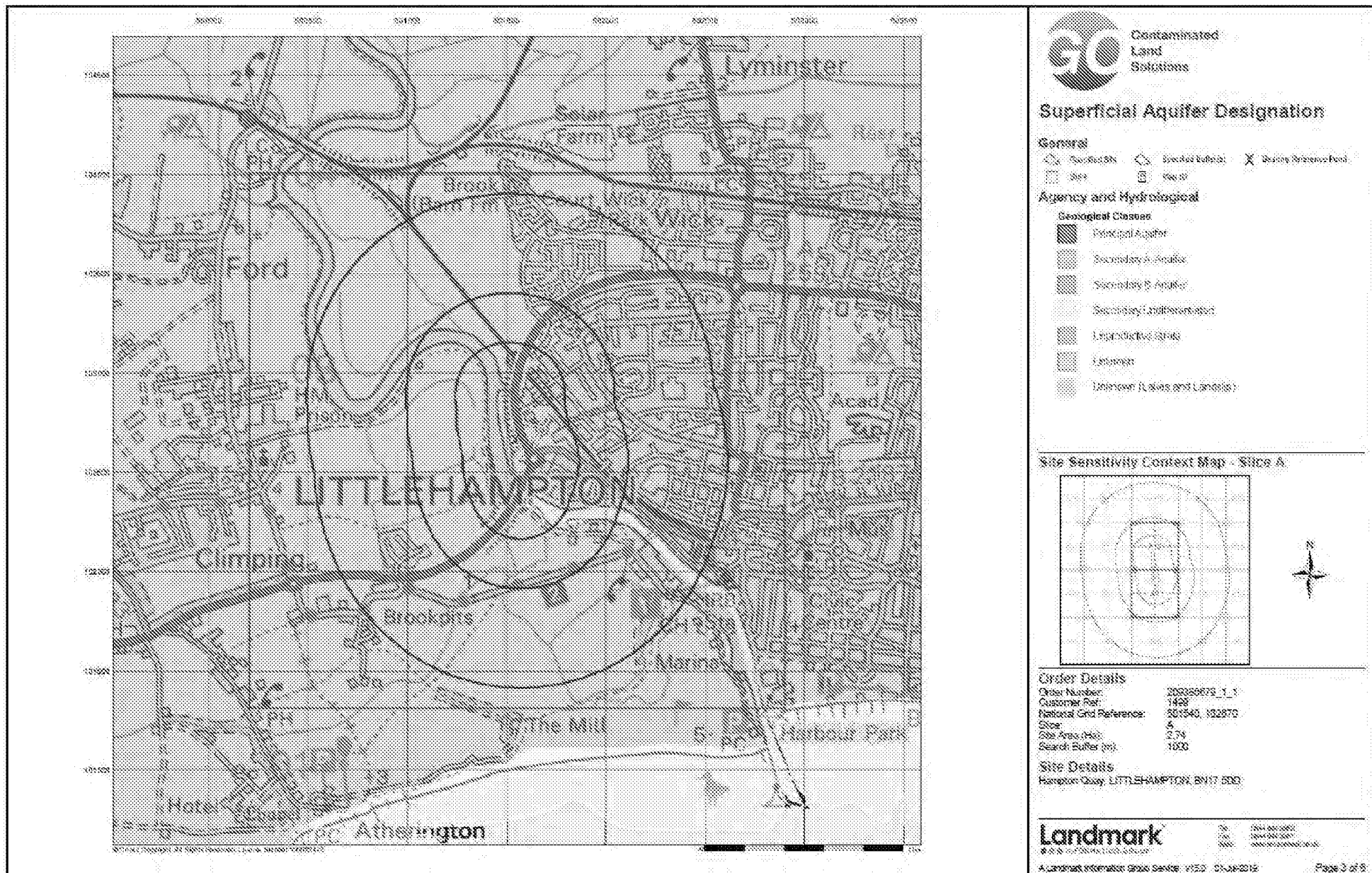
Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
353	Points of Interest - Manufacturing and Production Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A10NW (E)	872	9	502583 102551
354	Points of Interest - Manufacturing and Production Name: Factory Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A10SW (NE)	873	9	502521 102591
354	Points of Interest - Manufacturing and Production Name: Factory Location: BN17 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to address or location	A10SE (NE)	872	9	502525 102595
355	Points of Interest - Manufacturing and Production Name: Maguire Granite Worktops Location: 30 Willow Brook, Wisk, Littlehampton, BN17 7NW Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to address or location	A10SE (NE)	871	9	502557 102425
356	Points of Interest - Manufacturing and Production Name: Works Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A30E (SE)	876	9	502487 102079
356	Points of Interest - Manufacturing and Production Name: Works Location: BN17 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to address or location	A30E (SE)	876	9	502488 102075
357	Points of Interest - Public Infrastructure Name: Filler Beds Location: BN17 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A2NE (S)	9	9	501672 102409
357	Points of Interest - Public Infrastructure Name: Sluice Location: BN17 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A6NW (S)	15	9	501635 102453
358	Points of Interest - Public Infrastructure Name: Tesco Littlehampton Location: Broadplace, Littlehampton, BN17 5RA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A13SE (NE)	85	9	501638 102748
358	Points of Interest - Public Infrastructure Name: Tesco Petrol Filling Station Location: Broad Place, Littlehampton, BN17 5RA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A13SE (NE)	185	9	501648 102855
359	Points of Interest - Public Infrastructure Name: Cuffail Location: BN17 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A82E (S)	241	9	501691 102209
360	Points of Interest - Public Infrastructure Name: Sluice Location: BN17 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A82E (SE)	255	9	501737 102210



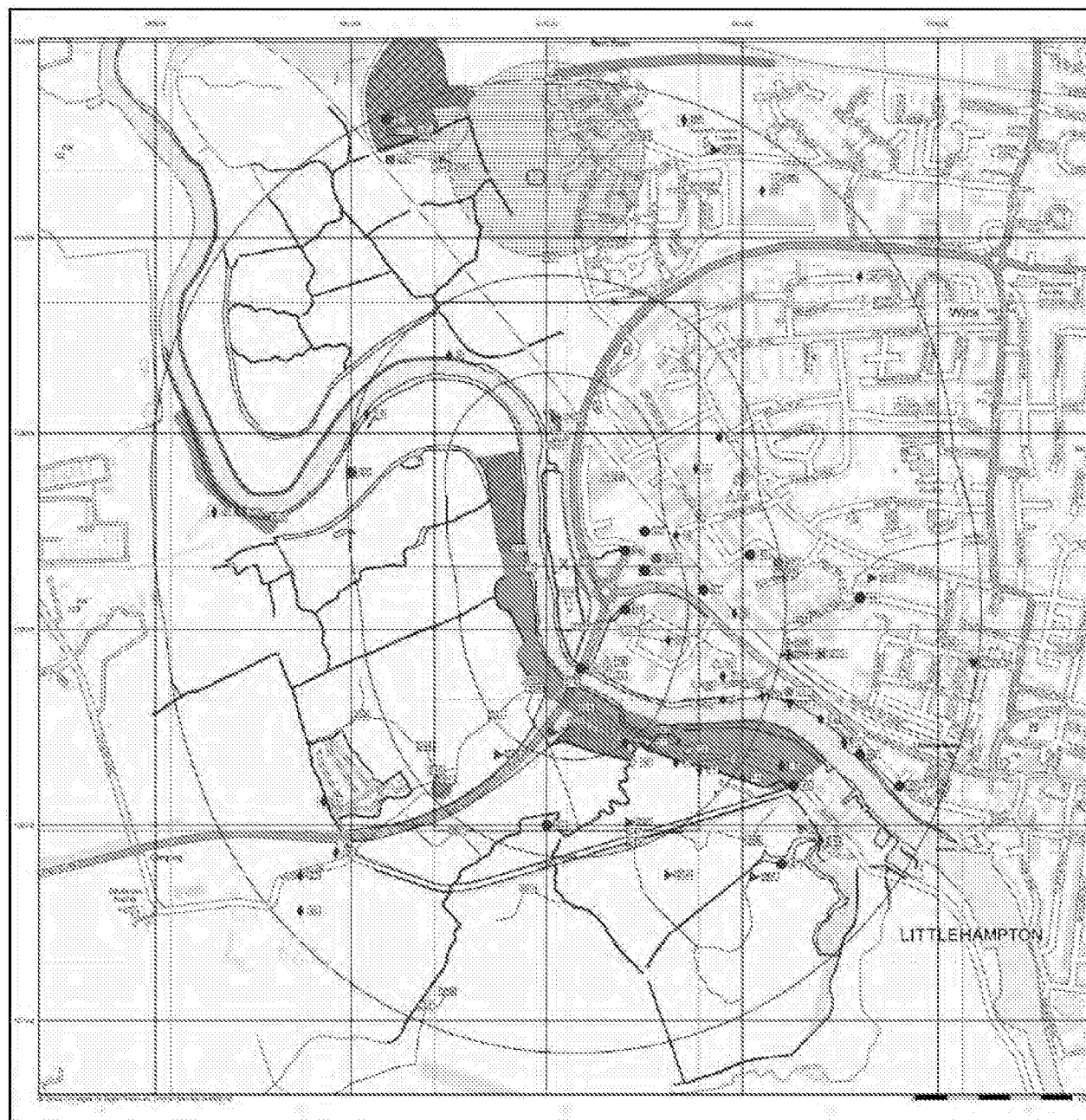
1499-P1E-1-B: Hampton Quay, Littlehampton
 Stolon Studios Ltd



1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



**Contaminated
Land
Solutions**

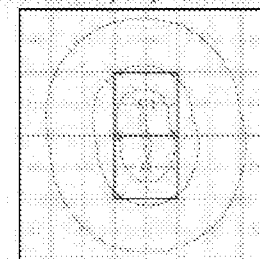
Conclusions

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Agency and Responsibilities

- [illegible]

Site Sensitivity Map - Alice A



Order Details

Order Number	303368670_1_1
Customer Ref	1486
National Grid Reference	591543, 952870
Slip	A
Site Area (Ha)	3.74
Search Buffer (m)	1000

Site Details

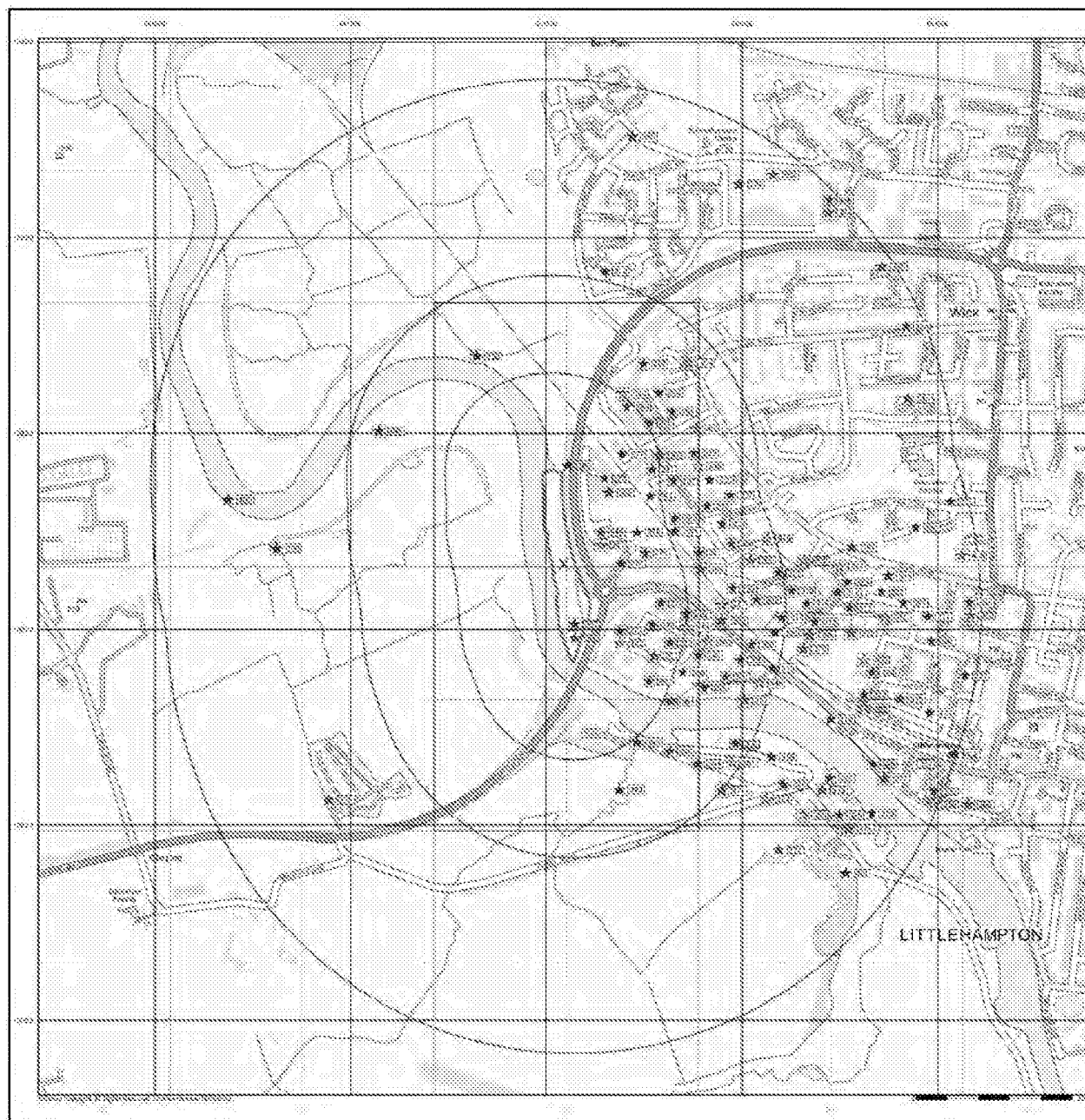
Hampton Way, LITTLEHAMPTON, BN17 5DD

Landmark

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1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



Industrial Land Use Map

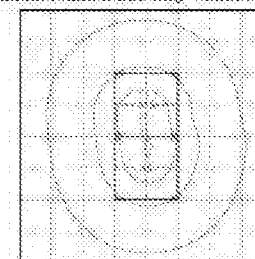
General

- | | | |
|--------------------------------------|--|---|
| ☐ Spectra 500 | ☒ Spectra 5000 | ☒ Spectra 50000 |
| ☐ SSI | ☒ SSI 2 | ☒ SSI 3 |

Industrial Land Use

- * **Disincentive** - **Penalizing**, **Fine**
- * **Disincentive**
- ↳ **Disincentive**
- * **Disincentive** - **Penalizing**, **Fine**
- * **Disincentive** - **Penalizing**, **Fine**
- * **Disincentive** - **Penalizing**, **Fine**
- * **Disincentive** - **Penalizing**, **Fine**
- ↳ **Disincentive** - **Penalizing**, **Fine**

Industrial Land Use Map - Slice A



Order Details

Order Number: 202009073_1_1
Customer Ref: 1460
National Grid Reference: 501540, 102070
Size: A
Site Area (Ha): 2.74
Search Buffer (m): 1000

Line Details

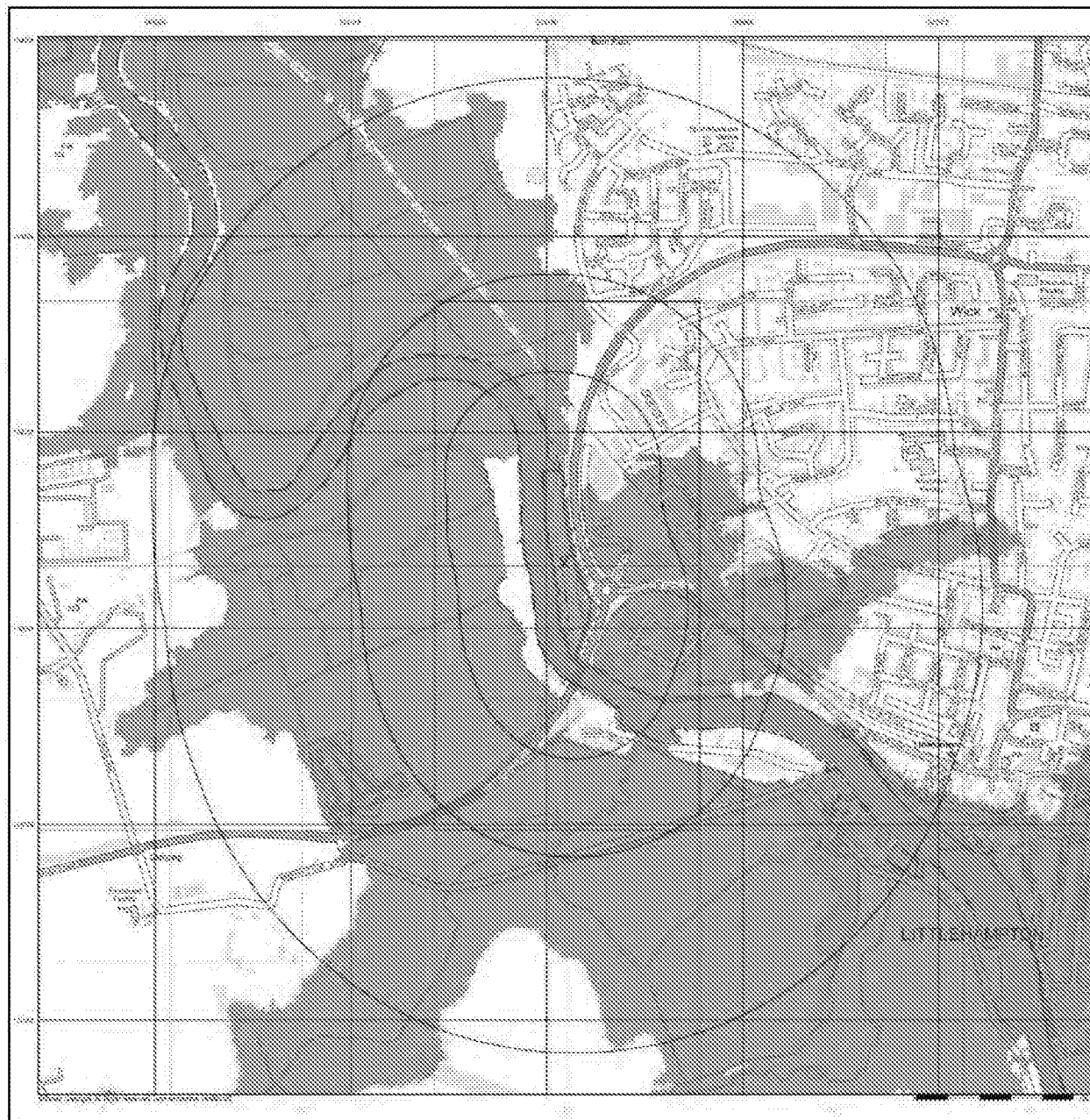
Hampton Quay, LITTLE-HAMPTON, SS17 5DD

Landmark

To: [REDACTED]
[REDACTED]

4. Lendiant Information Group Service, 156-3, 01-14-2018, Page 2 of 2

1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



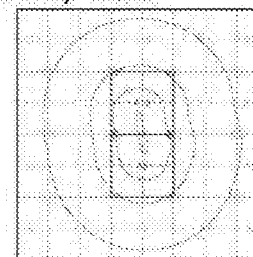
General

Contaminated Land
 CS: Contaminated Site
 X: Contaminated Site

Agency and Hydrological (Flood)

☐ Extreme Flooding from Dams in Slice without Cleanness (Class 1)
☐ Flooding from Dams in Slice without Cleanness (Class 2)
☒ Area Boundary from Flood Network
☐ Flood Water Storage Areas
☐ Flood Defence

Flood Map - Slice A



Order Details

Order Number: 250258079_1_1
 Customer Ref: 1499
 National Grid Reference: 501540, 502870
 Slice: A
 Site Area (Ha): 3.74
 Search Buffer (m): 1000

Site Details

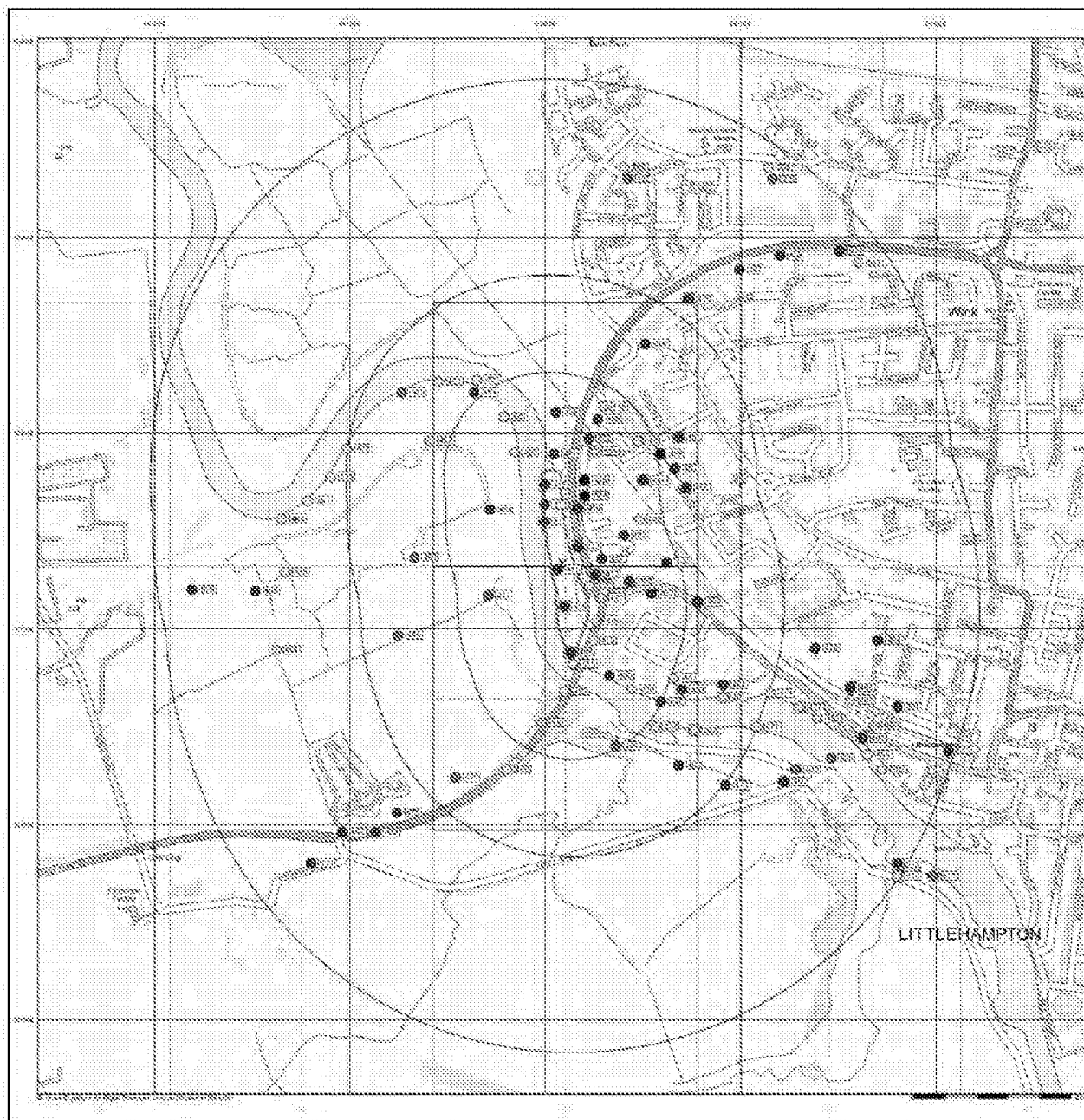
Hampton Quay, LITTLEHAMPTON, BN17 5DD

Landmark

Tel: 01444 333 333
 Fax: 01444 333 333
 Email: info@landmark.co.uk

A Landmark Information Group Service - 1000 01444 333 333 Page 3 of 6

1499-P1E-1-B: Hampton Quay, Littlehampton
 Stolon Studios Ltd



Contaminated Land Solutions

Genetics

- ☐ a) 1000
☐ b) 100
☒ c) 10
☐ d) 1

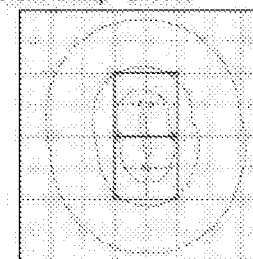
Agency and Psychological (Forensic)

- ☒ 1. The company's financial statements are accurate and complete.

For further information please refer to the Schedule and the values accompanying this slide.

A copy of the BGE Borehole Ordering Form is available to download from the Support section of www.enhanced.co.uk.

Boroughs Map - Slice A



Order Details

Order Number: 286285879_1_1
Customer Ref: 1456
National Grid Reference: 501540, 103870
Size: A
Site Area (Ha): 2.74
Search Buffer (m): 1000

Site Details

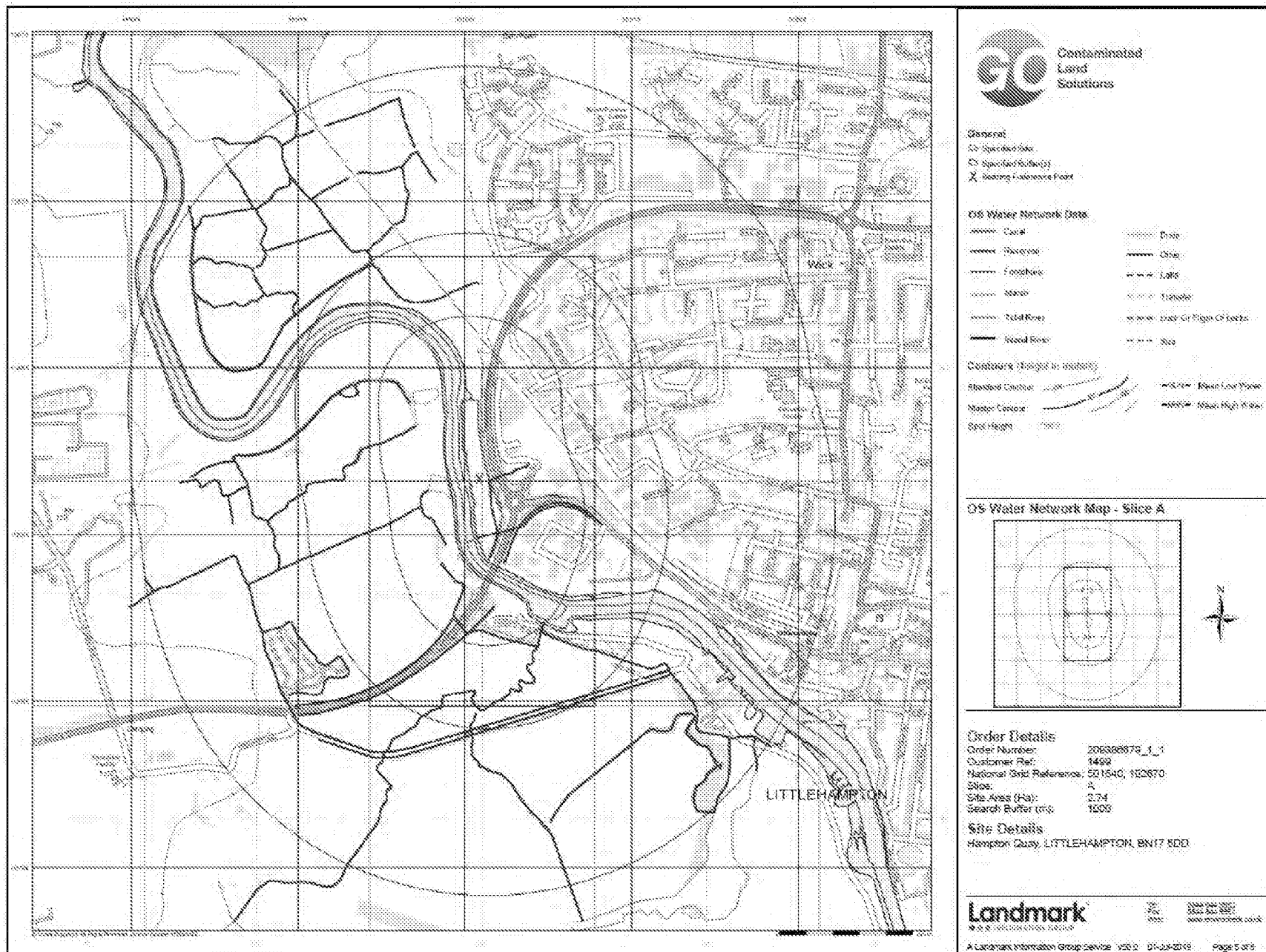
Hampton Day, LITTLEHAMPTON, 8537 500.

Landmark

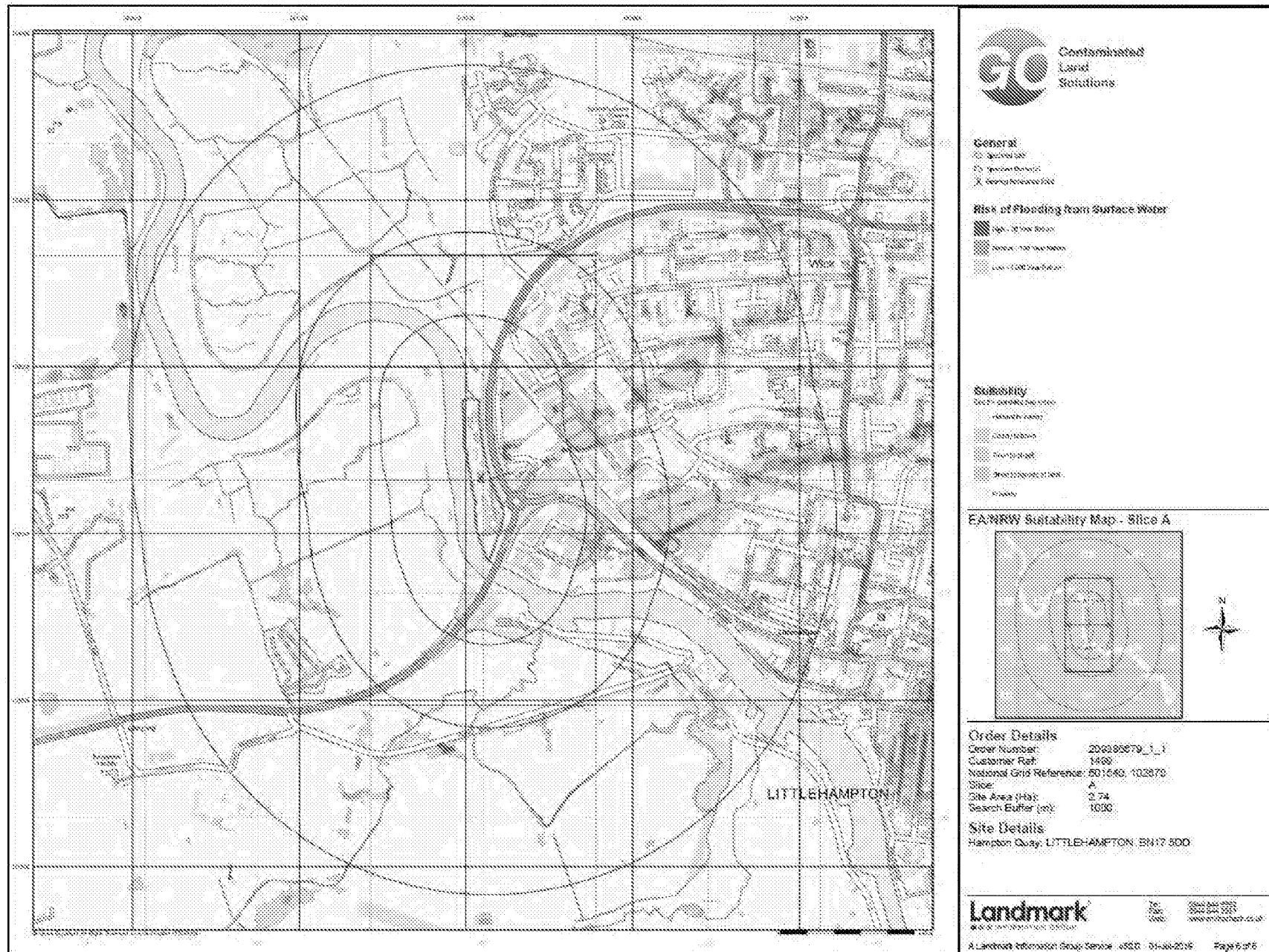
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1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



1499-P1E-1-B: Hampton Quay, Littlehampton
 Stolon Studios Ltd

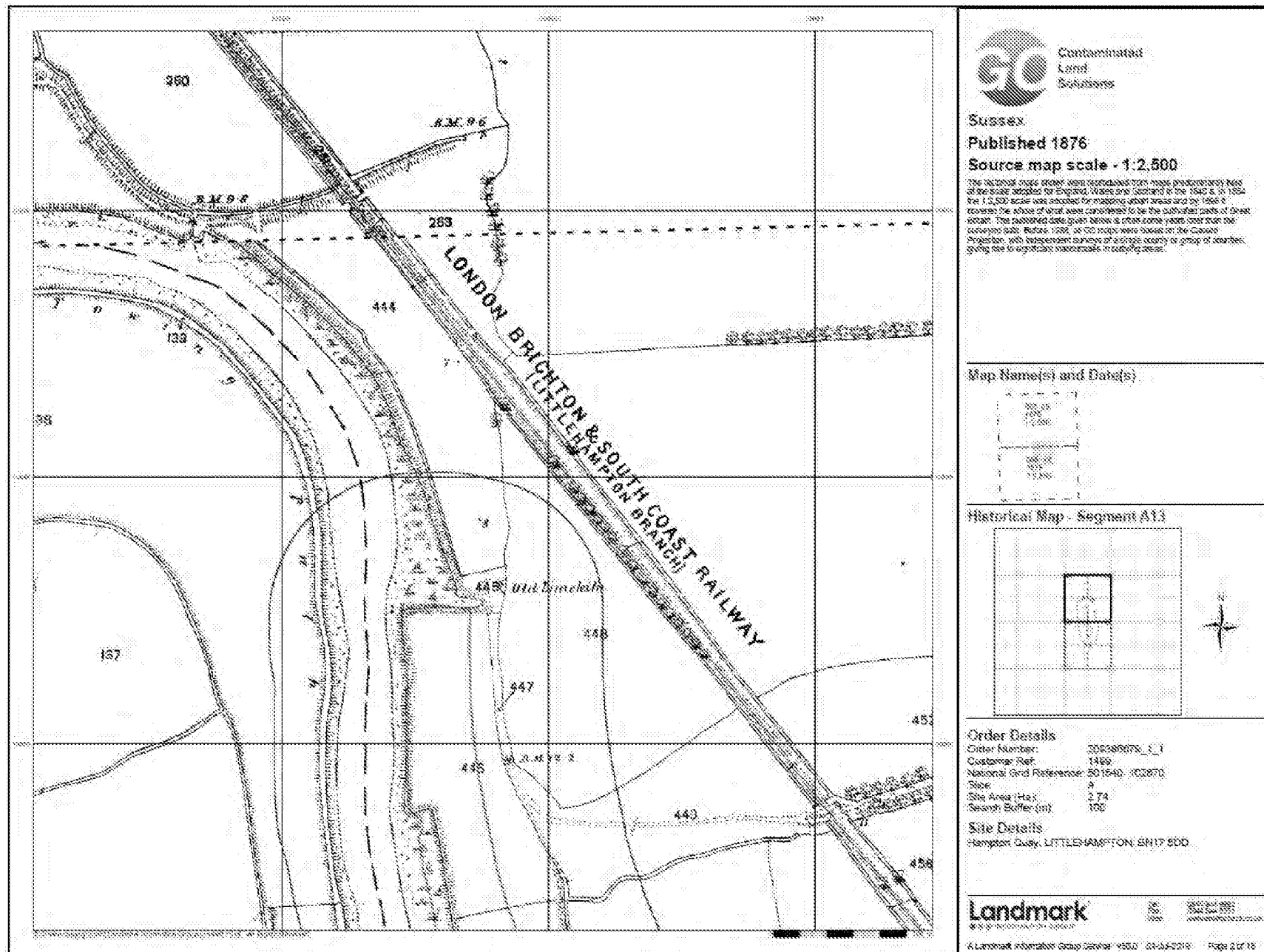


1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd

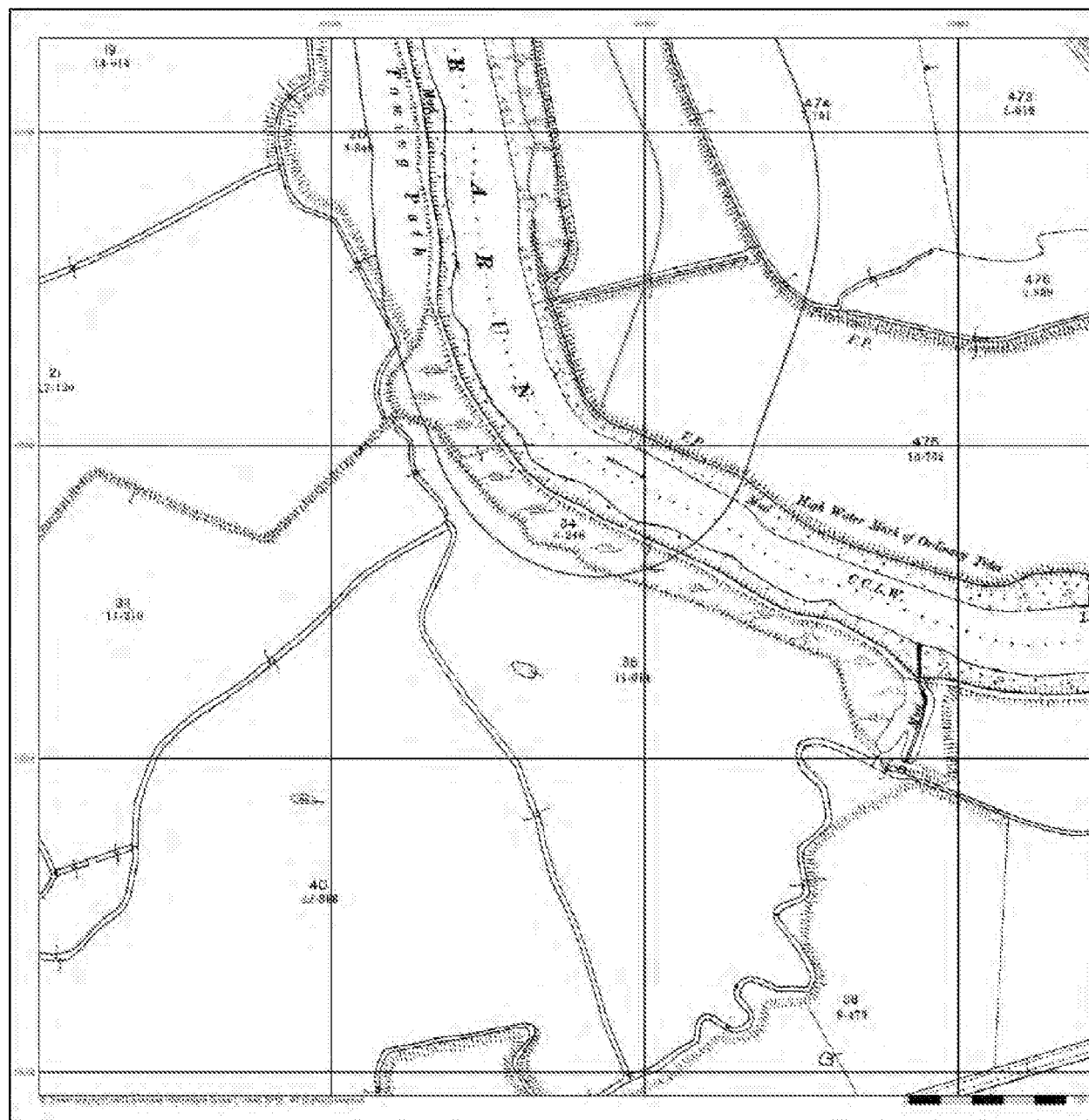


Appendix D – Historical Maps

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1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



Contents

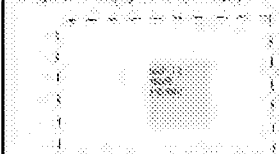
Sussex

ප්‍රතිපත්තිමය ප්‍රශ්න

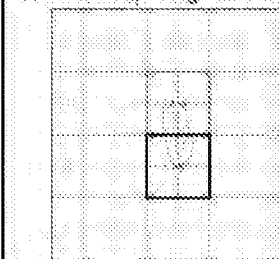
Source map scale - 1:2,500

The National maps shown were reproduced from maps predominantly held at the state adopted for England, Wales and Scotland in the 1940's. In 1954 the 1:250,000 scale was adopted for mapping water areas and by 1958 it covered the whole of water areas considered to be the cultivated parts of Great Britain. The published dates given below is often some years later than the surveying date. Before 1958, all GIC maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in county areas.

Map Name(s) and Date(s)



Historical Map - Segment 48



Order Details

Order Number: 200809070_3_1
Customer Ref: 1400
National Grid Reference: 501540 102070
Size: A
Site Area (Ha): 3.74
Search Buffer (m): 100

Site Details

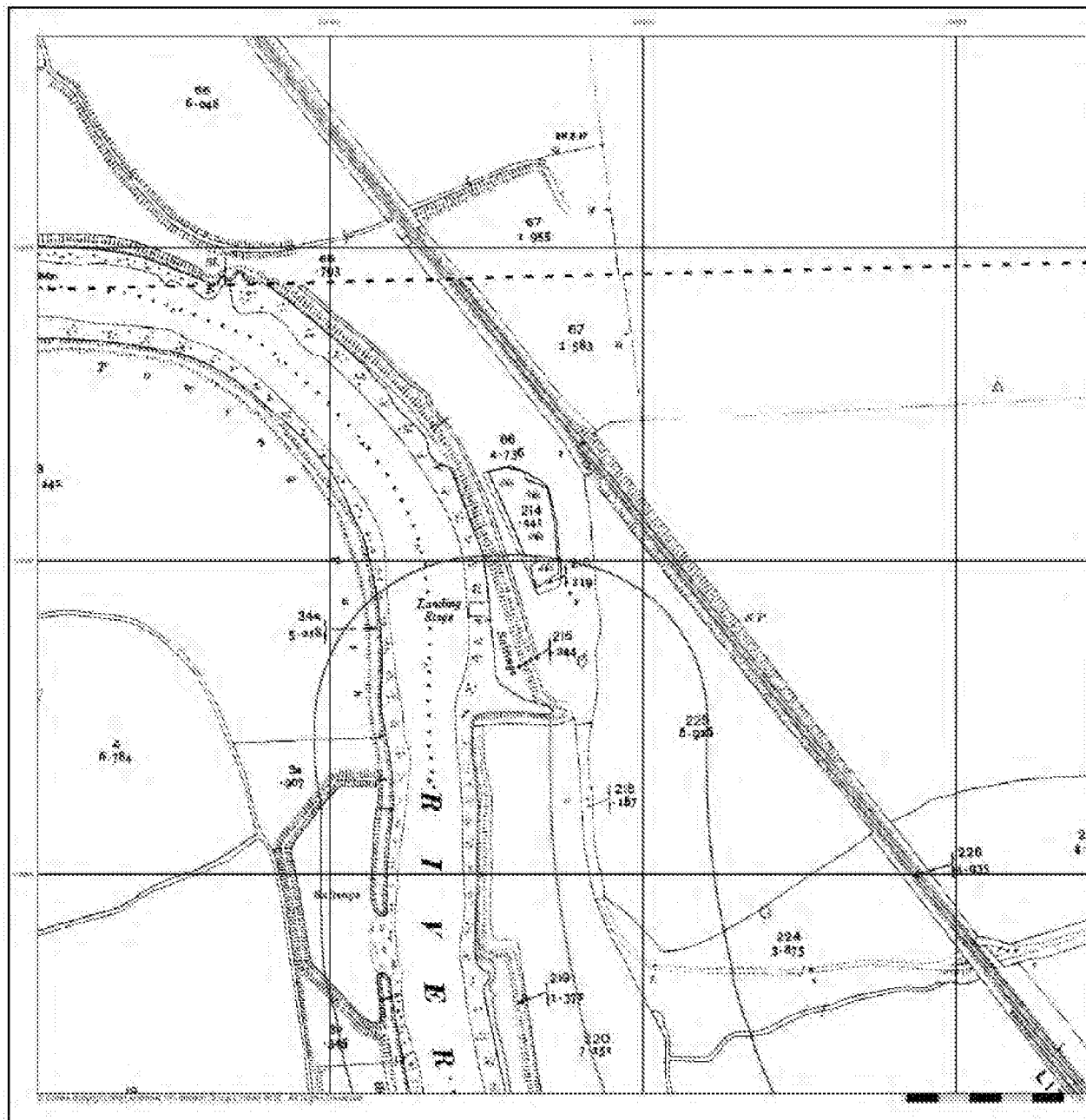
Hampton Quay, LITTLEHAMPTON, BN17 5DD

Landmark

70	2041 Jan-2002
70	2042 Jan-2003
600	2043 Jan-Mar 2000

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1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



Contaminated
Land
Solutions

Sussex

Published 1932

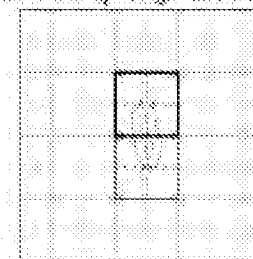
Source map scale - 1:2,500

The historical maps shown here have been taken from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1960's. In 1954 the 1:2,500 scale was adopted for mapping urban areas and by 1961 it covered the whole of what were considered to be the populated parts of Great Britain. The published date given below is often some years later than the survey date. Before 1920, all OS maps were based on the Cassini Projection, with independent surveys of 2.5 miles square or group of squares, giving rise to significant inaccuracies (including areas).

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 202008579_1_1
Customer Ref: 1450
National Grid Reference: 501540, 102670
Scale: A
Site Area (Ha): 2.74
Search Buffer (m): 100

Site Details

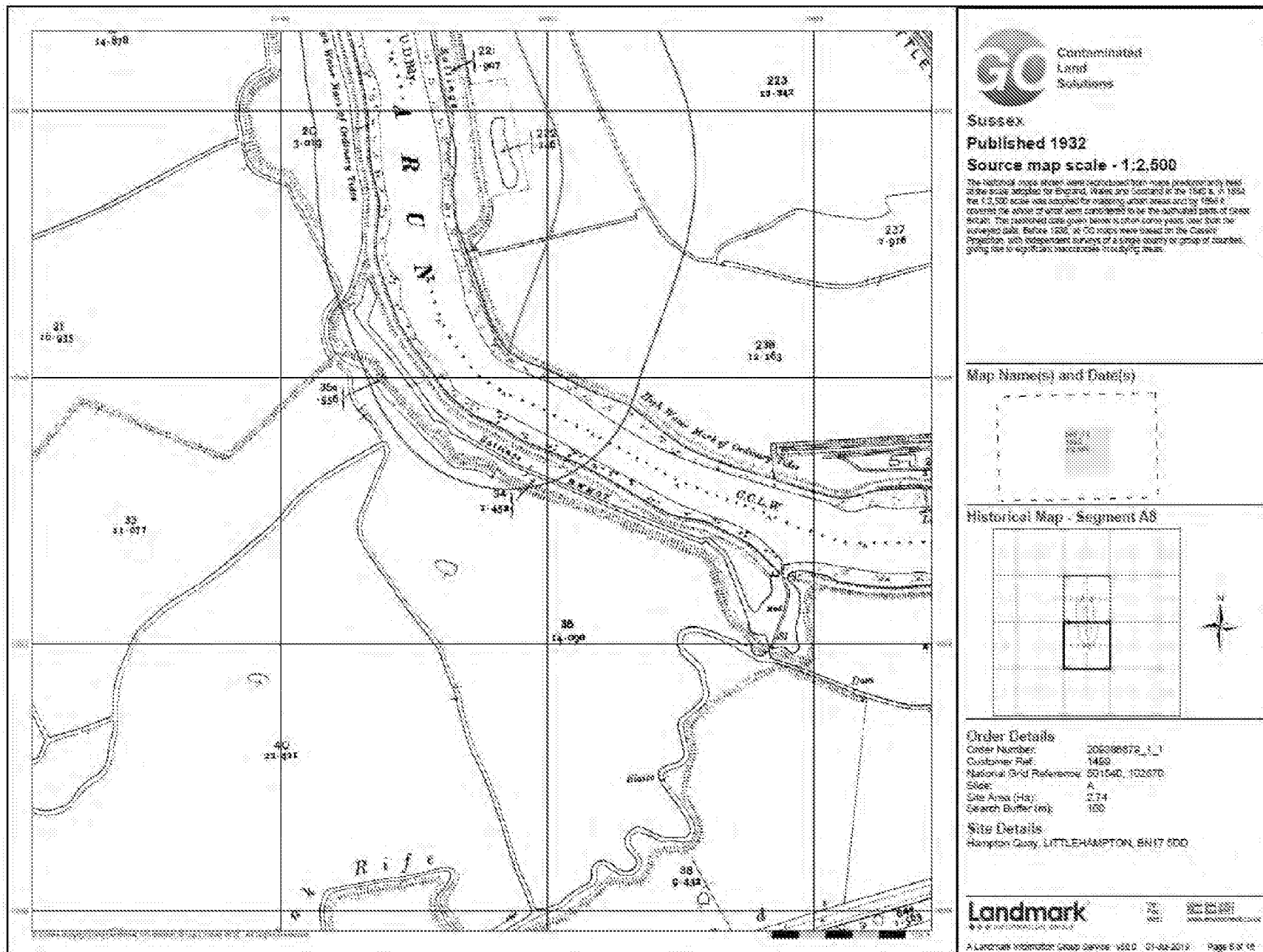
Hampton Quay, LITTLEHAMPTON, BN17 6DD

Landmark
A Landmark Information Group Service

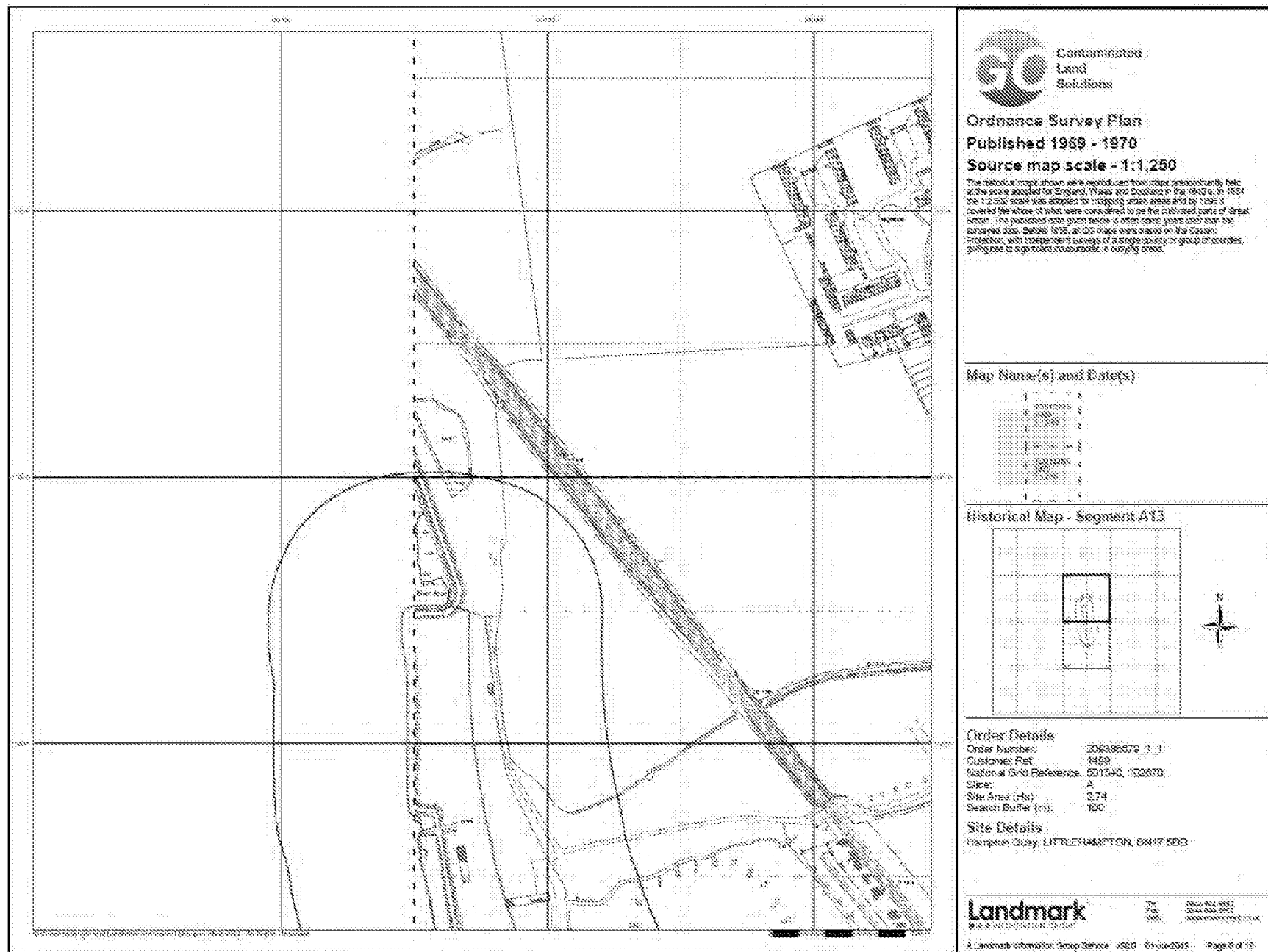
100%
www.landmark.co.uk

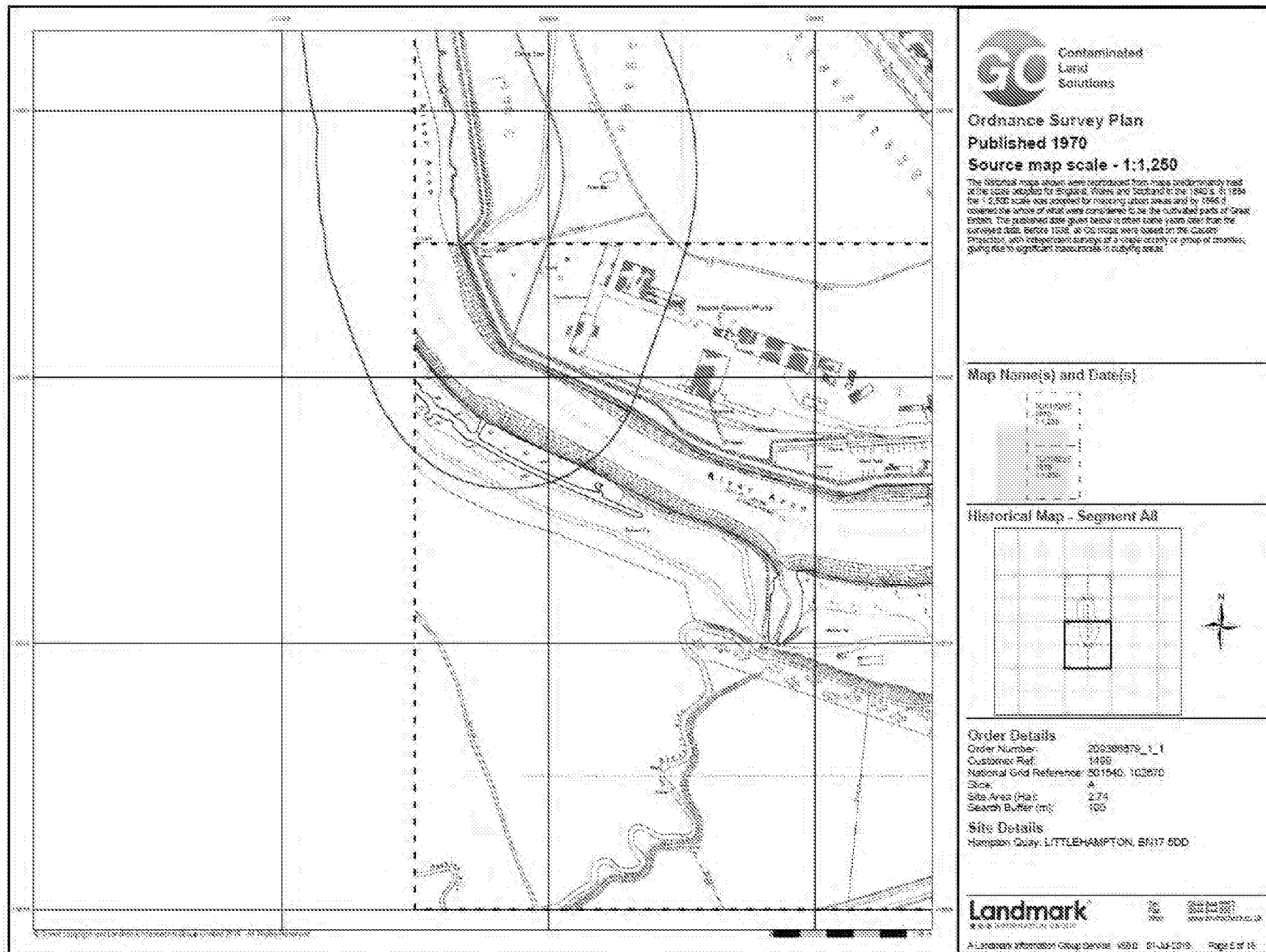
A Landmark Information Group Service 100% 01-462-2012 Page 6 of 16

1499-P1E-1-B: Hampton Quay, Littlehampton
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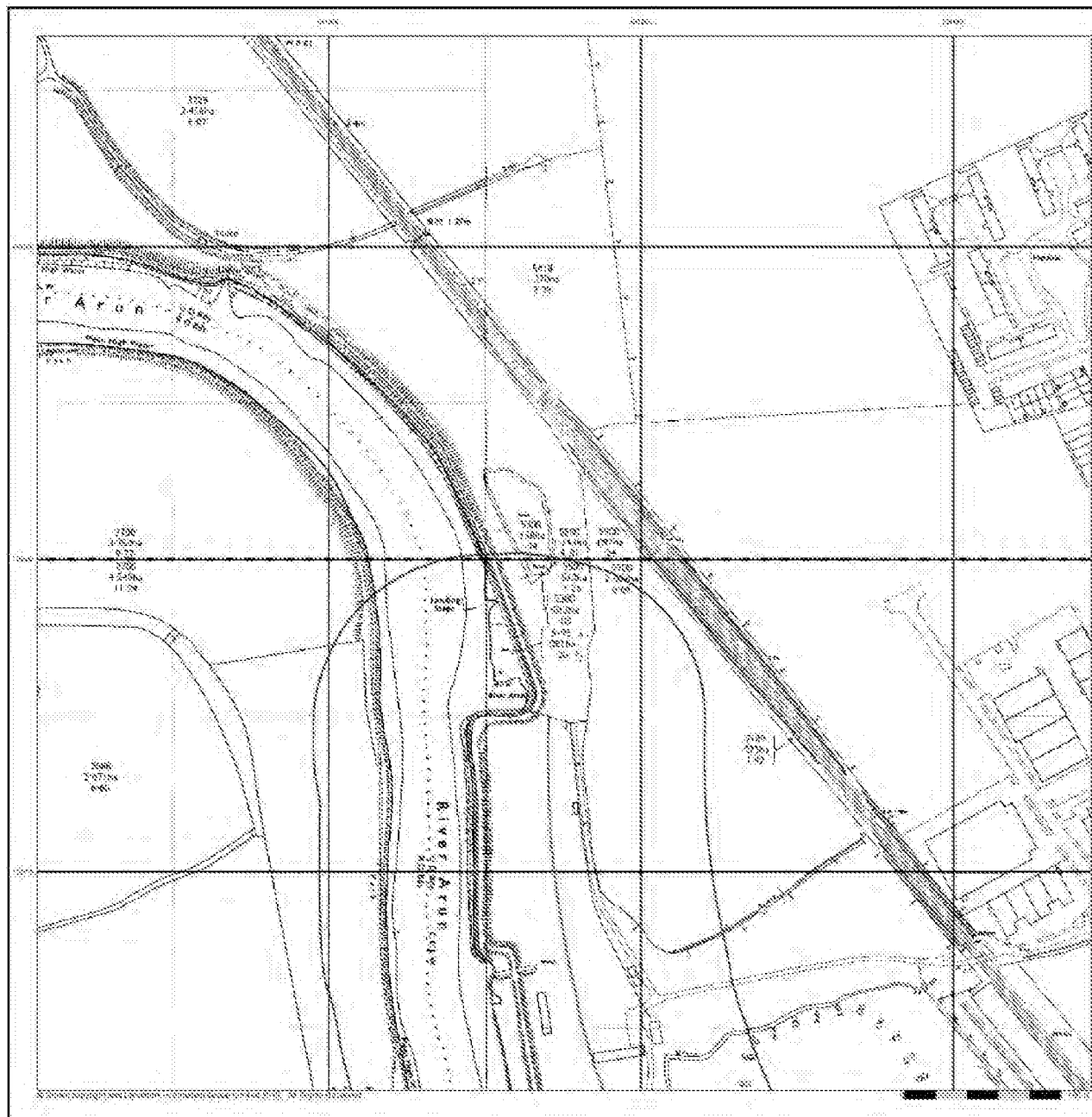


1499-P1E-1-B: Hampton Quay, Littlehampton
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1499-P1E-1-B: Hampton Quay, Littlehampton
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Contaminated
Land
Solutions

Ordnance Survey Plan

Published 1973

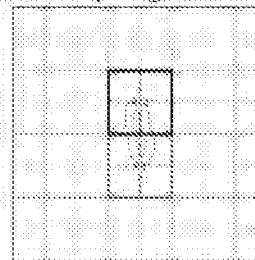
Source map scale - 1:2,500

The historical maps shown were reproduced from maps originally held at the scale adopted for England, Wales and Scotland in the 1840's. In 1954 the 1:2,500 scale was selected for mapping urban areas and by 1956 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the survey date. Before 1950, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in such areas.

Map Name(s) and Date(s)

1:2,500
1973
1:2,500
1973

Historical Map - Segment A13



Order Details

Order Number: 206396572_X_1
Customer Ref: 1499
National Grid Reference: 501540, 102678
Size: A
Site Area (Hect): 2.74
Search Buffer (m): 100

Site Details

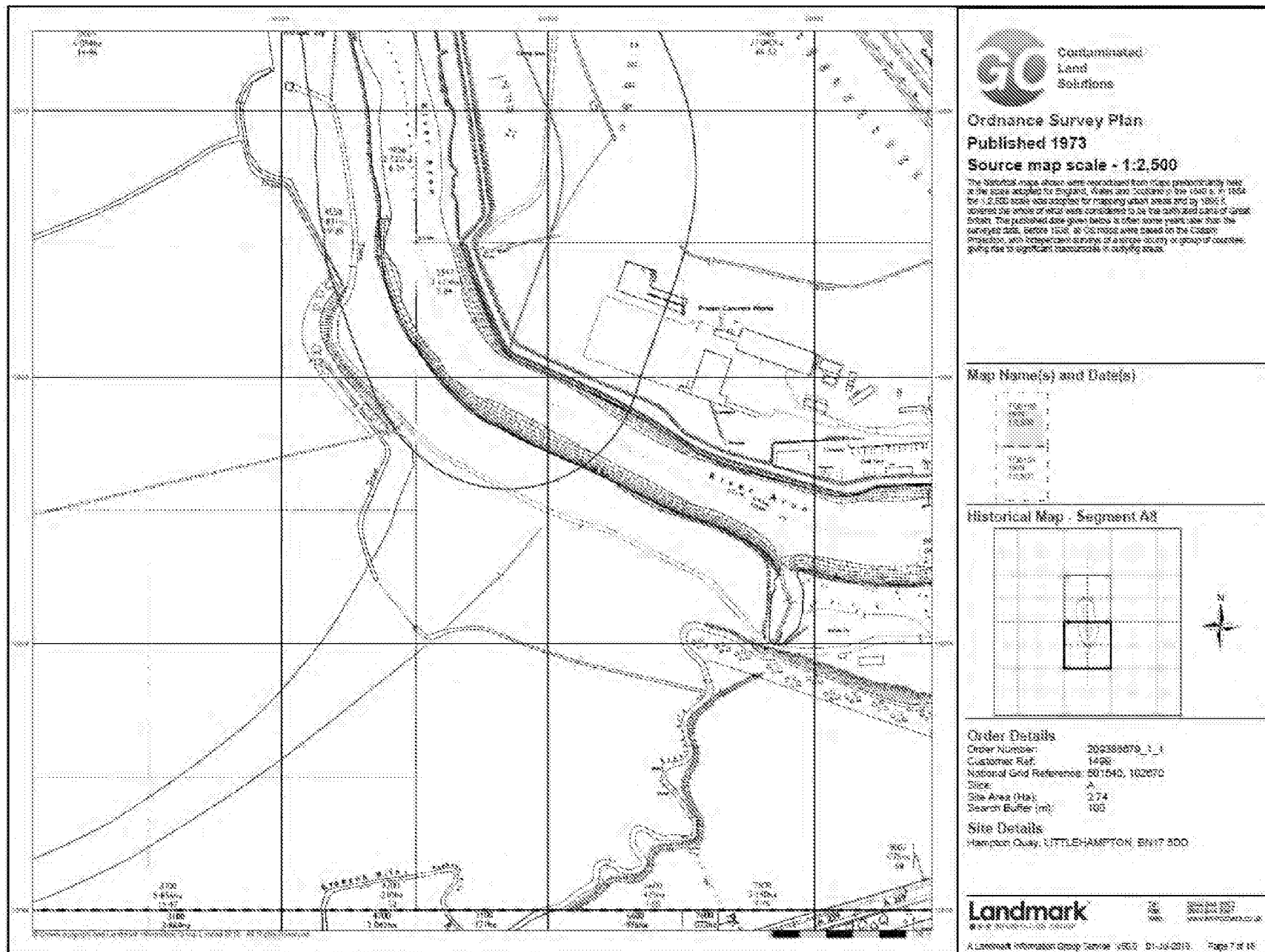
Hampton Quay, LITTLEHAMPTON, BN17 5DD

Landmark
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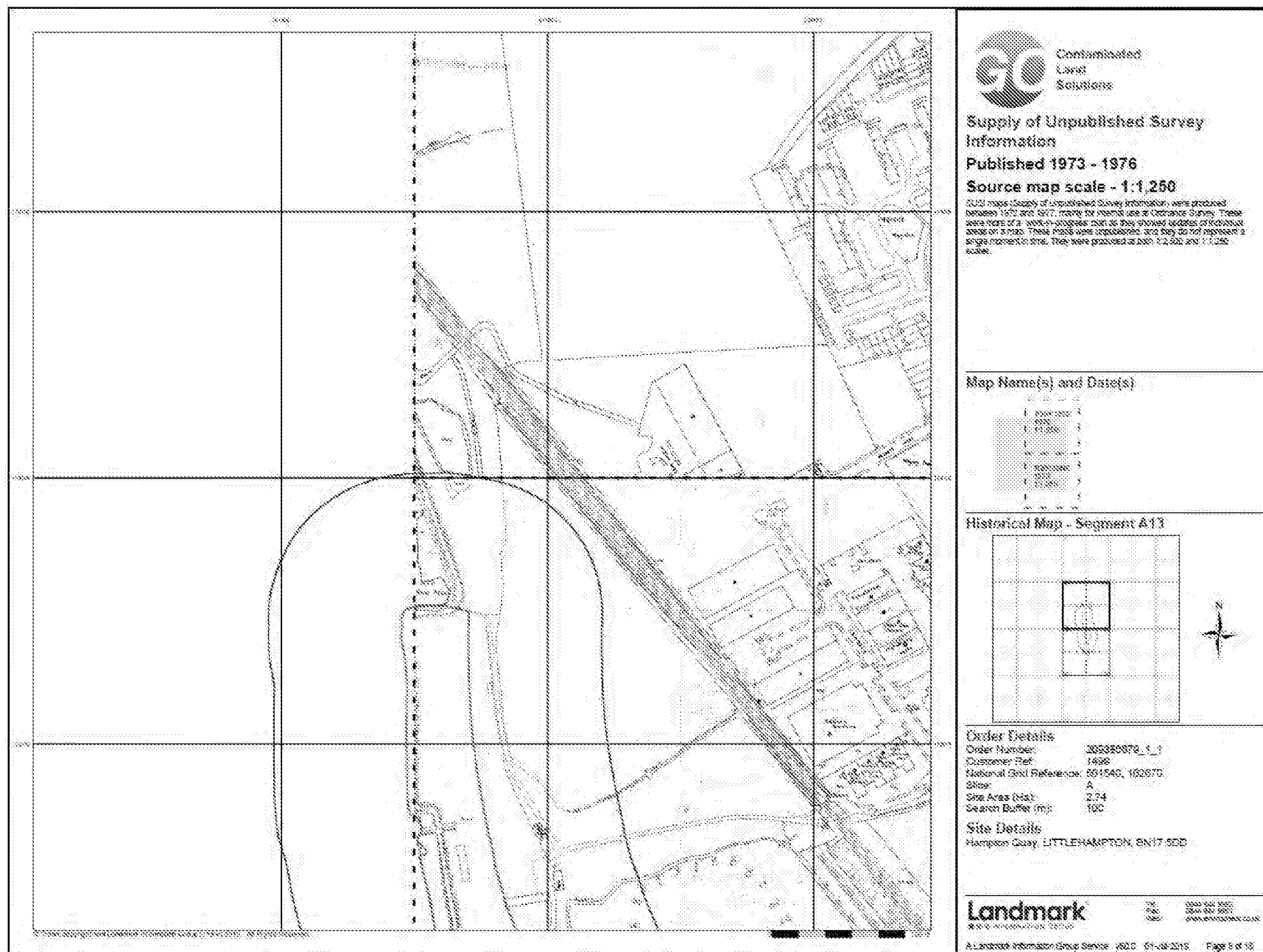
0114 276 6000
0800 077 2222
0800 077 2222

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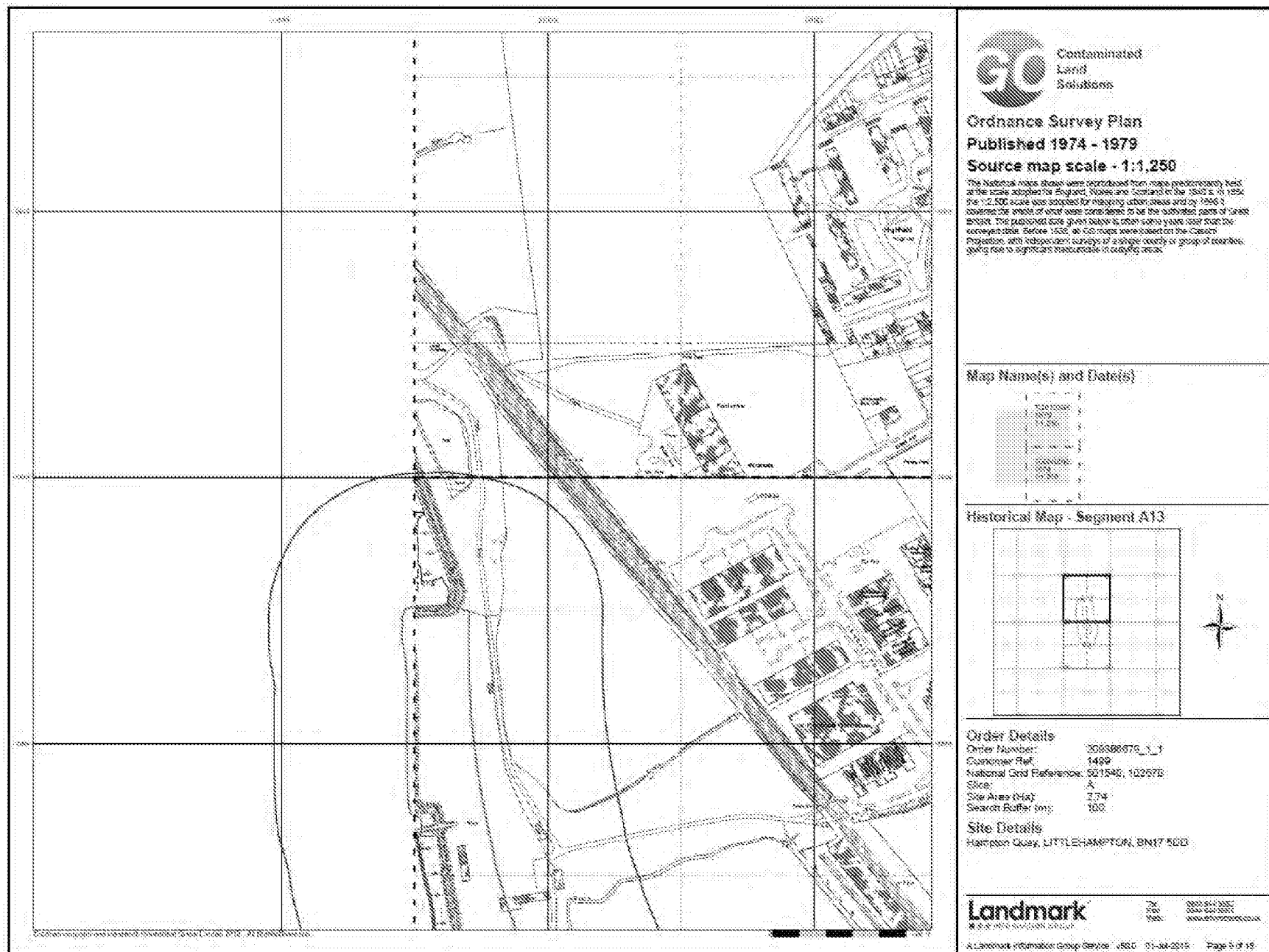
1499-P1E-1-B: Hampton Quay, Littlehampton
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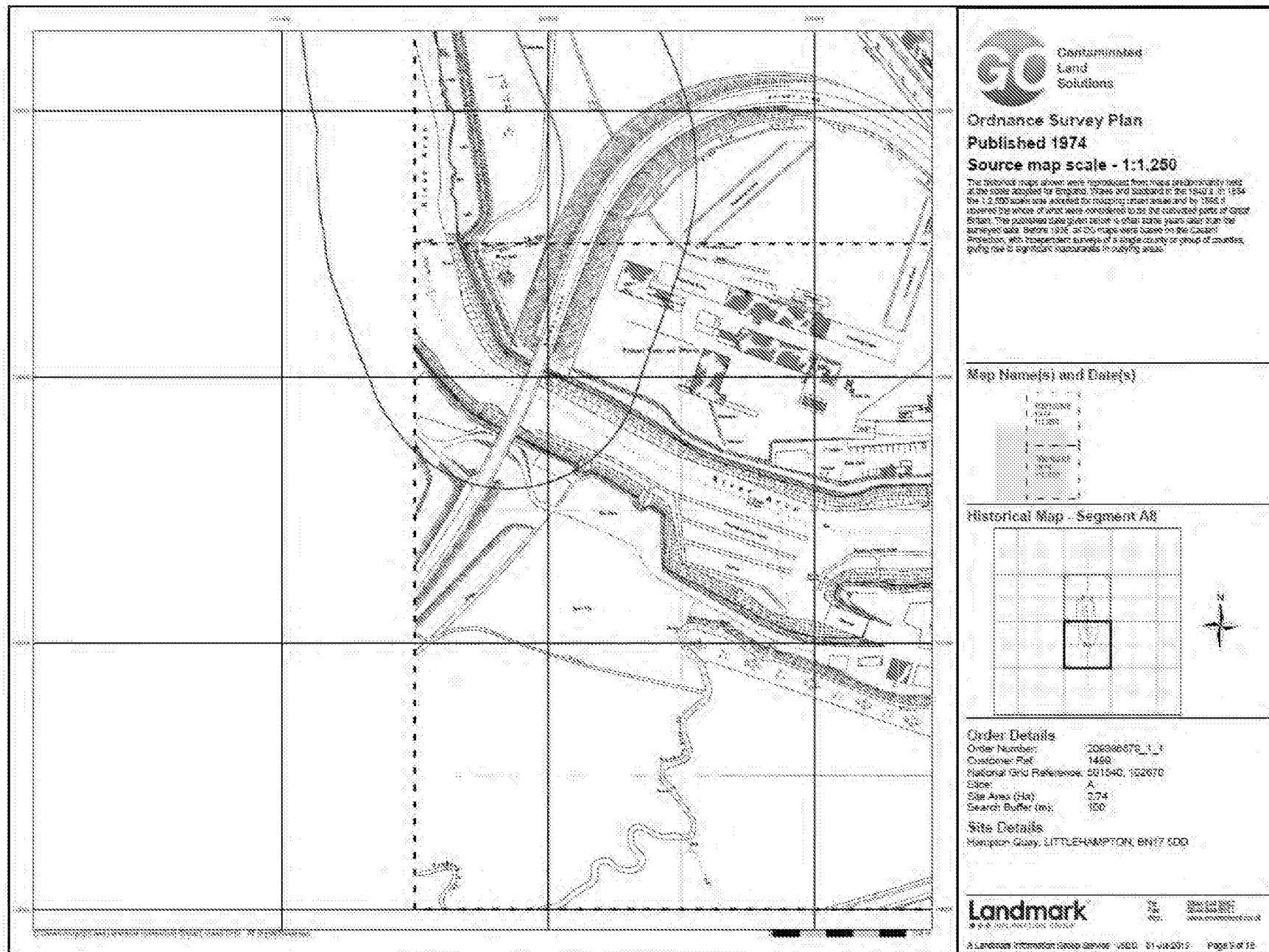
1499-P1E-1-B: Hampton Quay, Littlehampton
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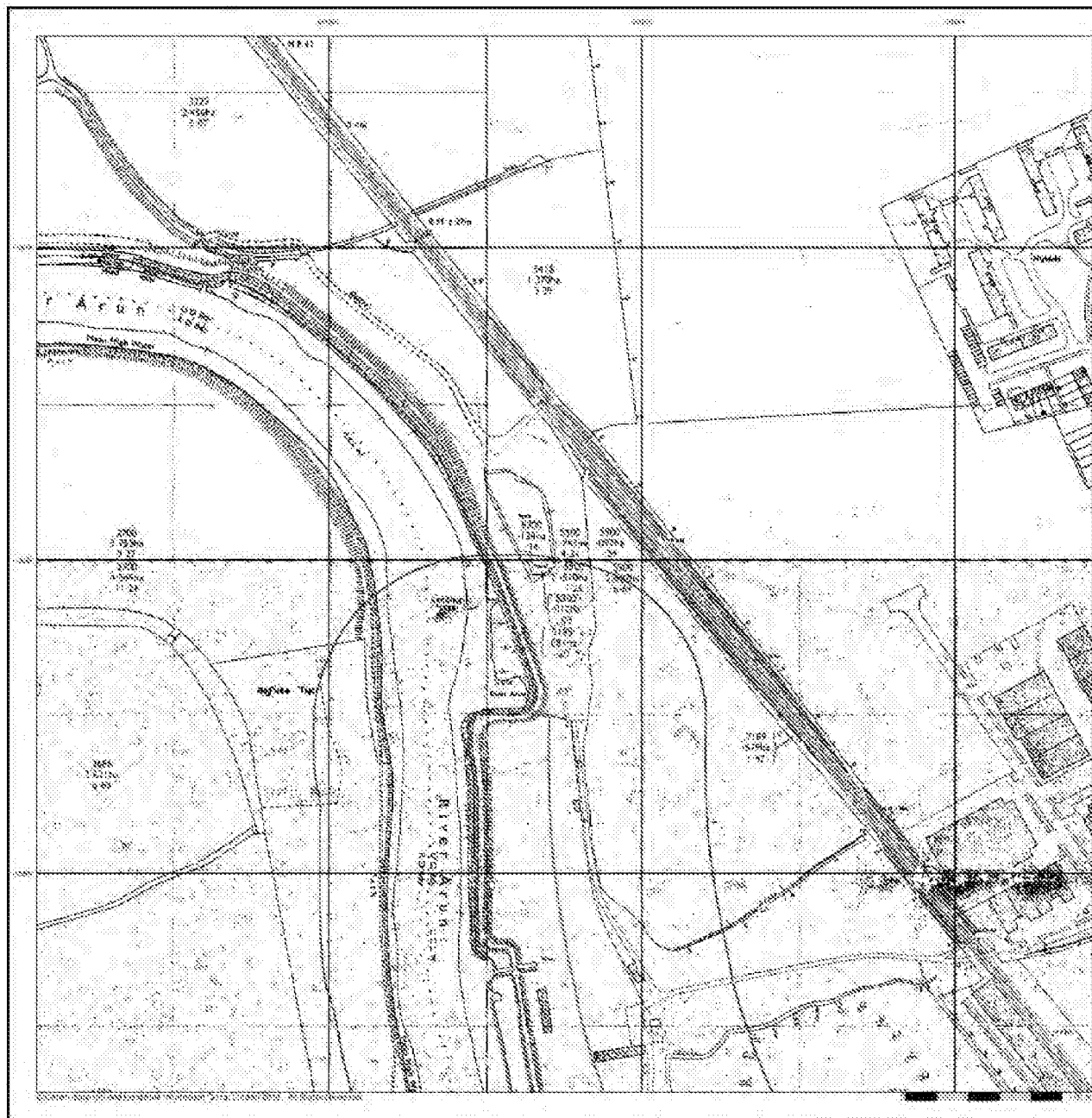
1499-P1E-1-B: Hampton Quay, Littlehampton
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1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



1499-P1E-1-B: Hampton Quay, Littlehampton
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Contaminated
Land
Solutions

Supply of Unpublished Survey Information

Published 1974

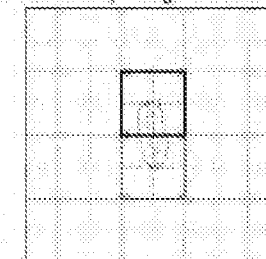
Source map scale - 1:2,500

GO's maps (copy of unpublished survey information) were produced between 1972 and 1977, mainly for internal use at Contaminated Survey. These were more of a 'work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

1:2,500
1974
1:1,250
1974
1:2,500
1974
1:1,250
1974
1:2,500
1974
1:1,250
1974

Historical Map - Segment A13



Order Details

Order Number: 306396572_1_1
Customer Ref: 1462
National Grid Reference: 521540, 102670
Sheet: A
Site Area (Ha): 2.74
Search Buffer (m): 100

Site Details

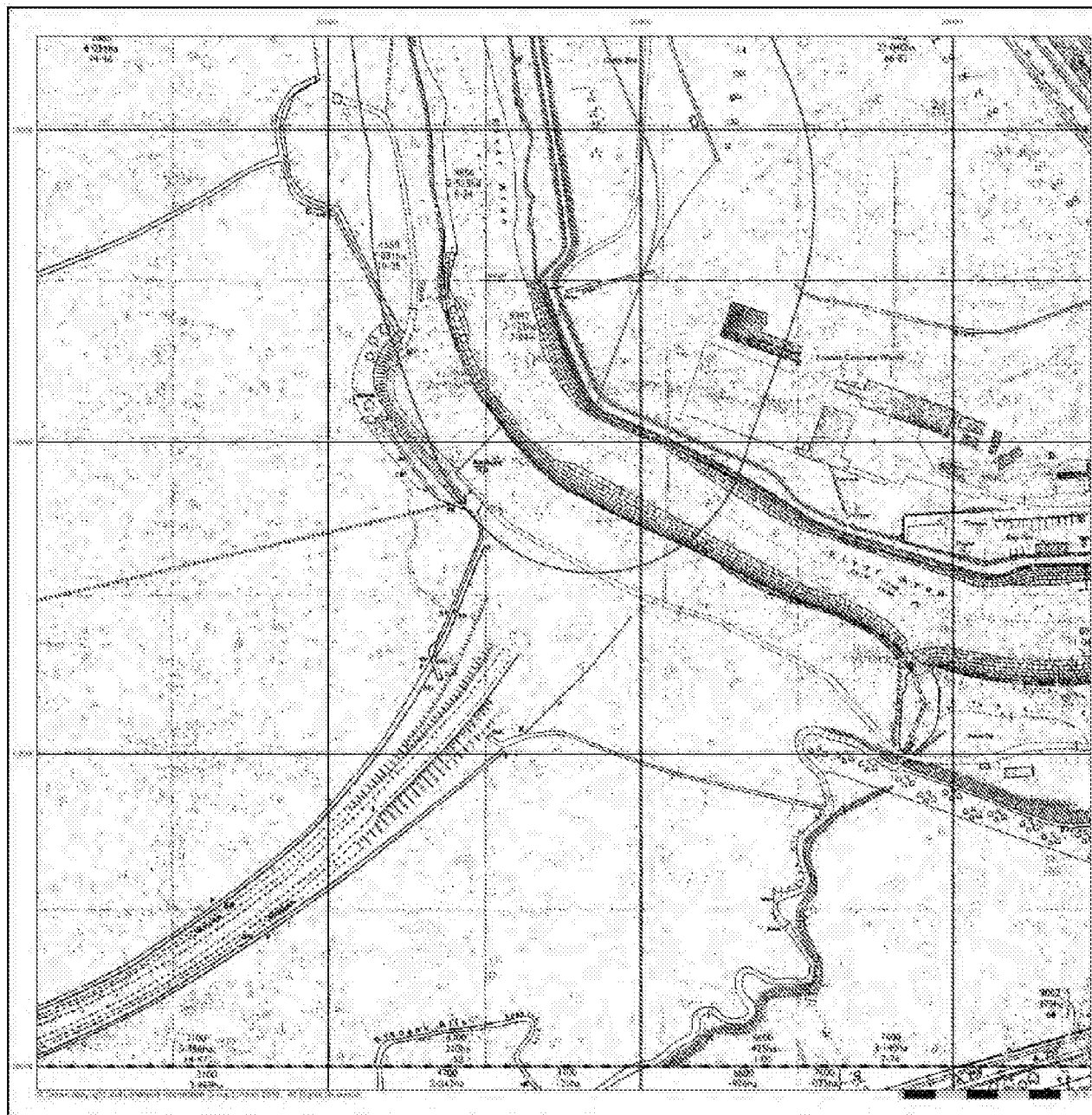
Hampton Quay, LITTLEHAMPTON, BN17 5DD

Landmark
A Landmark Information Group Service

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020 300 0001
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1499-P1E-1-B: Hampton Quay, Littlehampton
Stolon Studios Ltd



Contaminated
Land
Solutions

Supply of Unpublished Survey Information

Published 1974

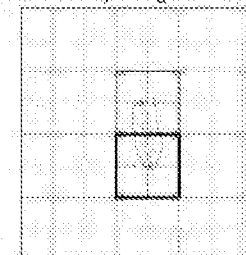
Source map scale - 1:2,500

20/21 maps (Supply of Unpublished Survey Information) were produced between 1970 and 1977, mainly for internal use at Ordnance Survey. These were more of a work-in-progress sort as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at scales 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

1:2,500 1
1:2,500 1
1:2,500 1
1:2,500 1
1:2,500 1
1:2,500 1

Historical Map - Segment A8



Order Details

Order Number: 20208579_1_1
Customer Ref: 1402
National Grid Reference: 501540, 102670
Scale: A
Site Area (Ha): 0.74
Search Buffer (m): 100

Site Details

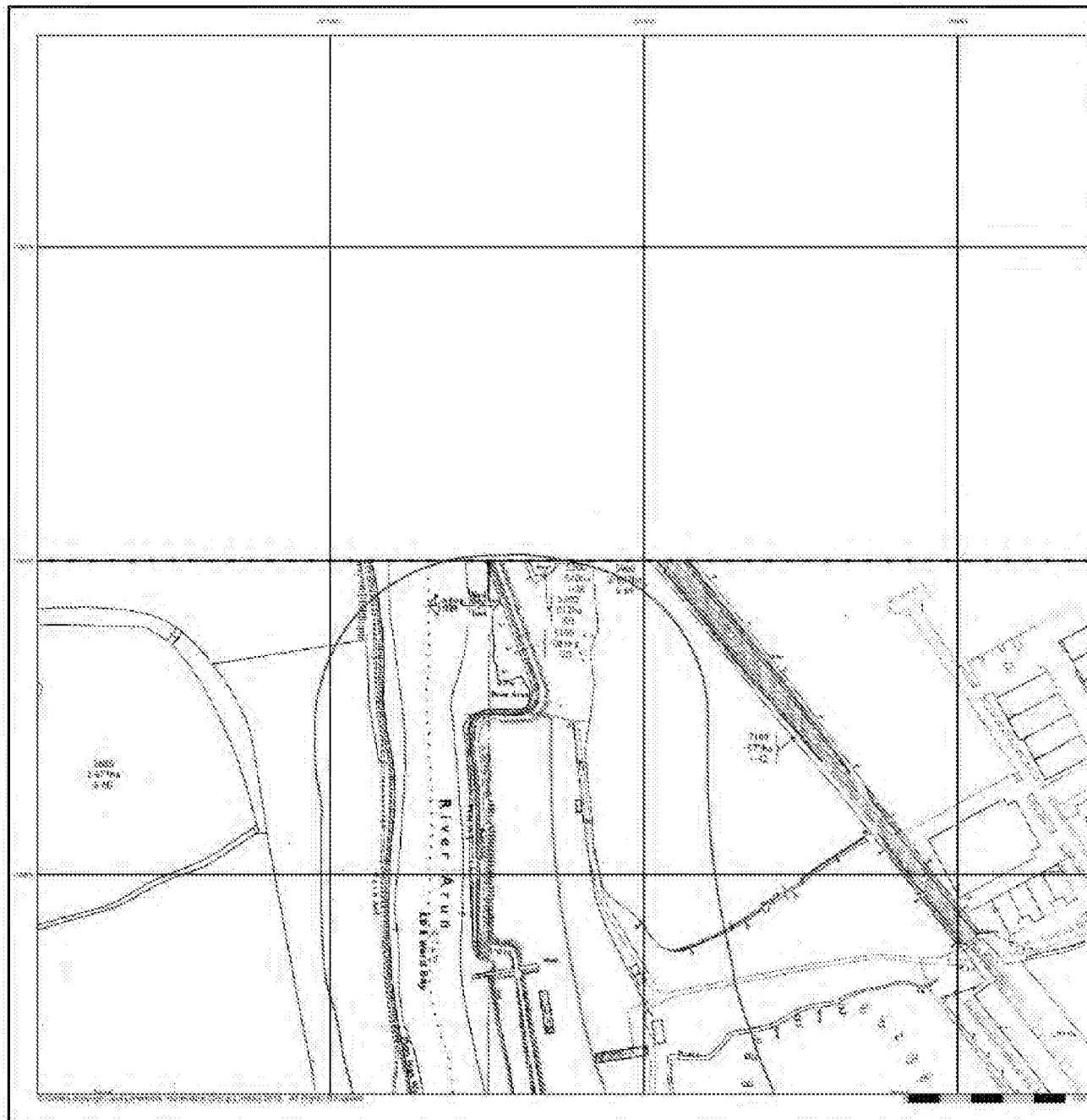
Hampton Quay, LITTLEHAMPTON, BN17 5DD

Landmark
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FAX: 0203 254 2221
WWW: www.landmark.co.uk

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Contaminated
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Additional SIMs

Published 1982

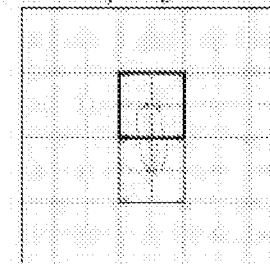
Source map scale - 1:2,500

The 1982 data (Ordnance Survey's 'Survey of Information on Contaminated Land') are further minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1984, and contain detailed information on buildings, roads and land use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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Customer Ref: 1429
National Grid Reference: 501540, 102670
Site: A
Site Area (Hectares): 2.74
Search Buffer (m): 100

Site Details

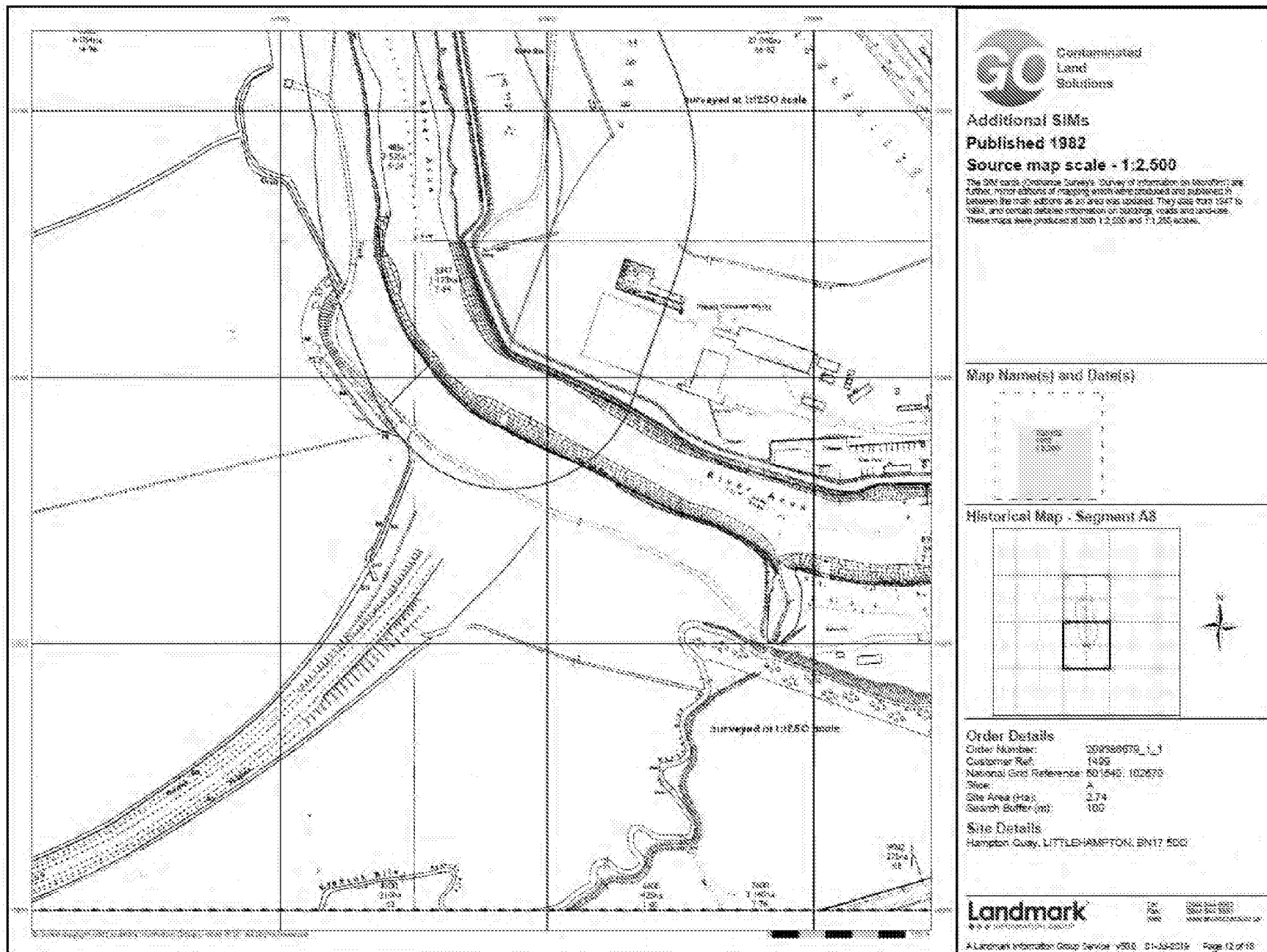
Hampton Quay, LITTLEHAMPTON, BN17 5DD

Landmark
A Landmark Information Group Service

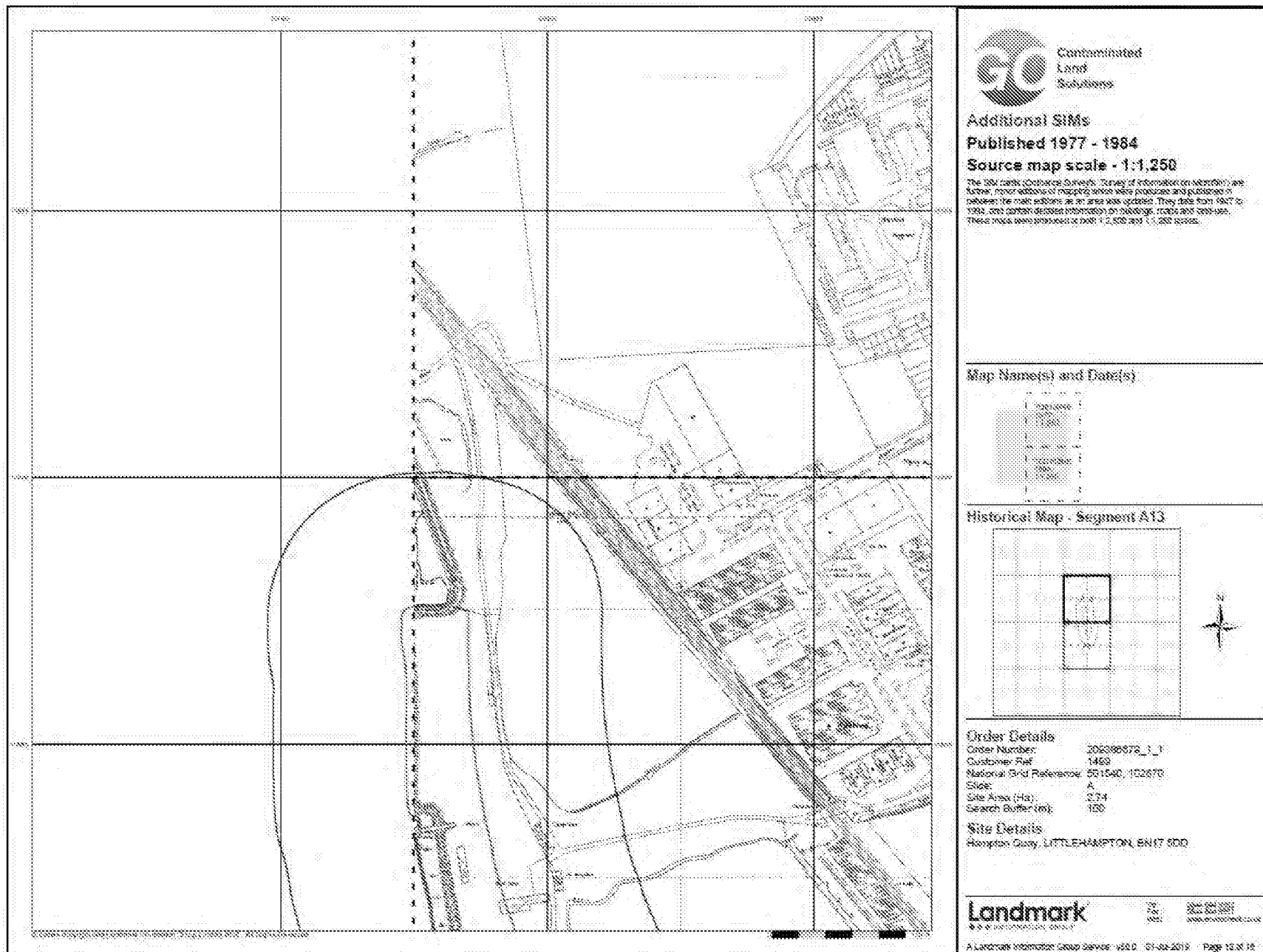
Tel: 0202 304 0957
Fax: 0202 304 0957
Web: www.landmark.co.uk

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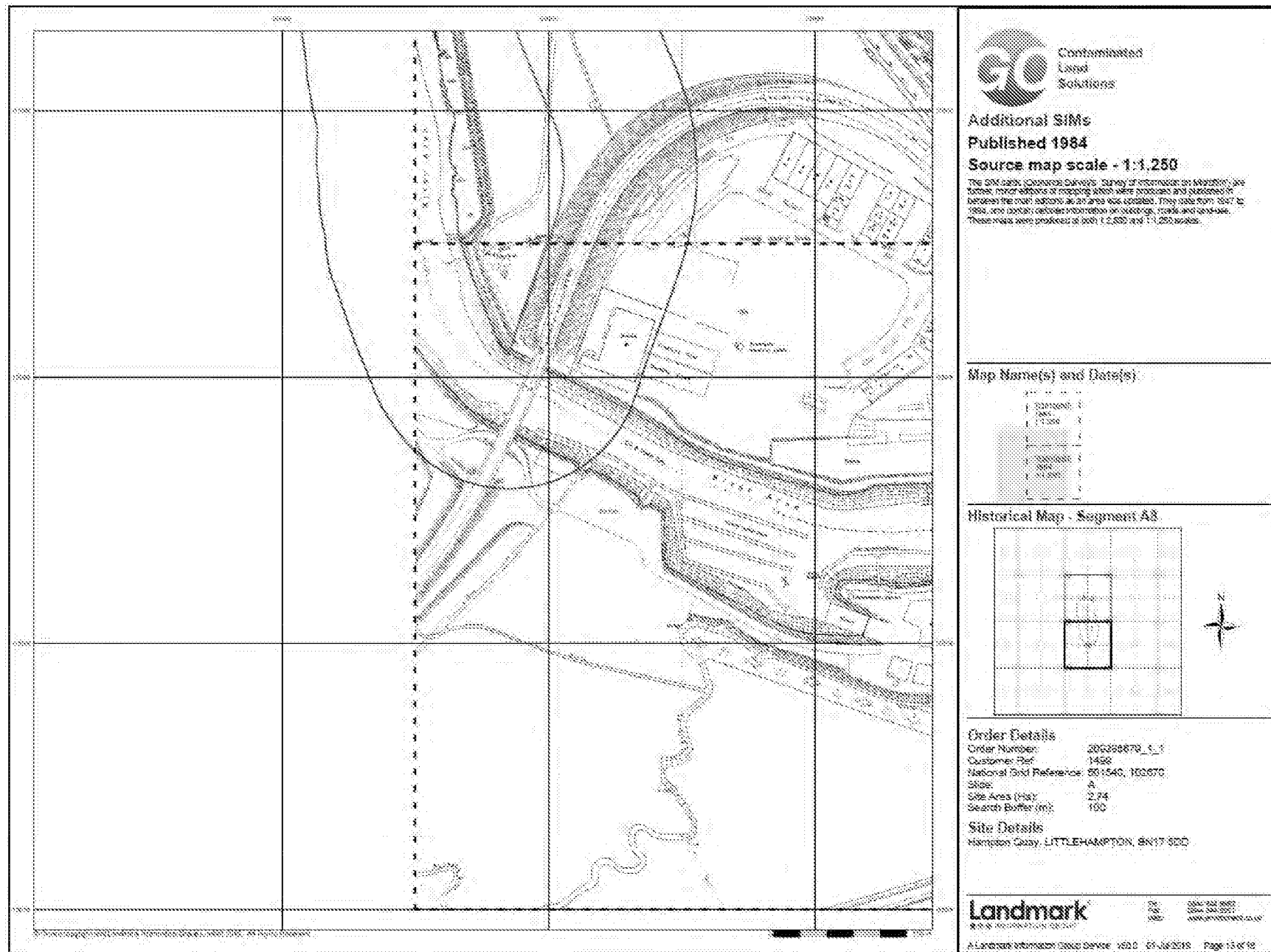
Hampton
Stolon Studios Ltd



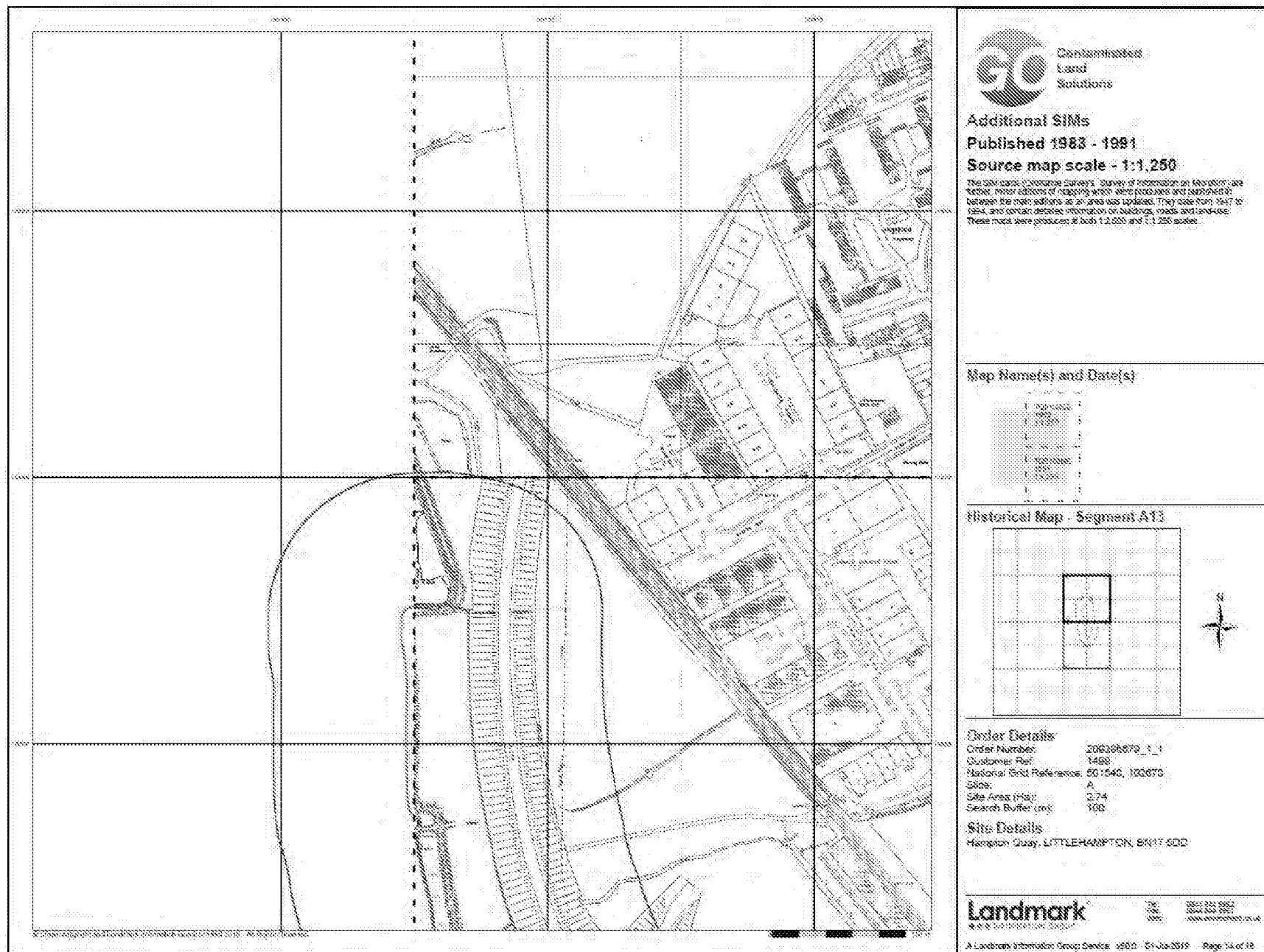
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 Stolon Studios Ltd



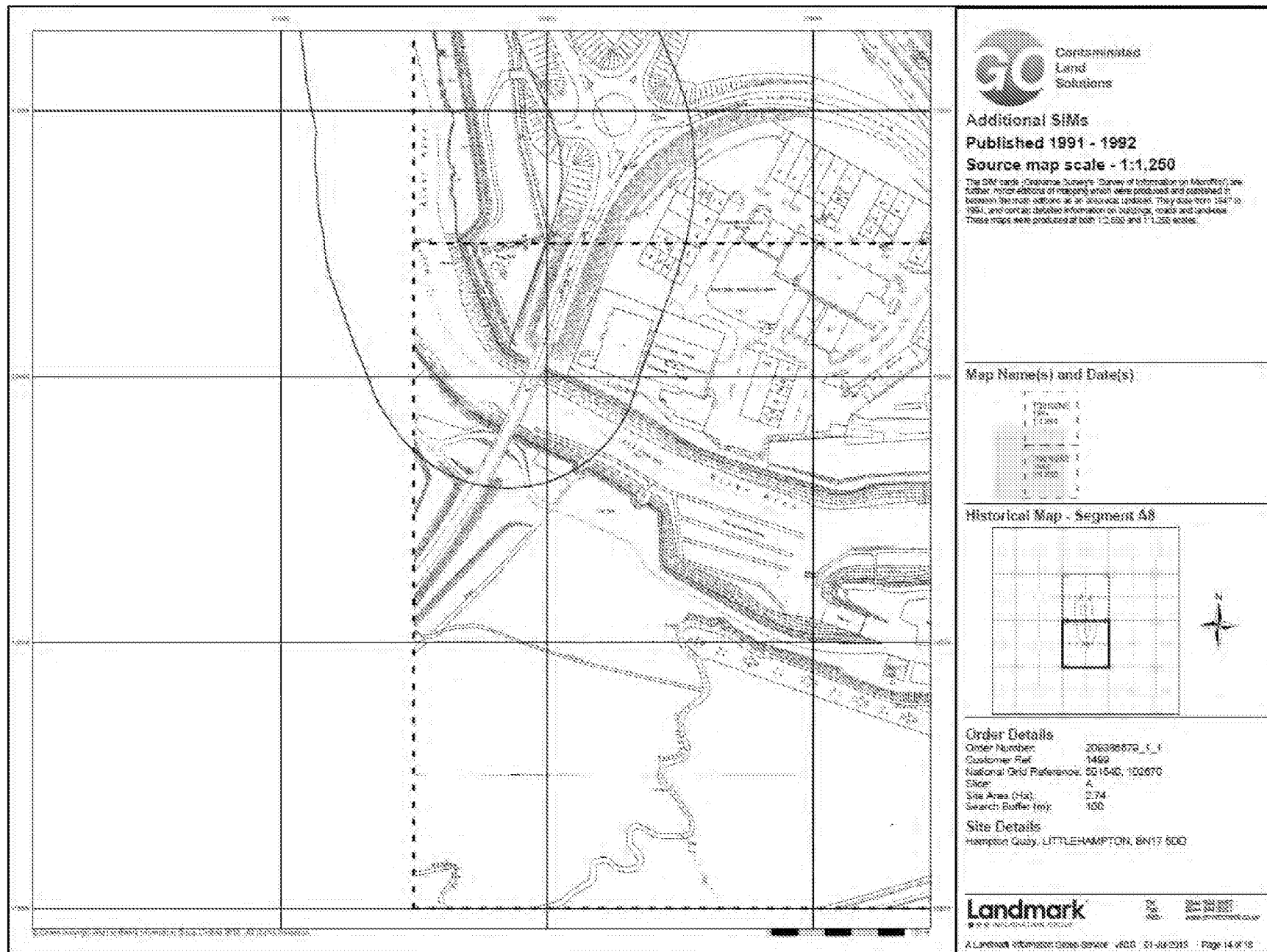
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 Stolon Studios Ltd



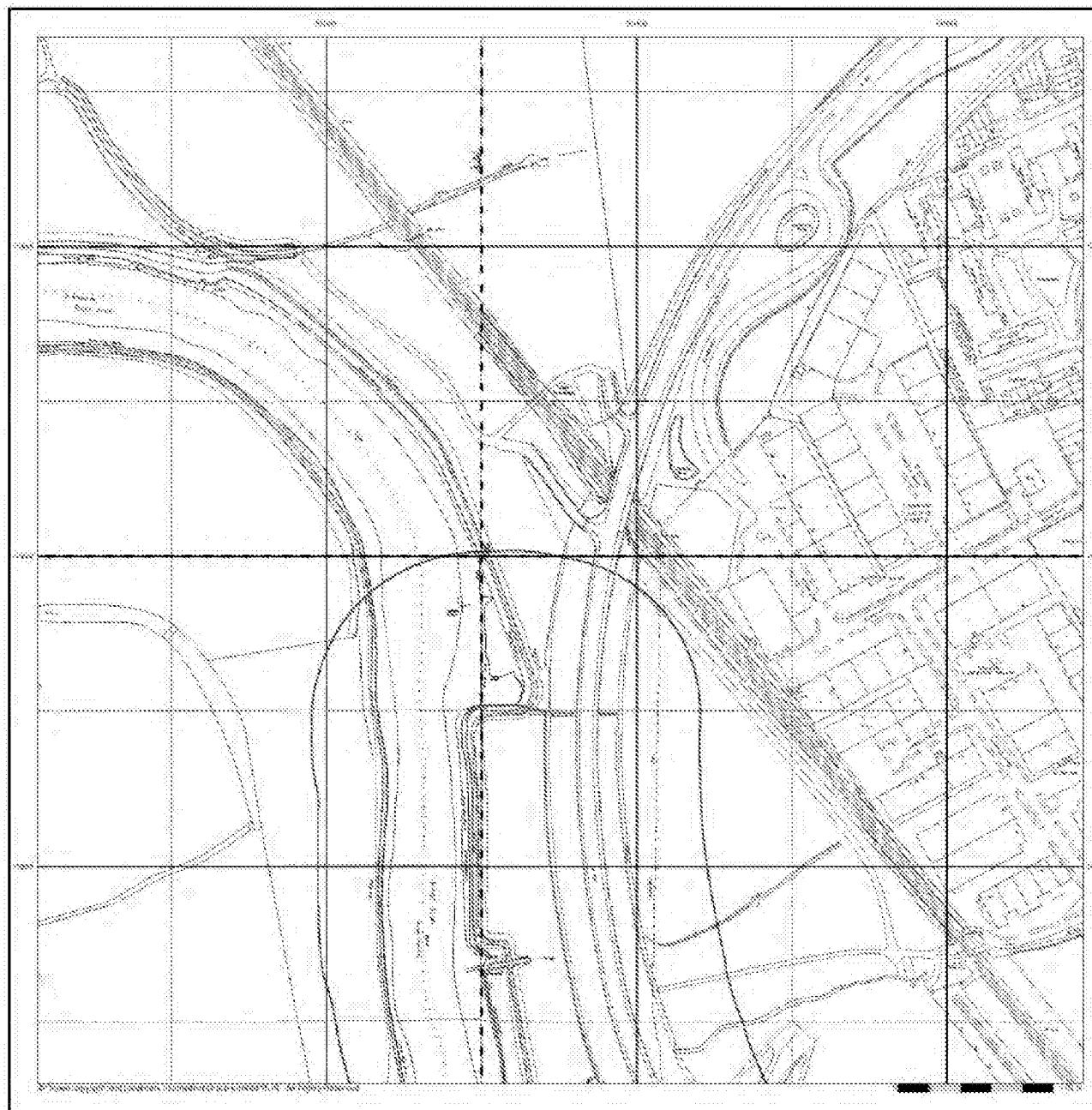
1499-P1E-1-B: Hampton Quay, Littlehampton
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Stolon Studios Ltd



1499-P1E-1-B: Hampton Quay, Littlehampton
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Large-Scale National Grid Data

Published 1994

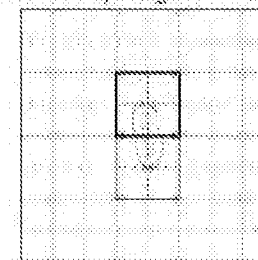
Source map scale - 1:1,250

Large Scale National Grid Data expressed OIV data (Ordnance Survey's Survey of Information on Vectors) in 1994, and combined to be imposed onto 1994. These maps were the first version of digital mapping and so provide detailed information on houses and roads but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

1:1,250	1:1,250
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1:1,250	1:1,250
1:1,250	1:1,250

Historical Map - Segment A13



Order Details

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Search Buffer (m): 100

Site Details

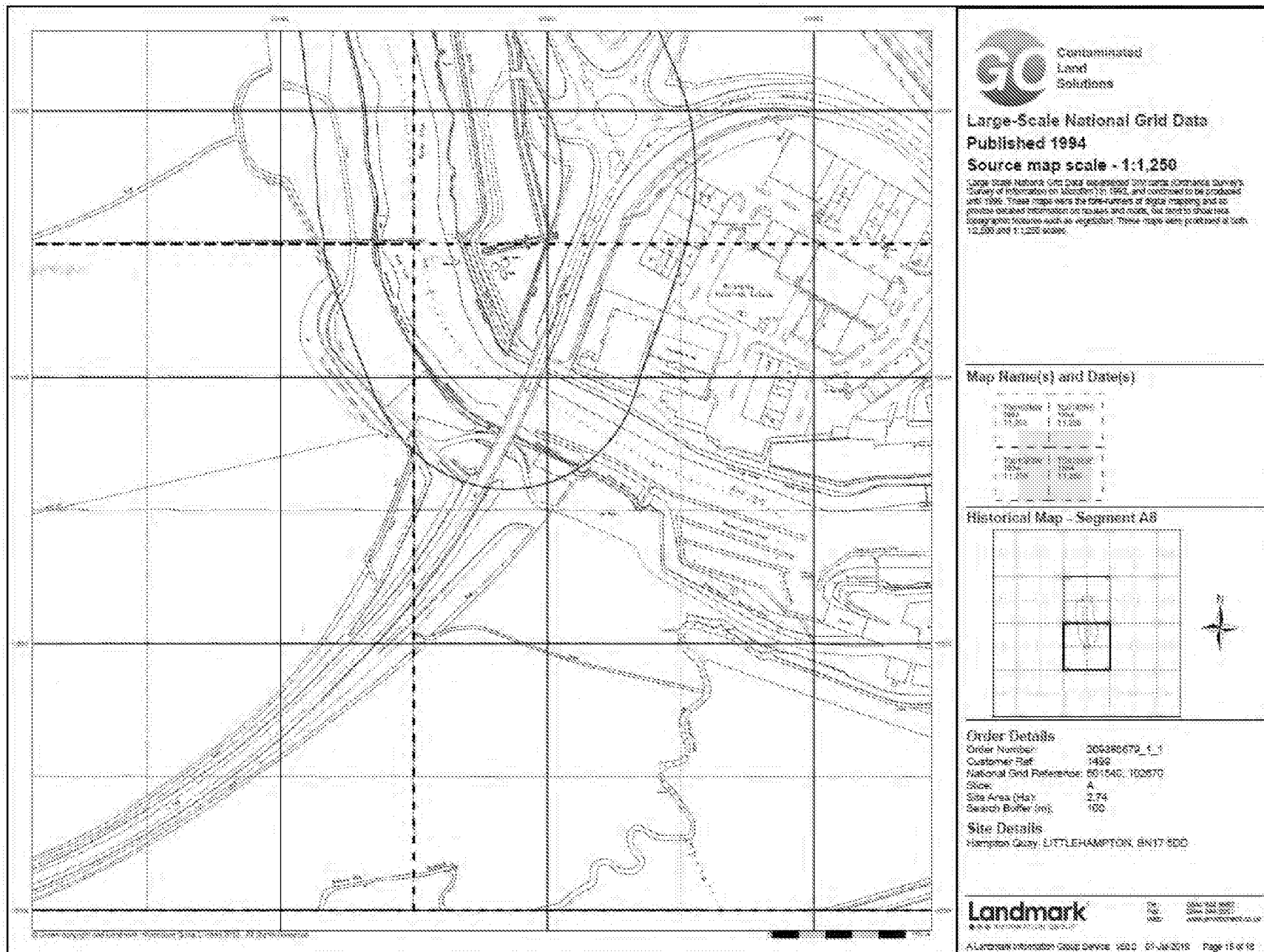
Hampton Quay, LITTLEHAMPTON, BN17 5DD

Landmark
www.landmarkgroup.co.uk

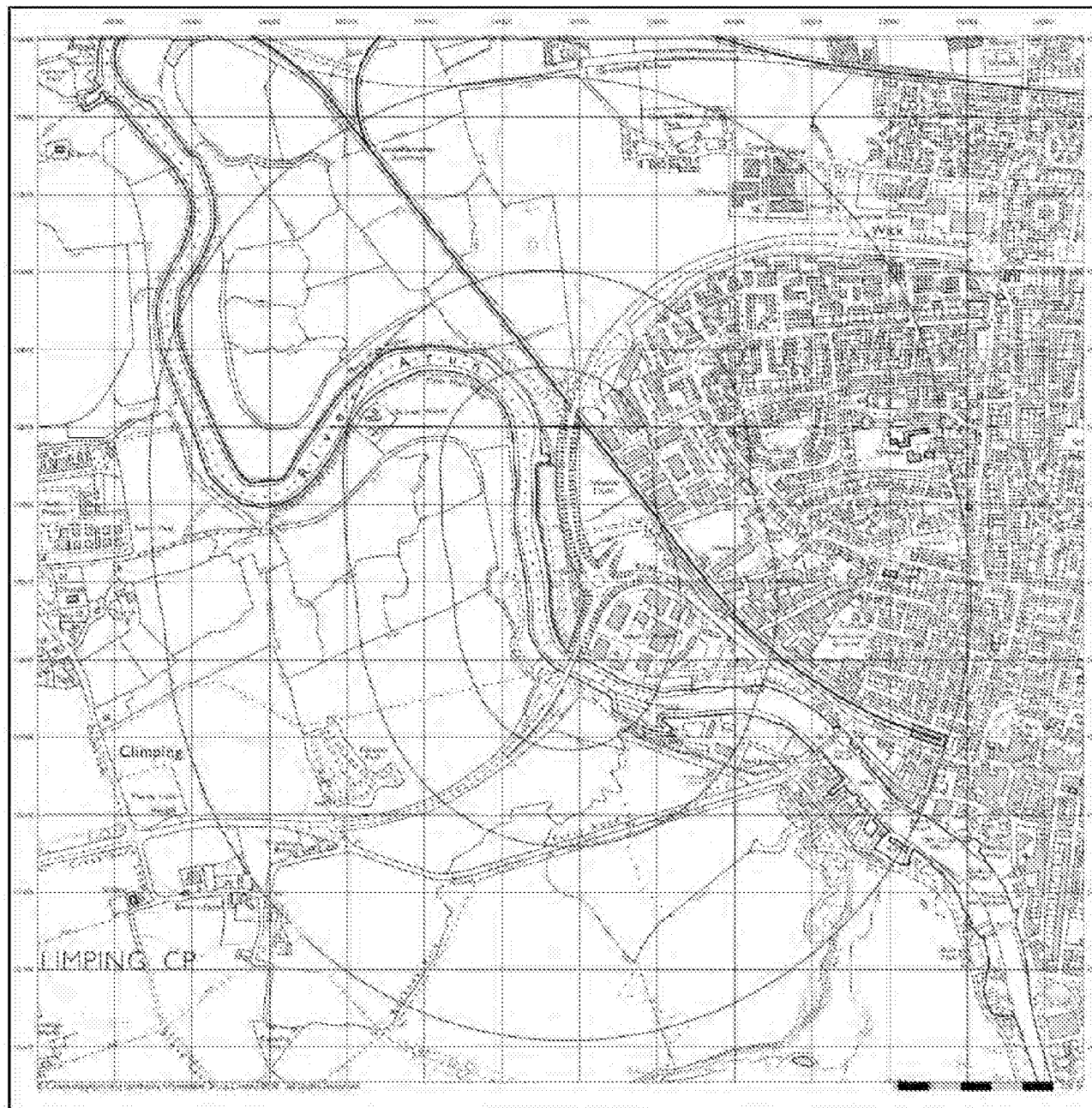
Tel: 0246 666 990
Fax: 0246 666 1567
www.landmarkgroup.co.uk

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1499-P1E-1-B: Hampton Quay, Littlehampton
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1499-P1E-1-B: Hampton Quay, Littlehampton
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Ordnance Survey Plan

Published 1993

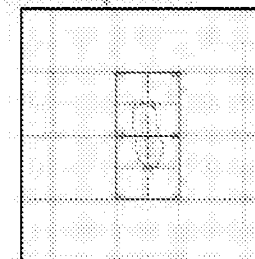
Source map scale - 1:10,000

The original maps shown were reproduced from maps predominantly held at the scale adopted for this project. Where any contained in the 1980's, it is noted that the 1:2,500 scale was adopted for mapping urban areas. These maps were used to update the 1:10,000 maps. The publication date given therefore is often some years later than the surveyed date. Before 1926, all OS maps were based on the Cassini Projection. With independent surveys of a single county or group of counties, giving rise to significant inaccuracies in adjoining areas. In the year 1949, a transition to British was completed, which updated the 1:10,000 mapping from a number of sources. The maps appear unaltered - with all military camps and other strategic sites removed. These maps were initially surveyed with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. This revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

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National Grid Reference: 501542, 102375
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Site Area (Ha): 2.74
Search Buffer (m): 1000

Site Details

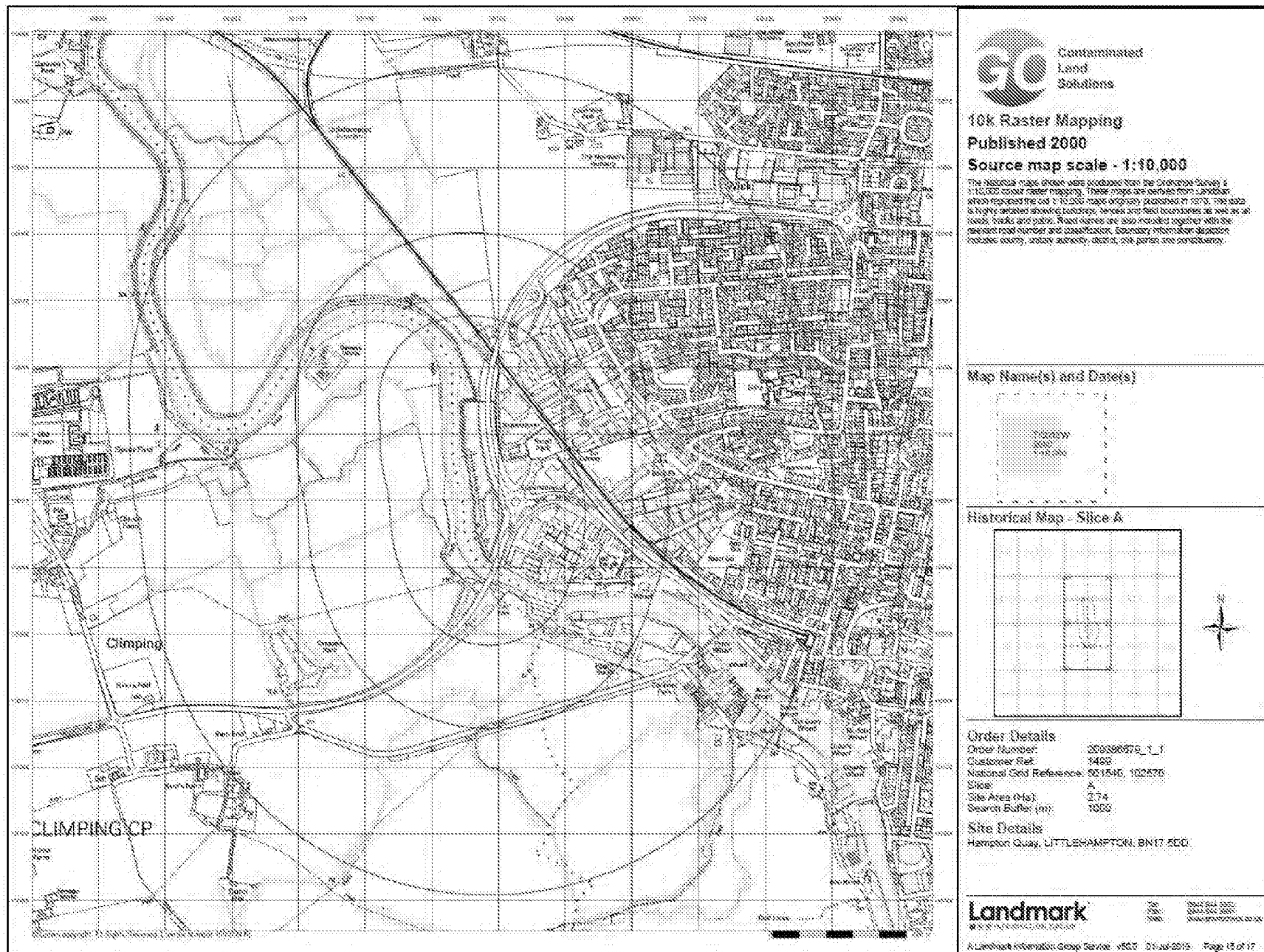
Hampton Quay, LITTLEHAMPTON, BN17 6DD

Landmark
www.landmark.co.uk

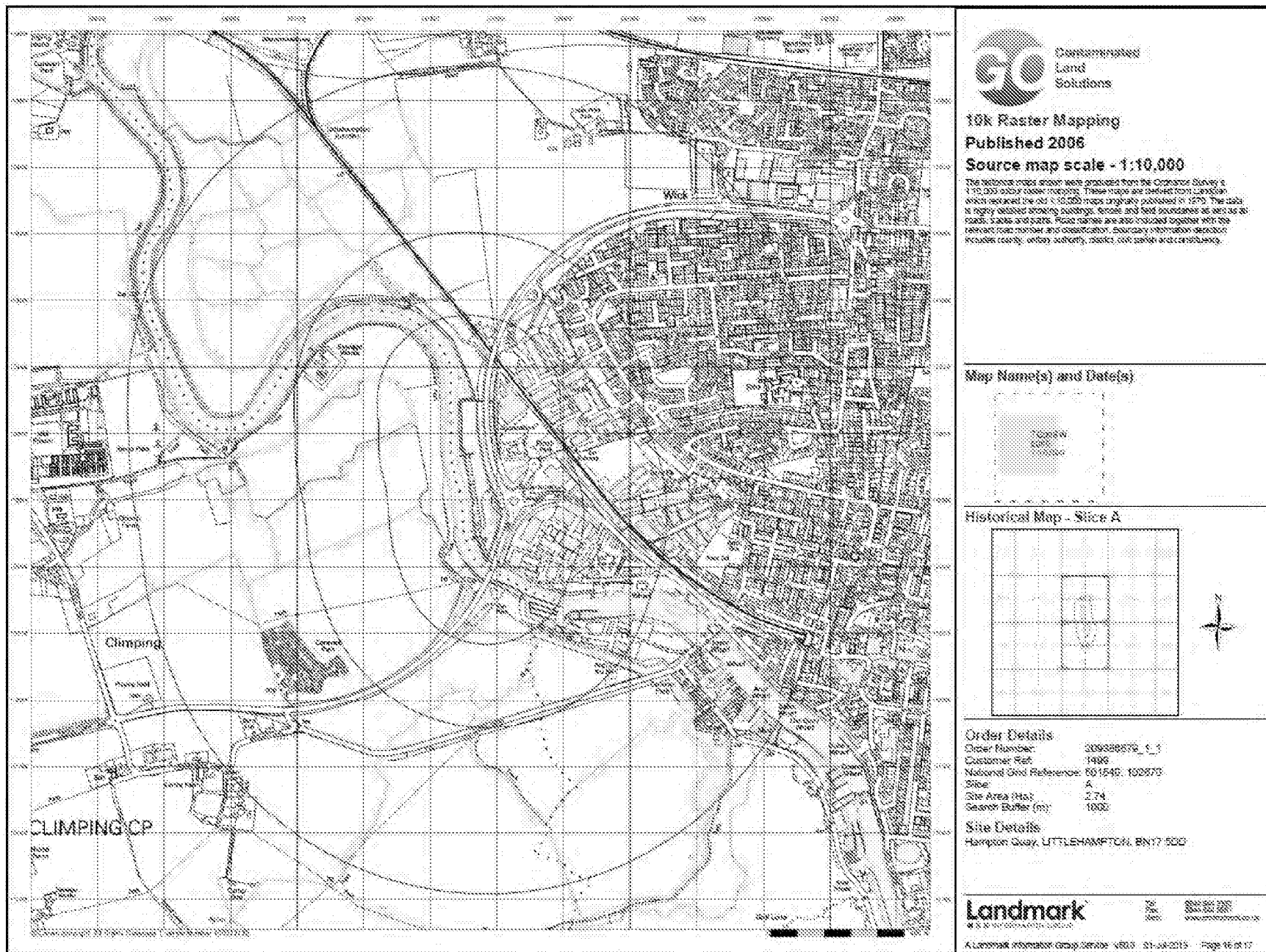


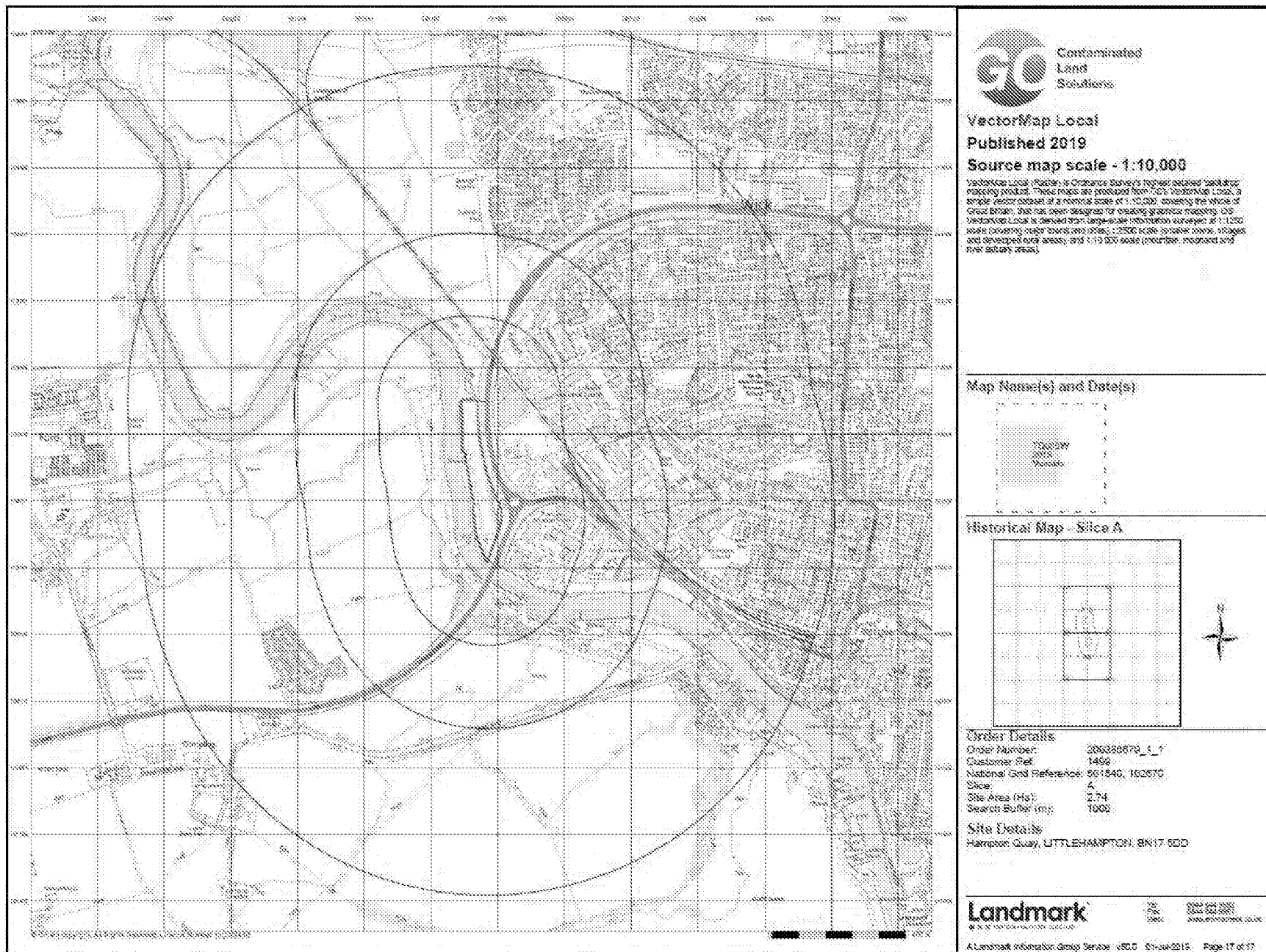
A Landmark Information Group Service v600 01-Jul-2016 Page 14 of 17

1499-P1E-1-B: Hampton Quay, Littlehampton
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1499-P1E-1-B: Hampton Quay, Littlehampton
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1499-P1E-1-B: Hampton Quay, Littlehampton
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Appendix E – Halcrow Updated Geo-Environmental Risk Assessment

(extracts relevant to Reach 6)

Summary

This report is an update of the 2010 report, "Littlehampton Arun Tidal Defences – East Bank Phase 2 Interpretative Geotechnical Report July 2010" which contained a human health and controlled waters risk assessment. This report is updated to include ground investigation data obtained in 2012. It also includes a section on waste management, and an outline design statement (for use with the CL:AIRE Code of Practice declaration).

The study area is split into six reaches. The improvements to Reaches 1 to 5 do not involve significant disturbance of soils and it is considered that there are no significant contamination risks associated with the improvements. For Reach Six plans may involve excavation of defence bunds and re-use of the soils within the scheme. There are no significant contamination issues associated with this approach, although it is recommended that the CL:AIRE Code of Practice is used to facilitate re-use of soil materials within the scheme.

The improvement plans for the study area are not finalised and may be subject to change. It is recommended that the conclusions of this study are revisited once plans are finalised.

1 Introduction

1.1 Background

The Littlehampton (Arun) East Bank Tidal Walls project comprises the replacement and upgrade of 2.6km of tidal defences. The project boundary extends along the east bank of the River Arun from the estuary mouth at Littlehampton to 500m north of the A259 road bridge. The project is divided into six reaches (Reach 1 to 6) according to existing tidal defences. For ease of comparison this report adopts the same reference system.

The outline design proposals included new steel sheet pile walls, raising of existing defences with reinforced concrete upstands or caps, and raising of embankments with a combination of new plastic sheet piles and new steel sheet piles. Further details on these proposals can be found in the Project Appraisal Report (PAR) produced by Halcrow in May 2011 and the outline design drawings DCARLN-001,100-104,200-202,300-301,400-401,500-502,600-605, Halcrow, October 2010.

Since outline design the embankment works have been reconsidered and there is now the potential for the realignment of approximately 400m of embankment.

This report is an update of the previous report, "Littlehampton Arun Tidal Defences – East Bank, Phase 2 Interpretative Geotechnical Report, Halcrow, July 2010" focussing on the controlled waters risk assessment, human health risk assessment and soils waste management. This document also includes a "design statement" for the purposes of the CL:AIRE definition of waste – Industry Code of Practice.

1.2 Scope

A human health risk assessment has been carried out to assess the risk posed to human health from contaminated land placed in the context of the proposed works.



The methodology follows the requirements of the CLR11 *Model Procedures for the Management of Land Contamination* (Environment Agency, 2004) in identifying land potentially affected by contamination and quantifying the risks.

A controlled waters risk assessment has been undertaken in line with the Environment Agency's Remedial Targets Methodology: Hydrogeological Risk Assessment of Land Contamination, 2006. The methodology applies to soils and ground water that are already contaminated, where the original surface source of the contamination has ceased.

1.3 Limitations of Report

This report is based on the information that has been made available to Halcrow from the sources presented in the report. The conclusions drawn in the report are considered correct although any subsequent additional information may allow refinement of the conclusions. It should be noted that:

- The report has been prepared under the express instructions and solely for the use of the Environment Agency (EA);
- The findings of this report represent the professional opinion of experienced geotechnical, geoenvironmental scientists and contaminated land specialists. Halcrow does not provide legal advice and, therefore, the advice of lawyers may also be required;
- All work carried out in preparing this report has utilised and is based upon Halcrow's current professional knowledge and understanding of current relevant UK standards and codes, technology and legislation. Changes in this legislation and guidance may occur at any time in the future and subsequently cause any conclusions to become inappropriate or incorrect. Halcrow does not accept responsibility for advising the EA or other interested parties of the facts or implications of any such changes;
- Preparation of this report has been augmented by factual information contained in maps and documents prepared by others. Halcrow can accept no responsibility for the accuracy of such information.

2 Site Description

2.1 Location and General Description

Littlehampton is a seaside resort town and civil parish in the Arun District of West Sussex. The area comprises predominantly low lying land, rising to meet the South Downs to the north. The River Arun is located immediately to the west of Littlehampton town centre. The river frontage is dominated by urban development which is protected by defences from tidal flooding and erosion.

The study site comprises 2.6km of existing sea defences on the east bank of the River Arun between the estuary mouth and approximately 500m to the north of the A259



road crossing. Many of the flood defences along this length have a short residual life (less than 10 years) and will need significant works or replacement to prevent failure or breach in the future. The predicted sea level rises resulting from global warming will also require the defences to be raised.

The study area is shown on drawing number DCARUN-001.

2.2 Existing Flood Defence Infrastructure

The existing defences largely comprise steel and concrete piled retaining walls (crane and sheet steel; concrete king post and plank; concrete vertical sections) as well as lesser sections of masonry and concrete gravity walls, armoured revetments and approximately 750m of earth embankment to the north of the study site.

2.3 Proposed Flood Defence Works

The proposed tidal defence scheme is divided into six reaches (Reach 1 to 6) according to the existing tidal defences and this reference system has been adopted in this report for ease of comparison. Currently, the preferred options are summarised within the Project Appraisal Report and the Options Appraisal Report and are shown on the outline design drawings. A brief overview is provided in the subsequent sections. It should be noted that at the time of writing this report the improvement plans for Reach 6B were not finalised.

2.3.1 Reach 1 (Drawings DCARUN-100 to 104)

The existing concrete post and plank wall and the steel sheet piled wall will remain in-situ. A new steel sheet piled wall will be constructed directly in front of the existing defence with a crest level to the full design height. The void between the existing and the new defence will be filled and the promenade reinstated at a raised level, and the width maximised by incorporating a retaining wall adjacent to the road.

2.3.2 Reach 2 (Drawings DCARUN-200 to 202)

The existing concrete wall will remain in-situ. A new steel sheet piled wall will be constructed in front of the existing defence with a crest level to the full design height. The alignment of the wall will tie into the defence line at Reach 1 (proposed) and Reach 3 (existing). This alignment will require some encroachment into the river and some breaking out of the existing concrete structure to the north of the reach. The void between the existing and new defence will be filled. The promenade will be raised to full height with steps down to the existing level of Pier Road and a realigned junction for Arun Parade/Pier Road.

2.3.3 Reach 3 (Drawings DCARUN-300 to 301)

2.3.3.1 Reach 3A

The majority of the defences in Reach 3A were constructed in 2000 as part of the recent redevelopment of this area and were constructed to a height at least 300mm higher than the other reaches. Therefore, the existing defences have significant residual life, both structurally and in terms of flood defence height. Therefore no works are proposed at present although works will be required in 2030 to raise the defences to the level required by this scheme.



2.3.3.2 Reach 3B

The existing concrete wall and the steel sheet piled wall will remain in-situ. A new steel sheet piled wall will be constructed in front of the existing defence with a crest level to the full design height. To reduce the embedded depth of the piles, the new defence will be tied to the existing defence.

2.3.4 Reach 4 (Drawings DCARUN 400-401)

2.3.4.1 Reach 4A

A sheet piled wall will be constructed riverward of the existing defences to the full design height. The void between the existing and new defences will be filled.

2.3.4.2 Reach 4B

The existing masonry/concrete wall will remain in-situ. A new steel sheet piled wall will be constructed to the full flood defence height. The void between the existing and new defence will be filled.

2.3.5 Reach 5 (Drawings DCARUN-500 to 502)

2.3.5.1 Reach 5A

The existing concrete wall will remain in-situ. The downstream section of the defence comprises of the walls of the pub extension. This extension will be rebuilt at a raised floor level and the flood defence will be raised with a reinforced concrete upstand with timber cladding. The top section of the defence will comprise of glass flood wall to minimise the floor height increase required. The upstream section of this defence currently comprises quay wall with handrail adjacent to a patio. This flood defence will be raised to full height using glass flood wall attached to the existing concrete capping beam.

2.3.5.2 Reach 5B

The existing defences will be raised by dowelling an extra section of reinforced concrete cap. The quay behind the raised cap will remain as existing. In the medium term (approximately year 2030 to tie into the end of Tarmac's lease from Littlehampton Harbour Board), a new sheet piled defence to full height will be constructed riverward of the existing defence.

2.3.6 Reach 6 (Drawings DCARUN-600 to 605)

2.3.6.1 Reach 6A

The existing embankment will be raised to full flood defence height (to year-100 level to account for the long design life of embankments). Due to space constraints and seepage risks, the existing embankment will be raised using a recycled plastic sheet piled cut off. This vertical defence will be cantilevered to provide the increase in height required.

2.3.6.2 Reach 6B

The existing embankment in the downstream reach will be raised to full design height (to include for 100-years of SLR). The two culverts under the A259 and the existing ditch network will remain in situ to provide an area of flood storage for the

The logo for Stolon Studios Ltd, featuring the word "Stolon" in a stylized, bold, italicized font.

tributaries. The existing siltice under the embankment will be extended to accommodate the increased embankment plan area.

The A259 road embankment will provide the flood defence for the upstream reach. To protect the road embankment, the flood defence will be built out at the toe to full flood height and an impermeable geotextile layer will prevent seepage. To provide a 4m wide vehicular access, a mass of granular fill will be added. The embankment will be protected from scour and waves by rip rap.

The existing flood embankment in the northern reach will be substantially removed and the excavated material redistributed to the rear of the site to a level that will maximise the potential area of saltmarsh habitat (and mudflats). The existing perpendicular sections of the existing flood embankment will remain in situ to protect the existing saltmarsh and to encourage additional saltmarsh colonisation and prevent the migration of the River Arun.

2.3.7 Geology

British Geological Survey (BGS) Sheet 317/332, Chichester and Bognor (solid and drift) (ref British Geological Survey (1996) 1: 50 000 Series Solid and Drift Geology Sheet 317/332 Chichester and Bognor) indicates soils of different geological origin are present within the wider area of the site, including Blown Sand, Tidal River deposits, Raised Beach Deposits and Aedrian Deposits (Brickearth). The underlying bedrock geology is Upper Chalk.

Although Made Ground is not marked on BGS Sheet 317/332 the commercial, residential and light industrial development along the southern half of the site has given rise to quite an extensive lateral and vertical profile of fill material.

No major faults are shown on BGS Sheet 317/332 within close proximity to the site.

A review of the BGS boreholes and site investigation data identified four main lithologies listed as follows:

- (i) Made Ground
- (ii) Alluvium (granular)
- (iii) Alluvium (cohesive)
- (iv) Upper Chalk

The results of the ground investigations generally confirm the findings of the desk study information presented above, proving a general sequence of Made Ground over alluvial deposits over the Upper Chalk. Both the Made Ground and alluvial deposits encountered within the recent ground investigation vary in depth, thickness and consistency along the reach comprising both cohesive and non cohesive (granular) soils. Drawings 463457-SI-001, 463457-SI-002, 463457-SI-003 and 463457-SI-004 show a long section of the geology for the whole scheme.

A former creek has been identified from historical mapping of Reach 6a (i) and Reach 5b (iii).

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Reach 3b and 3A(vi) – historical uses include wharfs, warehouses, small boatbuilding yards.

3.2.4 Reach 4

Ironworks to north of site. Most of reach is historically small wharfs.

3.2.5 Reach 5

Reach 5A – No significant contaminative uses – has been a public house since at least 1970, previously a wharf probably associated with ferry (prior to bridge crossing)

Reach 5B(i) – Large wharf and coal yard. Large gasworks to north of study area (other side of railway)

Reach 5B(ii) – Large wharf with conveyors and hoppers shown. Probably linked to asphalt works to the north.

3.2.6 Reach 6

Reach 6A(i) – Large wharf with conveyors and hoppers shown. Probably linked to asphalt works to the north. Site on infilled ancient creek (infilled after 1876).

Reach 6A (ii) and 6A (iii) – historical use as a coal yard.

Reach 6A (iv) – Precast concrete works from approximately 1970.

Reach 6A (v) – no significant use

Reach 6B (i) – Sewage works (small) from at least 1974.

Reach 6B (ii) – Infilled pond (filled between 1932 and 1970)

Reach 6B (iii) – no significant uses

Reach 6B (iv) – no significant previous contaminating uses.

Reach 6B (v) – Pond 1932-1976, now infilled. "Old" Limekiln – 1876-1898.

3.3 Site Walkover Survey

A site walkover was carried out on the 10th November 2009 and was attended by Peter Johnston (Halcrow Hydrogeologist), Jon Denner (Halcrow Project Engineer), Simon Deacon (Environment Agency) and Matthew Kennett (Local Authority). One area of particular concern that was discussed with regard to potential contamination was the current gas works site of which detail is given as follows.

Gas Works (NCR 102500, S02150) Reach 5B(i)

The EA have no information regarding this site. However, the EA were consulted as part of Network Rail's replacement of a transformer which lies between the main road and the gasworks. Shallow borings on the rail track land identified gasworks type contaminants in groundwater. It is likely that the sheet pile along the river bank is preventing the contamination from entering the river. The EA are concerned that no additional pathways from the aquifer to the river are created during construction.

Other sites considered to be of less significance include:



Hanson Aggregates (Reach 5B(ii) and Reach 8A (ii)) - PCL099 Environmental Regulations Permitted facility that stores and coats road stone with bitumen. No reports are available.

Riverside Industrial Estate (Reach 4B(i)) - PCL030 contains various industrial units on handstanding. The three closest units to the river bank are Arun Grinders, TWS who manufacture thermocouples and Concept Bathrooms. None of these are likely to have had an effect on the river bank. Previous to the development of the industrial estate the site was a precast concrete works.

Littlehampton Welding (Reach 4B(i)) - PCL074 is adjacent to Riverside Industrial Estate and a raised area of the river bank - Welding cutting and painting of architectural and structural metalwork with a travelling crane. No reports are available.

Tesco Petrol Station (Reach 6B(i)) - PCL029 current petrol station developed around 1994. No reports are available. Opposite side of A259.

Former Sewage Works (Reach 6B(i)) - PCL072 is now derelict. No reports are available.

Landfill (Reach 6B(v)) - PCL210 Environment Agency information: Dry pond, inert waste, soil etc, possible horticultural waste.

4 Preliminary Conceptual Site Model

4.1 Introduction

Risk assessment is usually carried out to determine the presence and the significance of concentrations of substances measured at a site. The commonly accepted approach to risk assessment is to examine the contaminant in relation to the receptor (which might be a human, sensitive environmental feature or building) and determine whether there is a link (pathway) between them (contaminant linkages). If any of these elements (contaminant source, pathway or receptor) are absent or removed the contaminant linkage is broken and site poses no risk.

4.2 Source-Pathway-Receptor Model

The proposed works are assessed with regard to the potential impact on existing contaminant linkages. Potential sources have been identified and the condition of soil and groundwater in the vicinity of the works assessed. If the proposed works create a new or exacerbate an existing contaminant linkage, then remediation may be required to mitigate negative impacts on controlled waters or human health receptors. Identified potential contaminant linkages are summarised in Table 4.1.

Where sources are identified but the works do not increase the potential risk to receptors, then no action is proposed. It is however, important to identify areas with high concentrations of contaminants to inform the preparation of soil management plans and construction risk assessments and contingency plans for encountering contamination.

Unlenn

	Source	Pathway	Receptor
Human Health	Historical data from Ordnance Survey maps dating from 1876 to 2009, previous studies, walk over surveys and communication from the Environment Agency identified several potential sources of contamination across the scheme. These are identified in Table 5.2 and include various historical industrial land uses, historical landfill sites, sewage treatment works and railways.	Ingestion of soil and soil-derived dust Dermal contact with contaminated soil and spillages Inhalation of airborne soil dust Inhalation of vapours	Construction staff
			Local visitors after the works are completed.
Controlled Waters		Infiltration and dissolution of soil sources to shallow groundwater. Vertical migration to deeper groundwater receptors (potentially along sheet piles)	Groundwater in the Alluvial Sands and Chalk aquifer.
		Migration in shallow groundwater to surface waters	River Arun

Table 4.1: Potential Sources, Pathways and Receptors

Possible Sources of Contamination from current and historical land use	Possible Contaminants Associated with these Sources
Made Ground	The most likely sources of contamination associated with Made Ground can be metals (e.g. arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc), inorganic chemicals (cyanide, sulphate), asbestos, and organics (oil/fuel hydrocarbons, PAHs)
Former Landfill	The most likely sources of contamination associated with landfills are metals (e.g. arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc), inorganic chemicals (cyanide, nitrate, sulphate, ammonia, chloride), asbestos, and organics (oil/fuel hydrocarbons, PAHs, solvents and PCBs).
Former Sewage Works	The most likely sources of contamination associated with sewage works are metals (e.g. arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, zinc), inorganic chemicals (cyanide, nitrate, sulphate, ammonia, chloride, fluorides, phosphates), asbestos, and organics (oil/fuel hydrocarbons, pesticides, chlorinated solvents and PCBs).

Unleash

Possible Sources of Contamination from current and historical land use	Possible Contaminants Associated with these Sources
Wharfs and associated works	The most likely sources of contamination associated with wharfs and associated works comprise spillage or leakage of materials such as metals (e.g. arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc), inorganic chemicals (cyanide, sulphate), asbestos, and organics (oil/fuel hydrocarbons, PAHs, solvents, lubricants, PCBs).
Caseworks	Groundwater contaminated with hydrocarbons.
Concrete Works/ Hanson Aggregate	The most likely sources of contamination associated with concrete works and aggregate works comprise spillage or leakage of materials such as metals (e.g. arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel, zinc), inorganic chemicals (sulphate), asbestos, and organics (oil/fuel hydrocarbons, PAHs, solvents, lubricants, PCBs).

Table 4.2 – Contaminants associated with sources of contamination

The Environment Agency do not own the land on which the proposed defences are to be built and as such will not be liable for remediating existing contaminant linkages. There will however be a requirement not to create new linkages, by for example driving contamination within the made ground into the underlying alluvium during piling or creating preferential migration pathways.

5 Ground Conditions

5.1 Archived Ground Investigation Reports

Six ground investigation reports have been made available to Halcrow that are of help in establishing the ground conditions along the length of the site. Three boreholes within each report drilled closest to the existing flood defence wall have been selected and illustrated on Drawings 463457-SI-001 to 004. A summary of the six reports is presented in Table 5.1 as follows:

Ref	Report Author	Date of report	Reach	Sub division	Title of Report
20	Harry Stanger	02/1989	3A	ii, iii, iv, v	Report on ground investigations – Littlehampton (reference Case Report in Ref 24)
30	Termetec Services	04/1998	4A	i	Site Investigation at 49 River Road, Littlehampton, West Sussex
28	Freeford Davison	10/1996	3A	ii	East Bank Development Littlehampton, Report no Ground and Structural Investigation at Norfolk and Baltic Wharves

Halcrow

	Borehole Number			
	CP/RC-B12A	CP-B13	WS1301	WS1303
Depth of sample (m)	1.00	1.00	1.20	0.50
	2.50		3.20	

Table 5.9 Summary of soil samples taken in Reach 6A

Table 5.10 shows the borehole locations and year of sampling, from which groundwater samples were taken for analysis in reach 6A.

Borehole	Year monitoring carried out
CPB13	2012
WS1301A(CP	2013

Table 5.10 Groundwater quality monitoring locations in Reach 6A

5.2.6.3 Results

Site investigations have shown an exceedance of the adopted assessment criterion for petroleum hydrocarbons in groundwater in borehole WS1301A, located in the existing flood embankment. An exceedance of the soil screening criteria for benzo(a)pyrene was detected in borehole WS1301A CP1103 (11mg/kg compared to a GAC of 1.0mg/kg).

5.2.7 Reach 6B

Borehole locations and interpreted log sections for Reach 6B are shown on Drawing 463457-SI-001.

5.2.7.1 Made ground

Materials categorised as forming the flood bund or embankment fill were present in all the boreholes located along the existing flood bund. The material is generally described as soft to firm, brown, slightly sandy, slightly gravelly clay. Sand is mainly fine, gravel is subangular and subrounded, fine and medium of flint and chalk. It appeared to be layered towards its base and varies in thickness from 1.55 to 2.10m.

Cohesive Made Ground was encountered in all areas to the rear of the flood bund. It was encountered as a variable layer between 0.30m and 1.60m in thickness comprising orange brown and mottled blue grey slightly silty gravelly fine to coarse sand with rare pockets (<12mm x 8mm) of black organic fragments; with subangular to subrounded fine to coarse gravel of chalk, flint and rare clinker.

None of the borehole logs recorded notable contamination.

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5.2.7.2 Sampling

Table 5.11 summarises the soil sampling undertaken in Reach 6B. Samples from boreholes WS1601, WS1602, WS1604 and WS1605 were taken during the 2010 ground investigation. Samples from boreholes WS20, WS22, WS23, WS24, WS25 and WS26 were taken during the 2012 ground investigation. During the course of the 2012 investigation three sediment samples were taken from former treatment tanks situated in an historic campsite located within Reach 6 for bacteriological analysis.

	Borehole Number					
	WS1601	WS1602	WS1604	WS1605	WS201	WS202
Depth of sample (m)	0.3	0.3	0	0.5	1.2	0.3
	0.8	0.6		1		
Depth of sample (m)	WS22	WS23	WS24	WS25	WS26	
	0.3	0.7	0.3	0.5	0.5	
				1.6		

Table 5.11 Summary of soil samples taken in Reach 6B

Table 5.12 shows the borehole locations and year of sampling, from which ground water samples were taken for analysis in reach 6B.

Borehole	Year monitoring carried out
WS1604	2010
WS1601	2010
WS1602	2010
WS1605	2010
WS201	2012
WS202	2012
WS26	2012

Table 5.12 Groundwater quality monitoring locations in Reach 6B

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5.2.7.3 Results

Previous investigations have shown an exceedance of the adopted assessment criterion for petroleum hydrocarbons in groundwater in boreholes WS1504 and WS1601, located in the existing flood embankment. It should be noted that bacteriological pathogens were also detected in borehole WS1504.

5.3 Superficial deposits

Reach 1a

Reach 1a is underlain by superficial deposits classed as 'blown sand'. They are described as typically comprising well sorted medium grained sands with a proportion of fine grained shell debris, blown from intertidal sand flats.

Reaches 1b to 5

Reaches 1b to 5 are underlain by superficial deposits classed as 'raised beach deposits'. The raised beach deposits (younger) occur widely on the lower coastal plain, but are generally concealed by Aeolian deposits and head gravel, and dissected by river channels. The thickness of the deposits is variable. The younger raised beach deposits comprise a complex sequence of sand, silt, and pebbly sand, with some sandy gravel and clean flint shingle. The greater part of the deposit is of thinly bedded calcareous silty fine to medium grained sand containing a few flint or chalk pebbles.

Reaches 5 to 6

Reaches 5 and 6 are underlain by tidal river deposits (formally known as marine and estuarine alluvium) includes the deposits adjacent to tidal rivers that were previously liable to tidal inundation but which now lie at up to 3m above present high water mark, having been artificially reclaimed for agriculture. The deposits consist of soft, brown and grey mottled, laminated silty clay, silt and fine sand with a sparse shelly fauna. Boreholes indicate that some 36m of alluvial sediment infill a buried valley beneath the flood plain near the mouth of the River Arun.

5.4 Solid Geology

All reaches are underlain by the White Chalk Subgroup comprising undifferentiated Lewes Nodular Chalk, Seaford Chalk, Newhaven Chalk, Tarrant Chalk, Spelsbury Chalk and Portsdown Chalk.

6 Updated Risk Assessment

This section describes a generic risk assessment for the whole scheme. Further risk assessment for each reach is detailed in the updated conceptual model section.

6.1 Human Health

Potential risks to human health from long term chronic exposure are assessed using the CLEA methodology (Environment Agency 2009) which provides a framework for deriving assessment criteria protective of human health. The CLEA model can be used to derive assessment criteria protective of sensitive human receptors for a range



of pre-defined land uses. Once constructed the flood defences will comprise open land which is likely to be accessible by members of the public for informal recreation. As there is no predefined land use within the CLEA model covering this use a conservative assessment has been undertaken adopting the residential without plant uptake criteria. This will identify areas, which, dependant on the final finish of the flood defences may require further consideration if the generic assessment criteria are exceeded.

The CLEA methodology is based on a chronic long term exposure risk, and does not consider short term acute exposure which may be a factor for construction workers handling and excavating shallow soils. In order to mitigate potential risk from chronic short term exposure, the mitigation measures set out in the Environment Statement should be adopted and a site by site risk assessment undertaken by the construction contractor, considering the soil data obtained from this investigation.

6.1.1 Results

Halcrow Tier 1 Generic Assessment Criteria (generated using the CLEA model) are presented in Table 6.1 for soils with 2.5% soil organic matter and tables of results screened against these criteria are included in Appendix A.

Test	Units	GAC (mg/kg)
Arsenic	mg/kg	35
Cadmium	mg/kg	18
Chromium	mg/kg	627
Hexavalent Chromium	mg/kg	4.3
Copper	mg/kg	6200
Lead	mg/kg	890
Mercury	mg/kg	240
Nickel	mg/kg	130
Zinc	mg/kg	30000
Boron (water soluble)	mg/kg	10000
Cyanide total	mg/kg	12
Aliphatic C3-C5	mg/kg	55
Aliphatic C6-C8	mg/kg	160
Aliphatic C9-C10	mg/kg	46
Aliphatic C10-C12	mg/kg	290
Aliphatic C13-C16	mg/kg	1700

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Test	Units	GAC (mg/kg)
Aliphatic C16-C21	mg/kg	64000
Aliphatic C21-C35	mg/kg	64000
Aromatic C5-C7	mg/kg	880
Aromatic C7-C8	mg/kg	1380
Aromatic C8-C10	mg/kg	81
Aromatic C10-C12	mg/kg	420
Aromatic C12-C16	mg/kg	1800
Aromatic C16-C21	mg/kg	1300
Aromatic C21-C35	mg/kg	1380
Aliphatic C5-C35	mg/kg	1300
TPH Al/Aro	mg/kg	1300
Acenaphthene	mg/kg	3100
Acenaphthylene	mg/kg	3000
Anthracene	mg/kg	22000
Benzo(a)anthracene	mg/kg	5.2
Benzo(a)pyrene	mg/kg	1.0
Benzo(b)fluoranthene	mg/kg	7.3
Benzo(k)fluoranthene	mg/kg	10
Benzo(g,h,i)perylene	mg/kg	47
Chrysene	mg/kg	9.7
Dibenz(a,h)anthracene	mg/kg	0.91
Fluoranthene	mg/kg	990
Fluorene	mg/kg	2500
Indeno(1,2,3-c,d)pyrene	mg/kg	4.4
Naphthalene	mg/kg	3.9
Phenanthrene	mg/kg	930
Pyrene	mg/kg	1400
Benzo(e)pyrene	mg/kg	0.49

Unleash

Test	Units	GAC (mg/kg)
Ethylbenzene	mg/kg	380
Toluene	mg/kg	1300
Xylene	mg/kg	140
Phenol - Monohydric	mg/kg	420

Table C.1 Halcrow Tier 1 Screening Criteria for Human Health

The following exceedances of the screening criteria for Human Health are noted:

The concentration of benzo(a)pyrene exceeds its criterion of 1.0mg/kg in a number of samples with concentrations ranging from 0.1mg/kg to 68mg/kg.

Concentrations of lead were found to exceed the assessment criterion of 450mg/kg in two samples during the Halcrow 2010 investigation. No exceedances of heavy metals were detected during the 2012 investigation.

Asbestos minerals crocidolite and amosite was detected in borehole CPRCB12A (Reach 5A) at a depth of 1.0m. The laboratory reported that the sample, "Contains Clump & Bundles of Unbound Asbestos". No asbestos was detected in any other sample locations across the site.

Carbon dioxide was found in most boreholes (maximum concentration of 0.9% vol in CPRCB11). However this is not associated with elevated methane or a reduction in oxygen content. It is thought to be naturally occurring carbon dioxide as a result of the geological ground conditions, not as a result of any made ground.

A limited amount of bacteriological analysis was undertaken in areas associated with former sewage works (HPB17 and TP17). The results are orders of magnitude below the level of bacteriological contamination associated with fresh sewage waste, and are not considered to present a risk to construction workers.

8.2 Controlled Waters

Soil and groundwater data have been compared against environmental quality standards (EQS) for Coastal and Transitional Waters.

A generic assessment applies the EQS standard (which indicates the maximum acceptable concentration in the water body) to the concentration of that contaminant at the source. The distance from source (soil sample) to receptor (River Arun) has not been considered in the derivation of assessment criteria and no allowance is made for dilution, retardation or degradation of the contaminant between the source and receptor. This therefore represents a conservative assessment of potential risk and exceedance of the EQS does not necessarily indicate a risk to the receptor, but rather that further consideration of the potential for the proposed scheme to create a pathway between source and receptor is required.

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Test	EQS for Coastal and transitional waters	EQS Saltwater
Arsenic, Dissolved	25	25
Cadmium, Dissolved	1.5	2.5
Chromium, Dissolved	32	15
Copper, Dissolved	5	5
Lead, Dissolved	7.2	25
Mercury, Dissolved	0.07	0.3
Nickel, Dissolved	20	30
Zinc, Dissolved	40	40
Boron, Dissolved	-	7000
Cyanide total	-	50
Cyanide free	-	50
Benzo(a)pyrene	0.05	0.1
Benzo(b)fluoranthene	0.05	0.025
Benzo(k)fluoranthene	0.03	0.025
Benzo(g,h,i)perylene	0.002	0.025
Indeno(1,2,3-c,d)pyrene		
Naphthalene	1.2	5
Phenol	7.7	

Table 6.2 Environment Quality Standards

Groundwater quality data has been obtained for 10 locations in Reaches 1, 2, 4, and 6 which gives an indication of the true potential for mobilisation of contamination into the River Arun and surrounding groundwaters.

Each Reach has been assessed individually to allow potential sources to be identified in each area of construction. The following summarises the controlled waters assessment.

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6.2.1 Results

6.2.1.1 Heavy Metals

There are no exceedances of the EQS for heavy metals at any of the sampling locations from the 2012 investigation. During the 2010 investigation there were eleven exceedances for copper out of a total 12 samples taken across all reaches, and two exceedances of zinc in boreholes CP1101 and WS1605 located in reaches 5B and 6B respectively.

6.2.1.2 PAH's

There were no exceedances of EQS's for PAH's in any of the boreholes monitored during the 2012 investigation or the 2010 ground investigation. Both investigations did not identify any PAH's within the groundwater; all PAH's were recorded as below the limit of detection.

7 Updated Conceptual Model

7.1 Reach 1

The conceptual model for Reach 1 is shown in Drawing 463457-G10ENV-007.

The current flood defences in Reach 1 consists of reinforced concrete king-posts and planks (on top of vertical concrete sheet piles with an additional lower capping beam towards low tide level), and steel sheet pile walls.

The promenade consists of granular Made Ground typically comprised white to grey-brown chalk gravel. Fragments of charcoal, ceramic, glass, brick, clinker and occasional concrete with cobbles of flint and chalk were also noted. The made ground overlies a sand and gravel layer up 8.50m bgl, below which white chalk was encountered. Previous investigations have shown an exceedance of the assessment criterion for petroleum hydrocarbons in groundwater within Reach 1, along with exceedances of soil screening criteria for lead and some PAH compounds.

The proposed work in this area will include the construction of a new sheet pile wall in front of the existing flood defence, as well as works to the promenade.

Sheet piling has the potential to create preferential pathways through the alluvium for contaminants within the made ground to migrate down into the underlying granular alluvium and laterally towards the river. The alluvium in the area of sheet piling is approximately 5m thick and so any piling is unlikely to create vertical pathways as the alluvium should tend to seal against the piles. The contamination from hydrocarbons seen in borehole B11201 at 0.8m depth is on the landward side of the piling and so any potential for lateral migration of contaminants towards the river is likely to be further reduced once the sheet pile is in place.

The exceedances of lead and PAHs found in CP203 and CP202 are a potential risk if uncovered during construction. This can be mitigated against, should soils be exposed, during construction within the site health and safety plan. It is considered that risks to site visitors post construction are minimised due to the hardstanding covering the made ground in this area.



It is considered that there are no significant contaminated land risks associated with the improvements in Reach 3.

7.4 Reach 4

The conceptual model for Reach 4 is showing in Drawing 463457-GEOENV-004.

Current flood defences include steel sheet pile wall and masonry.

Made Ground was encountered in all exploratory holes along this Reach comprising clayey silty and sandy gravel of crystalline rock, chalk, brick, flint and glass. The thickness of the Made Ground varies between approximately 0.40m and 2.80m.

Underlying the Made Ground was granular and cohesive alluvium underlain by weathered structureless chalk which grades into competent chalk.

There were no exceedances of the assessment criteria for soils or groundwaters during the 2010 or 2012 Halcrow investigations.

The proposed work in this area will include the construction of a new sheet pile wall in front of the existing flood defence.

It is considered that there is no contaminated land risks associated with the improvements in Reach 4.

7.5 Reach 5

The conceptual model for Reach 5 is showing in Drawing 463457-GEOENV-003.

The current flood defence comprises a steel pile wall of approximately 83m in length, connected into a deep reinforced concrete capping beam.

Reach 5 is underlain by Made Ground, up to approximately 6m deep generally described as cohesive with chalk and flint gravel and wood fragments. Tidal river deposits (formally marine and estuarine alluvium) were identified beneath the made ground including cohesive alluvium overlying granular alluvial sands. Structureless chalk was encountered at elevations varying from -0.93 to -5.71mOD.

Previous investigations have shown an exceedance of the assessment criteria for benzo(a)pyrene in soil within borehole CP1103; no exceedances were found within groundwater. Borehole 1103 is located adjacent to a gas works. TPH concentration in groundwater was below the detection limit in CP1101, which is located down hydraulic gradient.

The proposed work in this area will include the construction of a new sheet pile wall in front of the existing flood defence.

Primary pathways were identified as inhalation and ingestion of soil and dust, which can be controlled using standard good practice during construction.

7.6 Reach 6

The conceptual model for Reach 6 is showing in Drawing 463457-GEOENV-002 (6A) and 463457-GEOENV-001 (6B).

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Current flood defences consist of an embankment with a variable concrete, sand and gravel slope with a gravel/concrete crest and part vegetated back slope, including a sloping embankment and steel sheet pile wall.

The existing flood embankment comprises gravelly clay. Underlying the bank the alluvial deposits vary considerably along the length of Reach 6; a significant thickness of both cohesive and granular alluvium is present. Below the alluvium lies structureless and structured chalk at varying elevations.

Previous investigations have shown an exceedance of the adopted assessment criterion for petroleum hydrocarbons in groundwater in boreholes WS1301A, WS1504 and WS1601; located in the existing flood embankment in reaches 6A and 6B. It should be noted that bacteriological pathogens were also detected in borehole WS1504. An exceedance of soil screening criteria for benzo(a)pyrene was detected in borehole WS1301A (Reach 6A).

The proposed work in this area will include raising the existing embankment, some piling and extend the adjacent road embankment and realignment.

Primary pathways were identified as direct contact, inhalation, ingestion and windblown dust; which can be easily controlled using standard good practice during and after construction. Raising the embankment will require covering the existing materials, reducing any potential for exposure.

8 Waste Management

8.1 Discussion

The majority of the improvement works do not involve the generation of significant quantities of waste soils, apart from the improvements in Reach 6B. In Reach 6B some of the existing flood defences will be partially excavated and re-used to form re-profiled defences. The plans for Reach 6B are not fully formulated at the time of writing this report, so the exact soil movements are not known. The site investigation data from Reach 6B does not show significant concentrations of contaminants within the existing flood defences, so the re-use of the material should be acceptable.

The CL:AIRE Definition of Waste Code of Practice requires that either a remediation strategy or design statement be produced as part of the documentation; either of which must be approved by the Regulators (Environment Agency). A remediation strategy is required if significant soil contamination is present on the site; a design statement if no or insignificant contamination is present. Chapter 9 presents an outline Design Statement for this project.

Should there be no requirement for re-use of soils the soils will require off-site disposal. It is likely the excess soils will be classified as either inert or non-hazardous waste (depending on where they are excavated from). Disposal to licensed landfill for inert soils is likely to cost approximately £25/m³, and for non-hazardous waste £170/m³ (note these costs do not include excavation costs or transport to landfill, they are also based on 2013 landfill tax rates – rates may increase in future years). There are other options for dealing with excess soils which do not incur landfill tax, such as



deposition site and receptor and therefore it is considered that leachate test data should be compared to applicable Environmental Quality Standards.

9.3.3.4 Environmental Acceptance Criteria

Table 9.1 shows the risk-based Environmental Acceptance Criteria (EACs) for soils reuse based on the CLEA model and the applicable Environmental Quality Standards.

Contaminant	Risk-based Environmental Acceptance Criteria				
	Human Health Protection (soil analysis)		Surface Water Protection (leachate analysis)		
	Conc.	Units	Conc.	Units	Notes
Asbestos	0.001%	% w/w	Not applicable		
Arsenic	35	mg/kg	25	µg/l	EQ5 (coastal and transitional waters)
Boron	10000	mg/kg	7000	µg/l	EQ5 (saltwater)
Cadmium	18	mg/kg	1.5	µg/l	EQ5 (coastal and transitional waters)
Chromium	627	mg/kg	32	µg/l	EQ5 (coastal and transitional waters)
Chromium (hexavalent)	4.3	mg/kg	Not applicable		
Copper	6200	mg/kg	5	µg/l	EQ5 (coastal and transitional waters)
Iron	Not applicable		1000	µg/l	EQ5 (coastal and transitional waters)
Lead	450	mg/kg	7.2	µg/l	EQ5 (coastal and transitional waters)
Mercury (inorganic)	240	mg/kg	0.07	µg/l	EQ5 (coastal and transitional waters)
Nickel	130	mg/kg	20	µg/l	EQ5 (coastal and transitional waters)
Zinc	4000	mg/kg	40	µg/l	EQ5 (coastal and transitional waters)
Cyanide (total)	12	mg/kg	Not applicable		
pH	Not applicable		6 to 9		EQ5 (coastal and transitional waters))
Phenols	820	mg/kg	7.7	mg/l	EQ5 (coastal and transitional waters)
Benzene	0.40	mg/kg	8	µg/l	EQ5 (coastal and transitional waters)
Toluene	1300	mg/kg	40	µg/l	EQ5 (coastal and transitional waters)
Ethylbenzene	380	mg/kg	Not applicable		
m-xylene	140	mg/kg	30	µg/l	EQ5 (coastal and transitional waters)
o-xylene		mg/kg			
p-xylene		mg/kg			
TPH (total)	Not applicable		No visible sheen or staining		Freshwater Fish Directive / Surface Water (Fishlife) (Classification) Regulations 1997
Aliphatic C3-C6	55	mg/kg	Not applicable		
Aliphatic C6-C8	160	mg/kg	Not applicable		
Aliphatic C8-C10	46	mg/kg	Not applicable		
Aliphatic C10-C12	230	mg/kg	Not applicable		
Aliphatic C12-C16	1700	mg/kg	Not applicable		

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Contaminant	Risk-based Environmental Acceptance Criteria				
	Human Health Protection (soil analysis)		Surface Water Protection (leachate analysis)		
	Conc.	Units	Conc.	Units	Notes
Aliphatic C18-C21	64000	mg/kg	Not applicable		
Aliphatic C21-C35	64000	mg/kg	Not applicable		
Aromatic C5-C7	480	mg/kg	Not applicable		
Aromatic C7-C8	1200	mg/kg	Not applicable		
Aromatic C8-C10	81	mg/kg	Not applicable		
Aromatic C10-C12	420	mg/kg	Not applicable		
Aromatic C12-C16	1600	mg/kg	Not applicable		
Aromatic C16-C21	1300	mg/kg	Not applicable		
Aromatic C21-C35	1300	mg/kg	Not applicable		
Aliphatic C3-C35	1300	mg/kg	Not applicable		
Acenaphthylene	3100	mg/kg	Not applicable		
Acenaphthene	3000	mg/kg	Not applicable		
Anthracene	220000	mg/kg	Not applicable		
Benzo(a)anthracene	5.2	mg/kg	Not applicable		
Benzo(a)pyrene	1.0	mg/kg	0.05	µg/l	EQ5 (coastal and transitional waters)
Benzo(b)fluoranthene	7.3	mg/kg	0.03	µg/l	EQ5 (coastal and transitional waters)
Benzo(k)fluoranthene	10	mg/kg	0.002	µg/l	EQ5 (coastal and transitional waters)
Benzo(g,h,i)perylene	47	mg/kg			
Indeno(1,2,3-c,d)pyrene	4.4	mg/kg			
Chrysene	9.7	mg/kg	Not applicable		
Dibenz(a,h)anthracene	0.91	mg/kg	Not applicable		
Fluoranthene	960	mg/kg	Not applicable		
Fluorene	2300	mg/kg	Not applicable		
Naphthalene	3.9	mg/kg	1.2	µg/l	EQ5 (coastal and transitional waters)
Phenanthrene	930	mg/kg	Not applicable		
Pyrene	2400	mg/kg	Not applicable		

Table 9.1 – Proposed Environmental Acceptance Criteria

9.4 Verification Reporting

9.4.1 Materials Management Plan

A Materials Management Plan will be required as part of the CLAIRE Code of Practice declaration. The Materials Management Plan sets out the requirements for the contractor to develop and implement a tracking system to provide an auditable trail for excavation, disposal, treatment and/or reuse volumes throughout the scheme.

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10.1.6 Reach 6

Some exceedances of the CLEA guideline values were noted, but it is considered that generally soils are suitable for re-use, subject to review once plans for Reach 6 are finalised.

10.2 Recommendations

It is recommended that once plans are finalised for the scheme, the risk assessment is reviewed. It is also recommended that soils re-use in Reach 6 be facilitated by use of the CL:AIRE Definition of Waste Code of Practice.

The logo for Halrunw, featuring the word "Halrunw" in a stylized, bold, italicized font.



Contaminated
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Appendix F – Contacts

Local Authority	Building Control	
	Environmental Health	
Environment Agency	National Customer Contact Centre PO Box 544 Rotherham S60 1BY	
Coal Authority	Mining Reports Office 200 Lichfield Lane Berry Hill, Mansfield Notts, HG18 4RG	
Health Protection Agency, Radiation Protection Division	Chilton Didcot Oxon, OX11 0RQ	