

# Hornsea Project Four: Environmental Statement (ES)

PINS Document Reference: A6.1.2 APFP Regulation 5(2)(a)

# Volume A6, Annex 1.2: Envirocheck Report – Part One

PreparedRoyal HaskoningDHV, July 2021CheckedAnt Sahota, Orsted, August 2021AcceptedThomas Watts, Orsted, August 2021ApprovedJulian Carolan, Orsted, September 2021

A6.1.2 Version B



# Orsted

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gure 1: Envirocheck Study Area
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# Hornsea 4

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# Glossary

Term	Definition
Development	An order made under the Planning Act 2008 granting development consent for one or
Consent Order	more Nationally Significant Infrastructure Projects (NSIP).
(DCO)	
Export cable	The specific corridor of seabed (seaward of Mean High Water Springs (MHWS)) and land
corridor (ECC)	(landward of MHWS) from the Hornsea Project Four array area to the Creyke Beck
	National Grid substation, within which the export cables will be located.
Hornsea Project	The prosed Hornsea Project Four Offshore Wind Farm project. The term covers all
Four Offshore	elements within the Development Consent Order (i.e. both the offshore and onshore
Wind Farm	components). Hereafter referred to as Hornsea Four.
Onshore	Comprises a compound containing the electrical components for transforming the
substation (OnSS)	power supplied from Hornsea Project Four to 400 kV and to adjust the power quality
	and power factor, as required to meet the UK Grid Code for supply to the National Grid.
	If a HVDC system is used the OnSS will also house equipment to convert the power from
	HVDC to HVAC.
Order Limits	The limits within which Hornsea Project Four (the 'authorised project) may be carried
	out.
Orsted Hornsea	The Applicant for the proposed Hornsea Project Four Offshore Wind Farm
Project Four Ltd	Development Consent Order (DCO).

# Acronyms

Acronym	Definition
DCO	Development Consent Order
EBI	Energy balancing infrastructure
ECC	Export Cable Corridor
OnSS	Onshore substation
PEIR	Preliminary Environmental Information Report

# Units

Unit	Definition
km	kilometre

# Hornsea 4

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## 1 Introduction

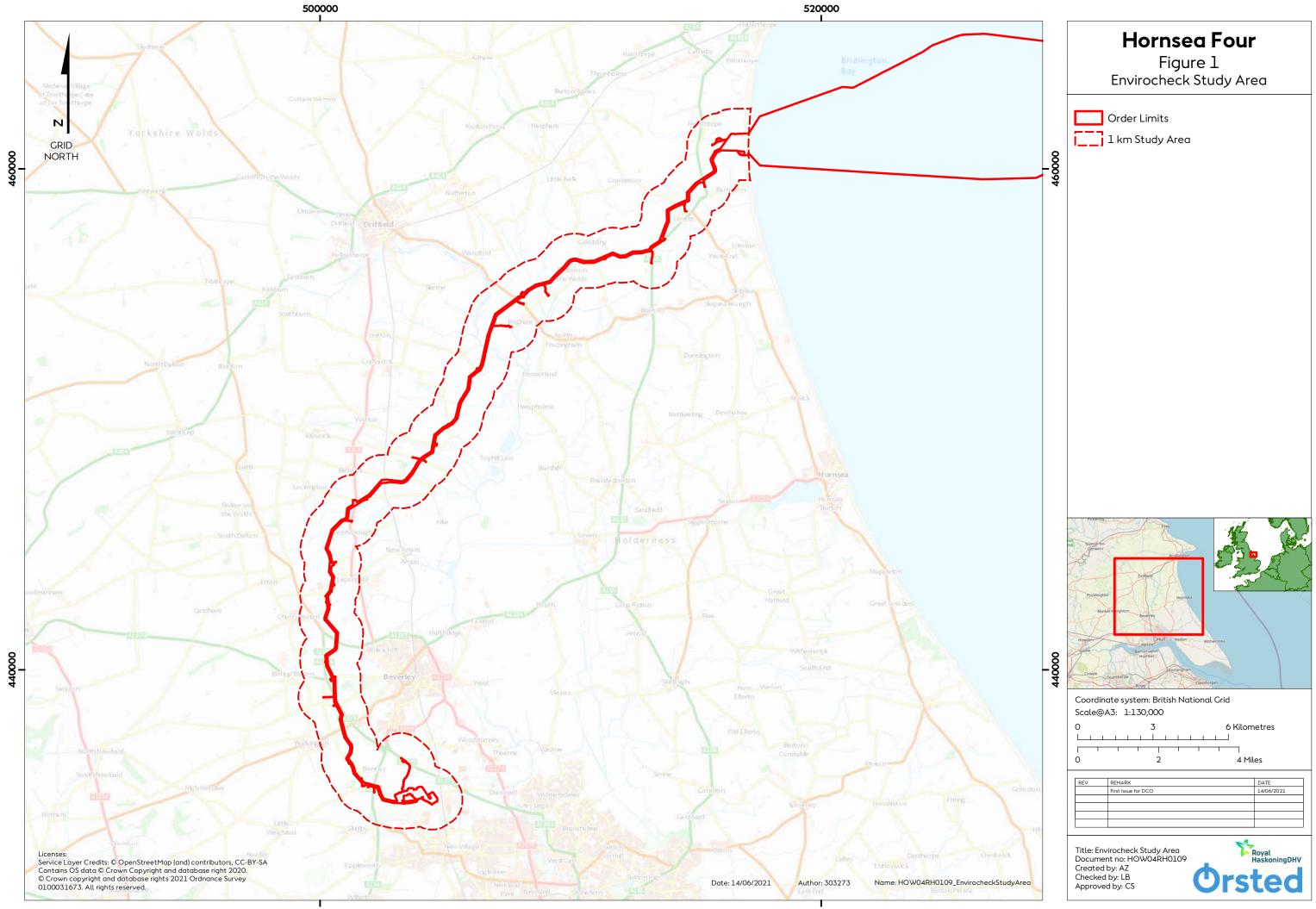
### 1.1 Project Background

- 1.1.1.1 Orsted Hornsea Project Four Limited (the 'Applicant') is proposing to develop the Hornsea Project Four offshore wind farm (hereafter Hornsea Four). Hornsea Four will be located approximately 69 km offshore the East Riding of Yorkshire in the Southern North Sea and will be the fourth project to be developed in the former Hornsea Zone. Hornsea Four will include both offshore and onshore infrastructure including an offshore generating station (wind farm), export cables to landfall, and on to an onshore substation (OnSS) with energy balancing infrastructure (EBI), and connection to the electricity transmission network.
- 1.1.1.2 Royal HaskoningDHV was commissioned to obtain an Envirocheck Report<sup>1</sup> covering the Hornsea Four Order Limits plus a 1 km buffer which in turn forms the Hornsea Four geology and ground conditions study area, as shown in **Figure 1**. This technical annex has been produced to present this data (a series of maps) which has been used to inform and support the following parts of the Hornsea Four Environmental Statement: Geology and Ground Conditions Chapter (**Volume A3, Chapter 1: Geology and Ground Conditions**); and Land Quality Preliminary Risk Assessment (**Volume A6, Annex 1.1**).
- 1.1.1.3 Due to the number and document size of the maps, the Envirocheck report has been divided into eight parts:
  - Part One Covers the report introduction and landfall with,
  - Parts Two to Six Cover the onshore export cable corridor (ECC), split of five sections from north to south (Section 1 to Section 5); and
  - Parts Seven and Eight Cover the OnSS, split over two sections (Section 1 to Section 2).

### 1.2 Data Limitations

- 1.2.1.1 Following the initial request and purchase of the Envirocheck Report, a route refinement process of Hornsea Four has been undertaken and is detailed in Volume A1, Chapter 3: Site Selection and Consideration of Alternatives.
- 1.2.1.2 An updated Envirocheck Report has not been obtained following the outcome of the route and site selection refinement process, as a 1 km study area was applied around the pre-Development Consent Order (DCO) boundary (submitted at Preliminary Environmental Information Report (PEIR)), and this area of search continues to include all land within the Hornsea Four Order Limits. Therefore, the baseline data contained within the Envirocheck Report and subsequently used to inform the Geology and Ground Conditions (Volume A3, Chapter 1: Geology and Ground Conditions) assessment and the Land Quality Preliminary Risk Assessment (Annex 1.1: Land Quality Preliminary Risk Assessment) remains valid.

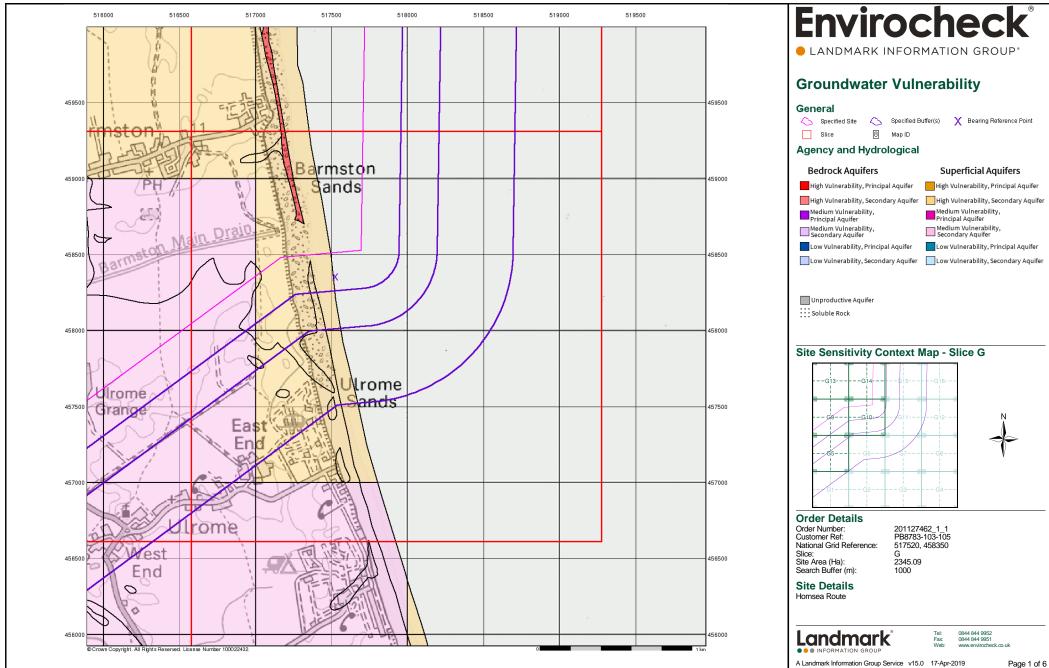
<sup>&</sup>lt;sup>1</sup> Envirocheck Report (Ref 201127462\_1\_1, 201127557\_1\_, 201127555\_1\_1, 201127465\_1\_1 and 201127560\_1\_1.) comprising historical maps, environmental sensitivity data and regulatory records.

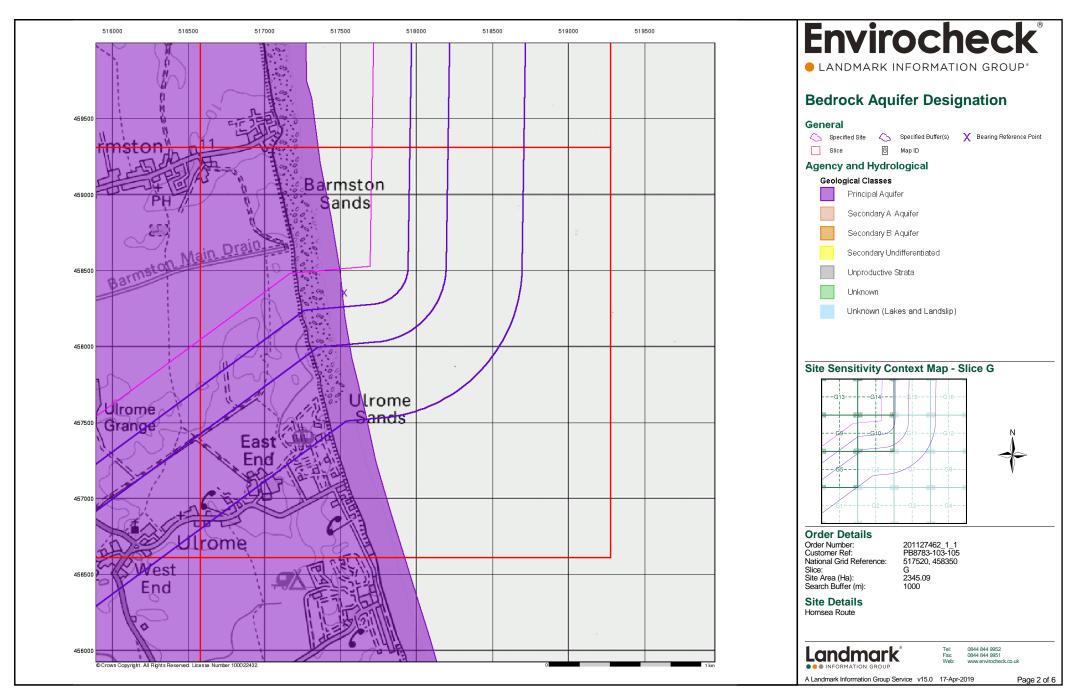




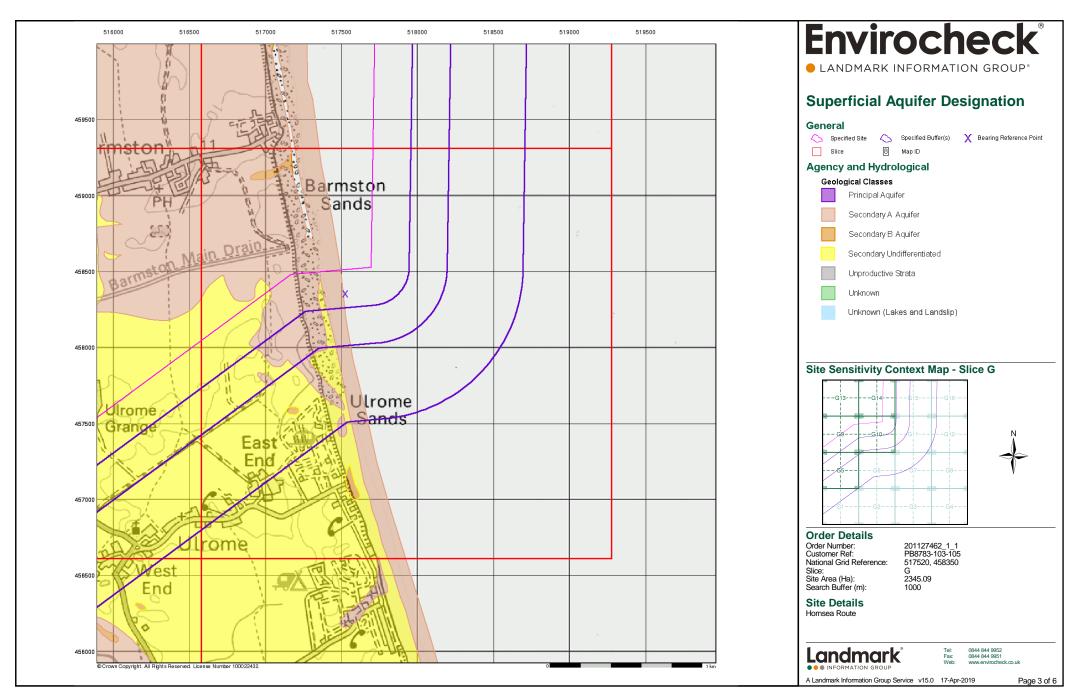


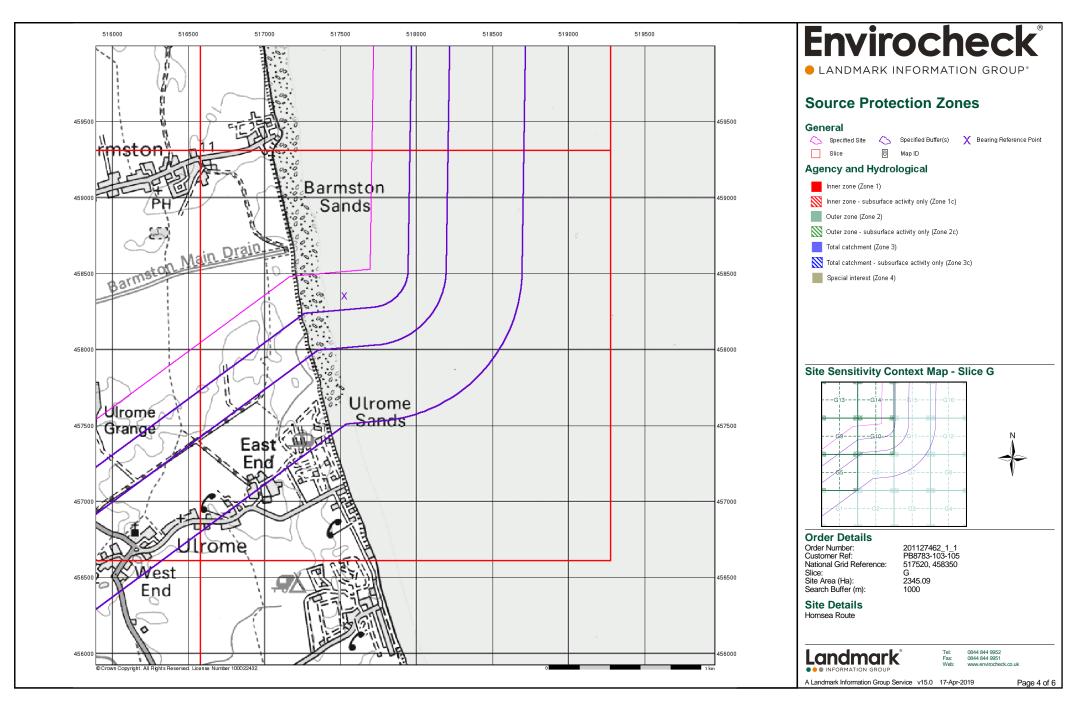
2 Landfall Maps



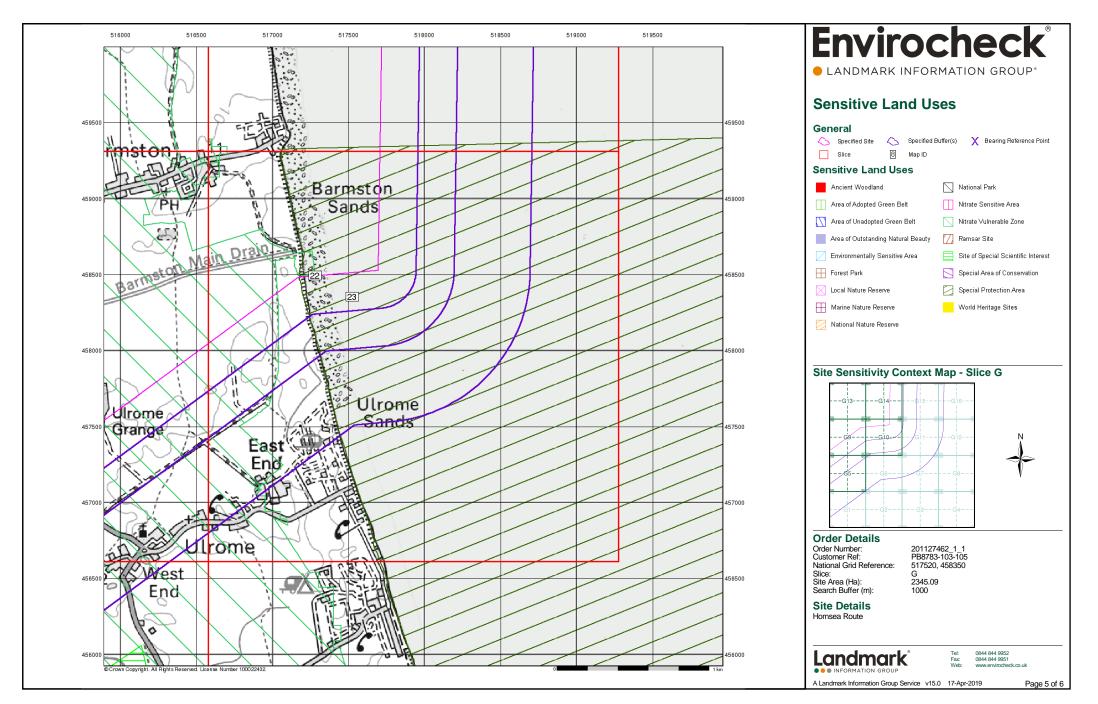


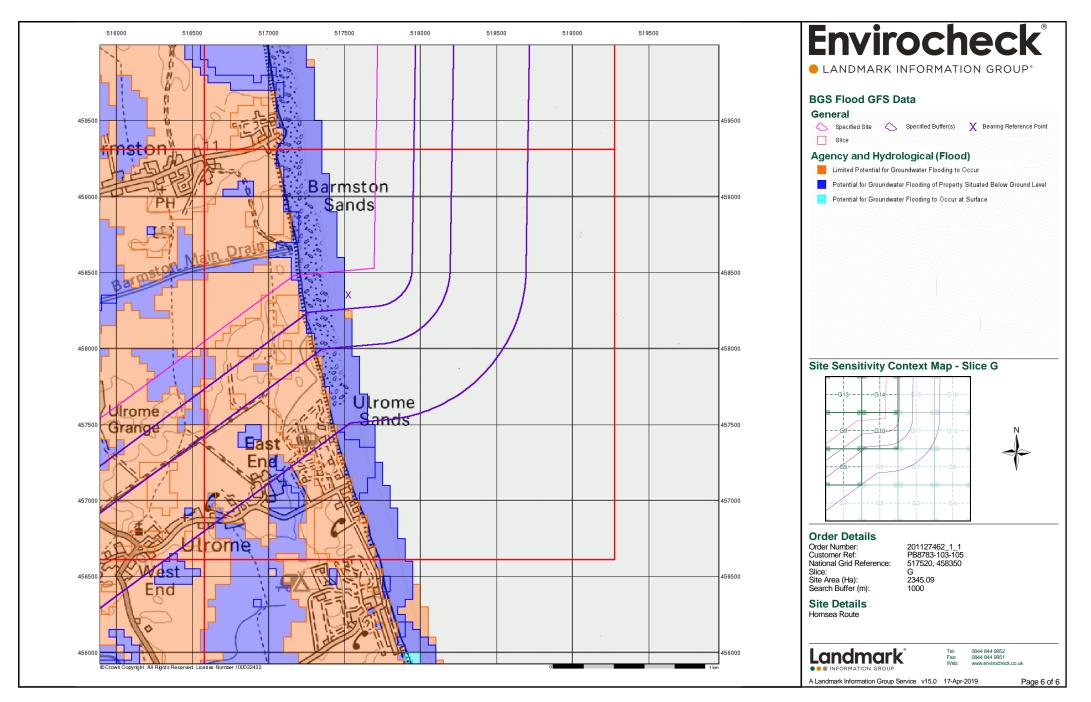
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# **Historical Mapping Legends**

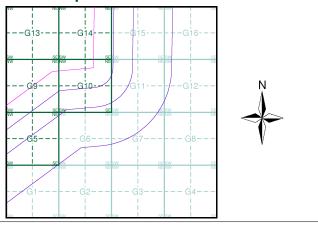
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<sup>**</sup> ***** ******** ********************	ers	Marsh		Refuse or Slag Heap		Lake, Loch or Pond		Boulders	000 000	Boulders (scattered)
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MORE SUMMARY MALE	Un-Fenced	Un-Fenced	Cutting		ent 	_ Standard Gauge Multiple Track Standard Gauge	↑ ↑	Coniferous trees (scattered)	$\underline{\hat{\nabla}}$	Positioned tree
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# **Envirocheck**<sup>®</sup> LANDMARK INFORMATION GROUP\*

## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:10,560	1854	2
Yorkshire	1:10,560	1893	3
Yorkshire	1:10,560	1911 - 1912	4
Yorkshire	1:10,560	1928	5
Ordnance Survey Plan	1:10,000	1956	6
Ordnance Survey Plan	1:10,000	1983	7
10K Raster Mapping	1:10,000	1999	8
Street View	Variable		9

## Historical Map - Slice G



### **Order Details**

Order Number: Customer Ref: National Grid Reference: 517520, 458350 Slice: Site Area (Ha): Search Buffer (m):

201127462\_1\_1 PB8783-103-105 G 2345.09 1000



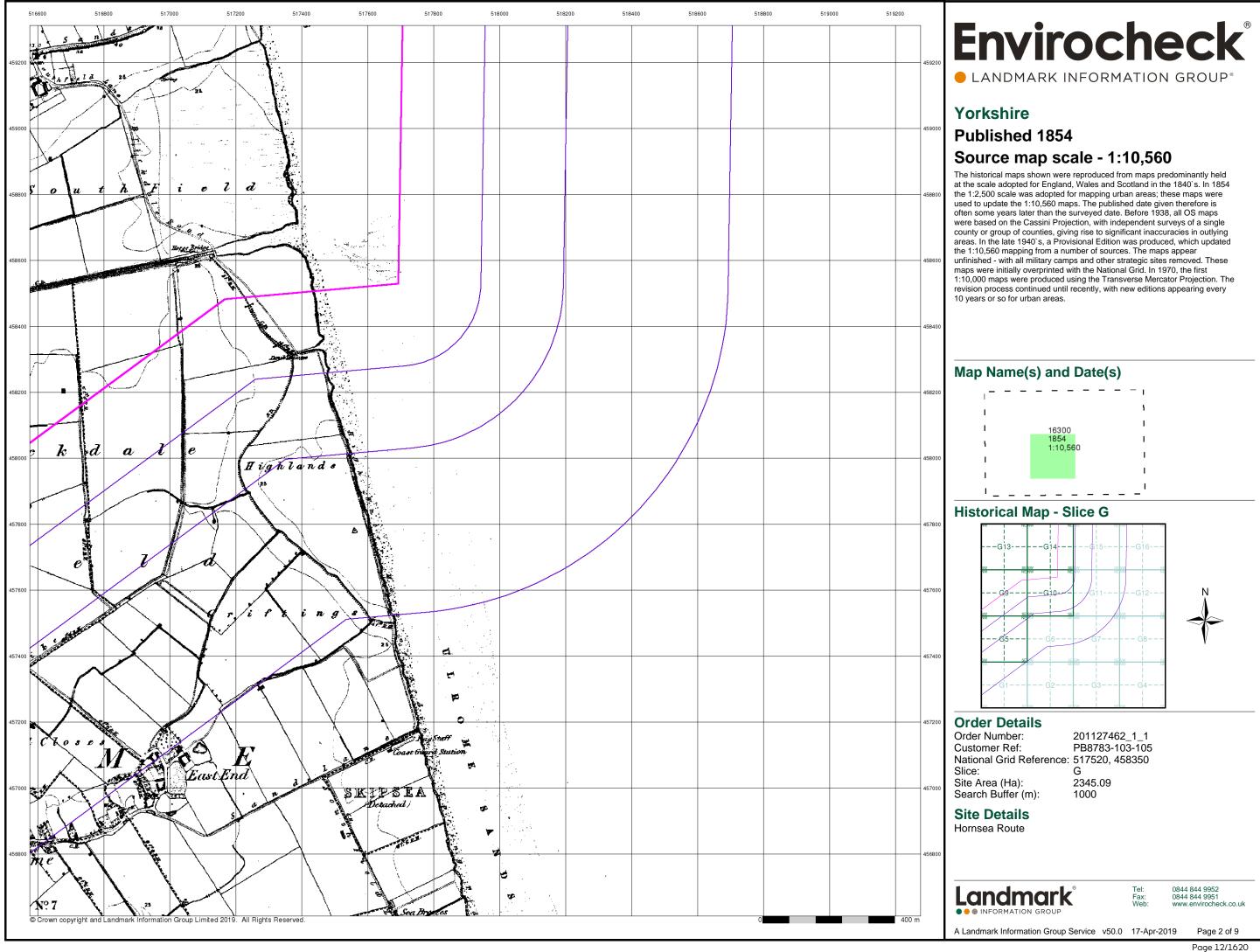


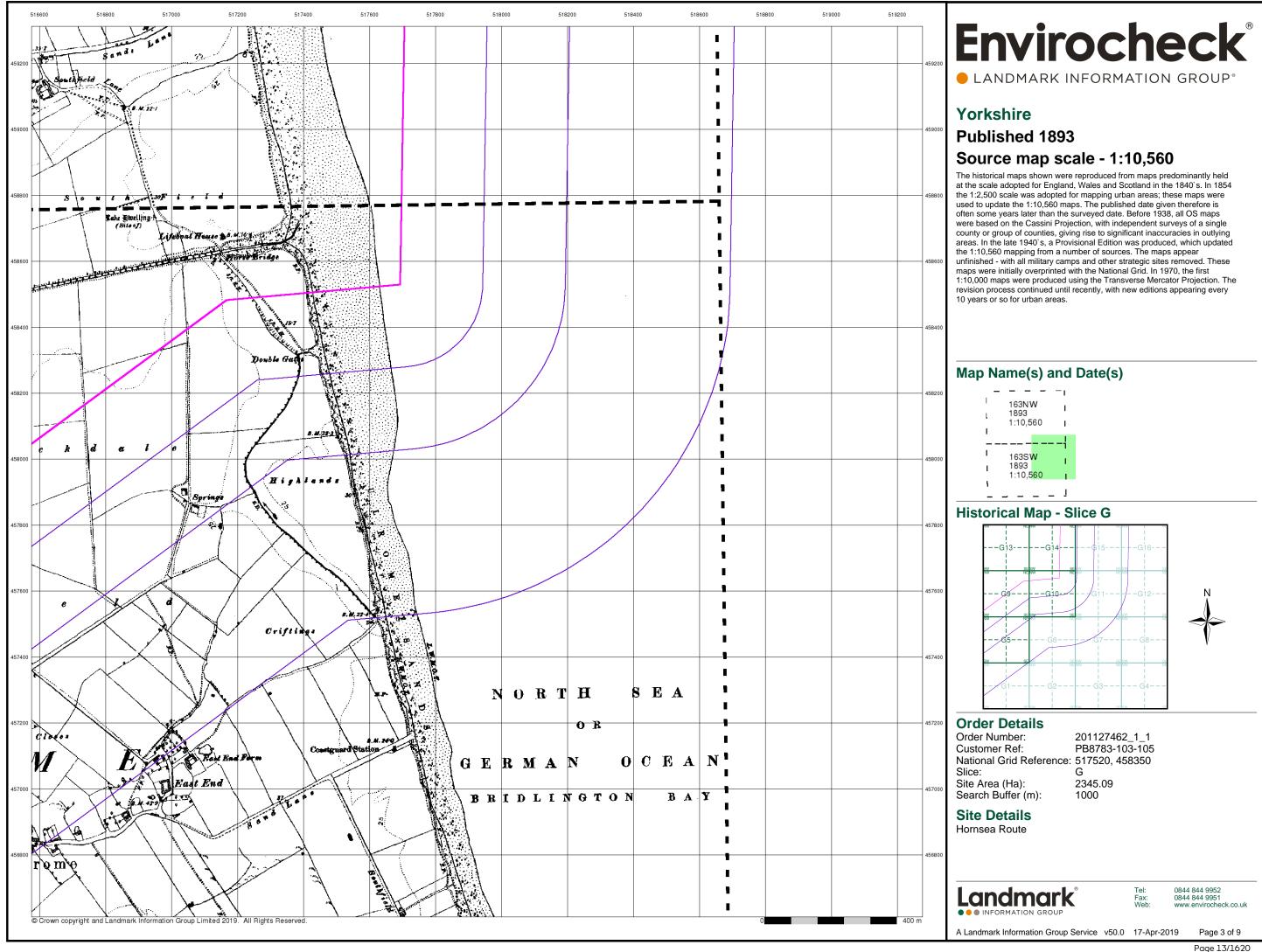


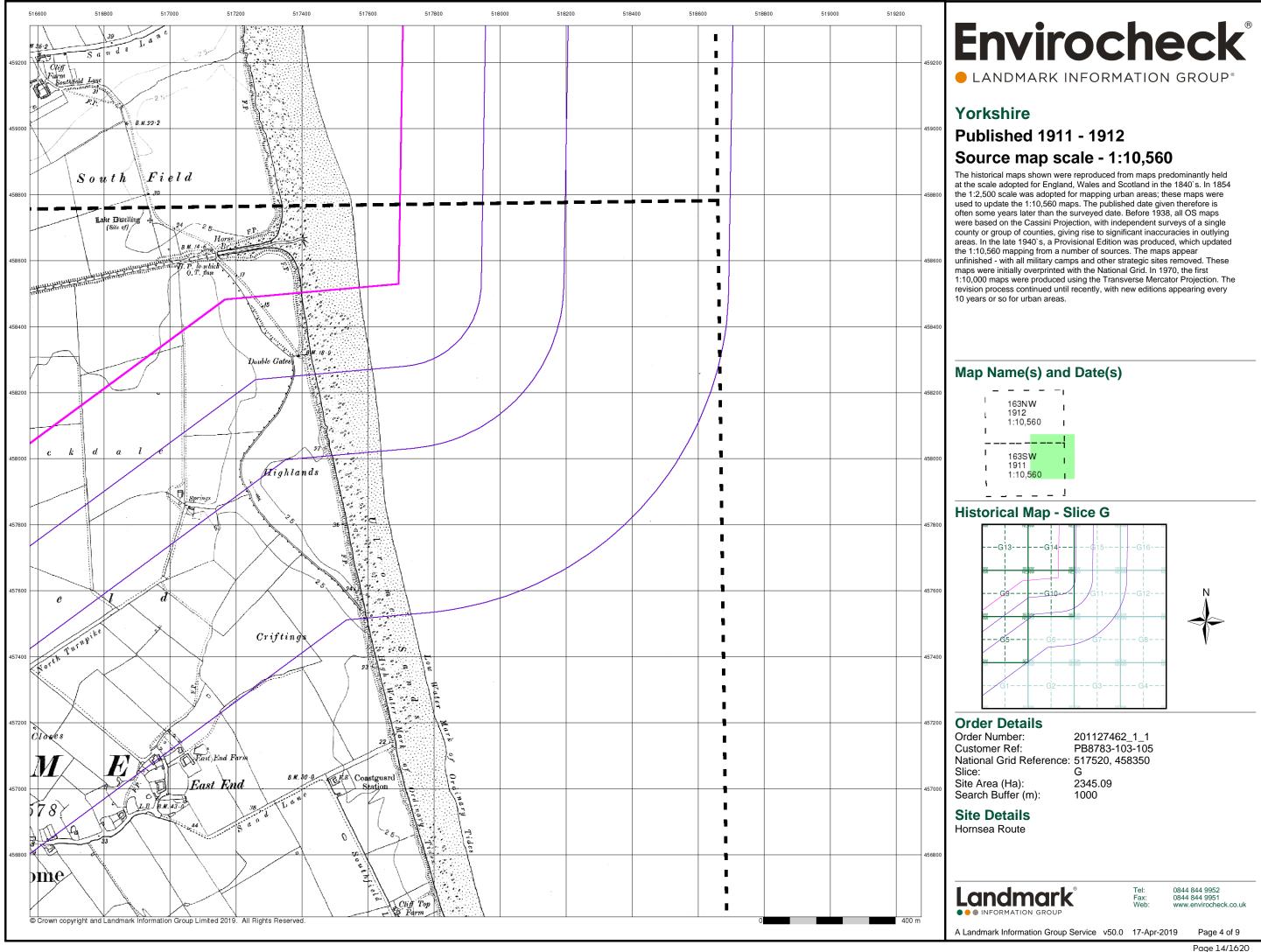
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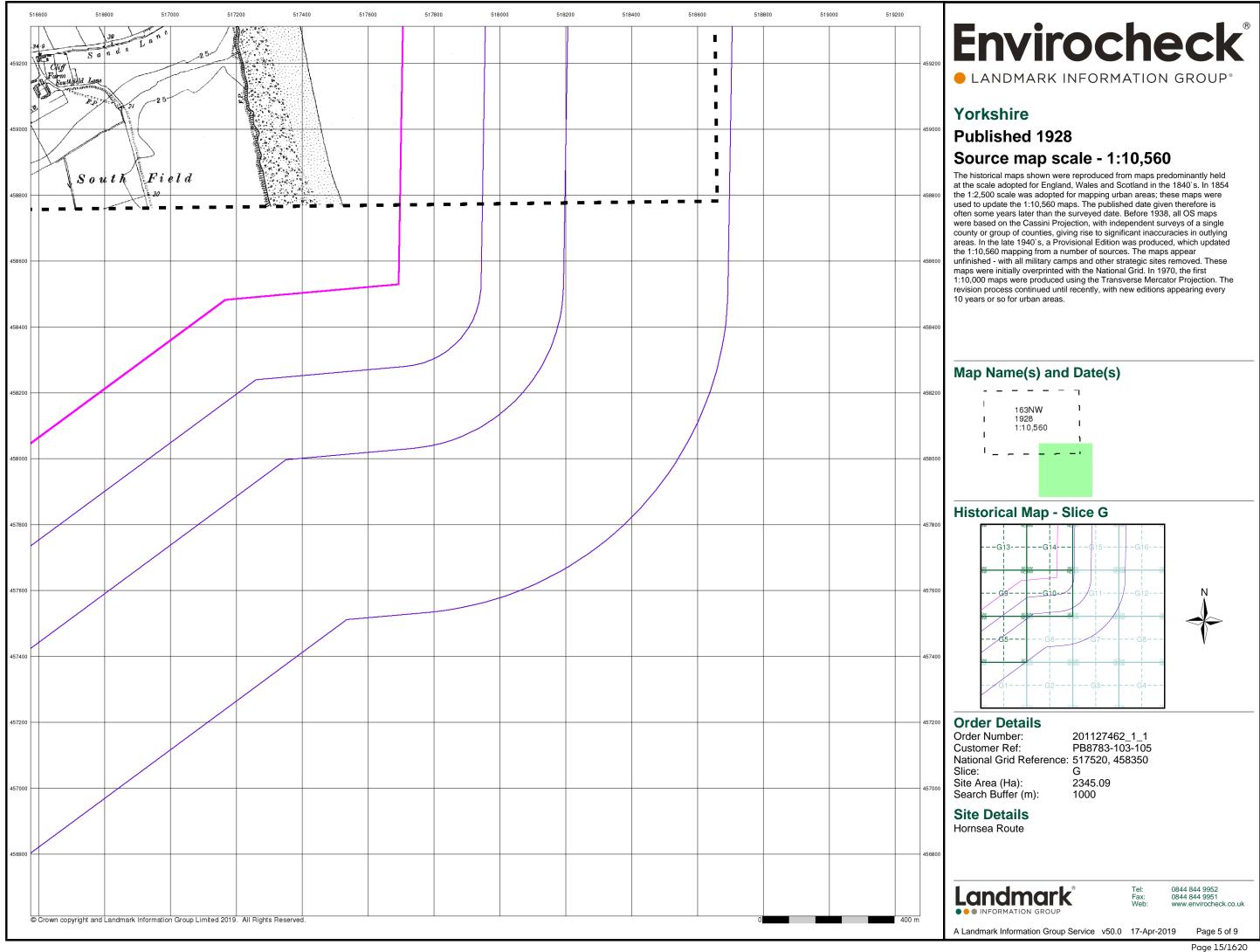
0844 844 9952 0844 844 9951 www.envirocheck.co.uk

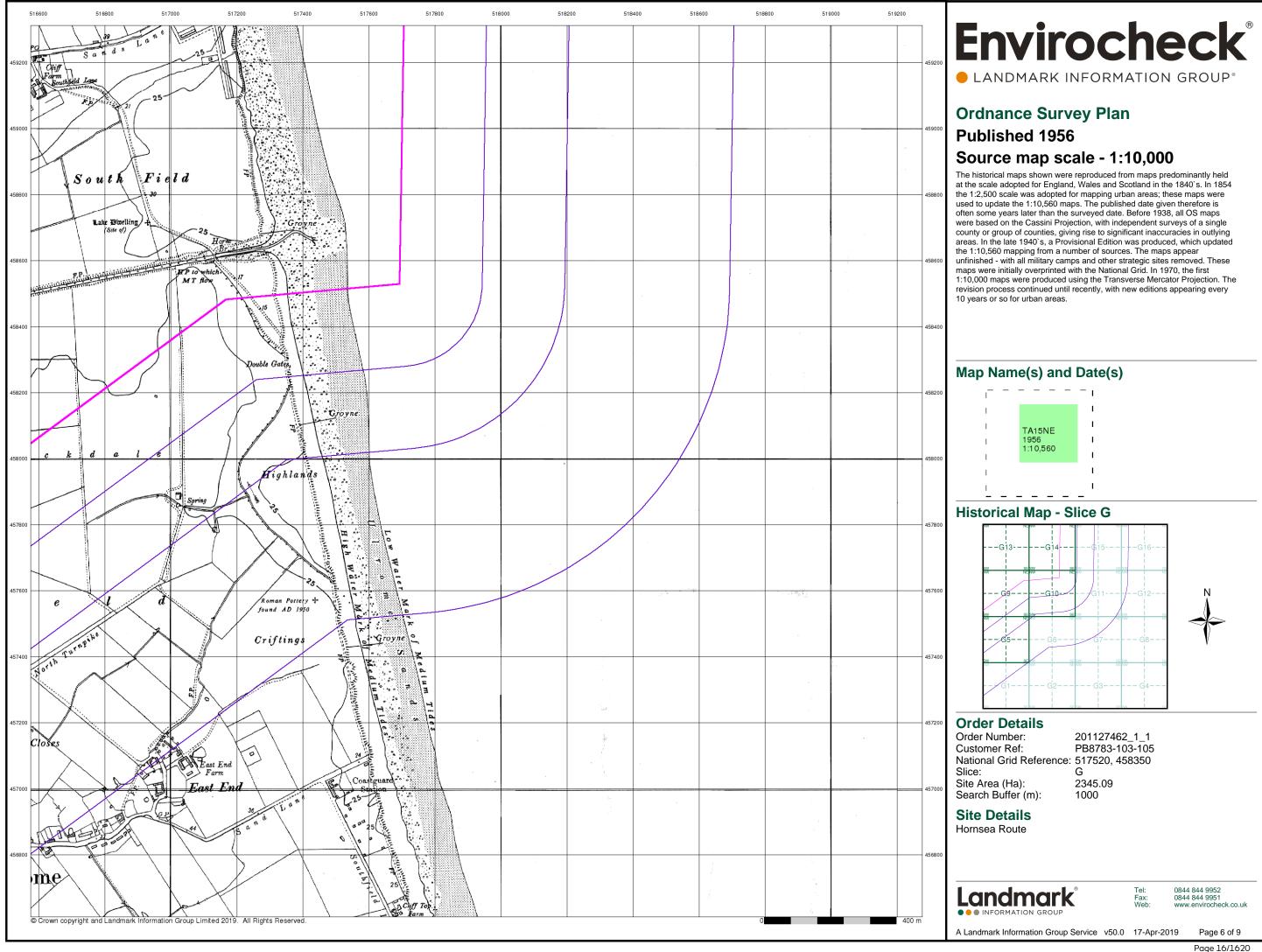
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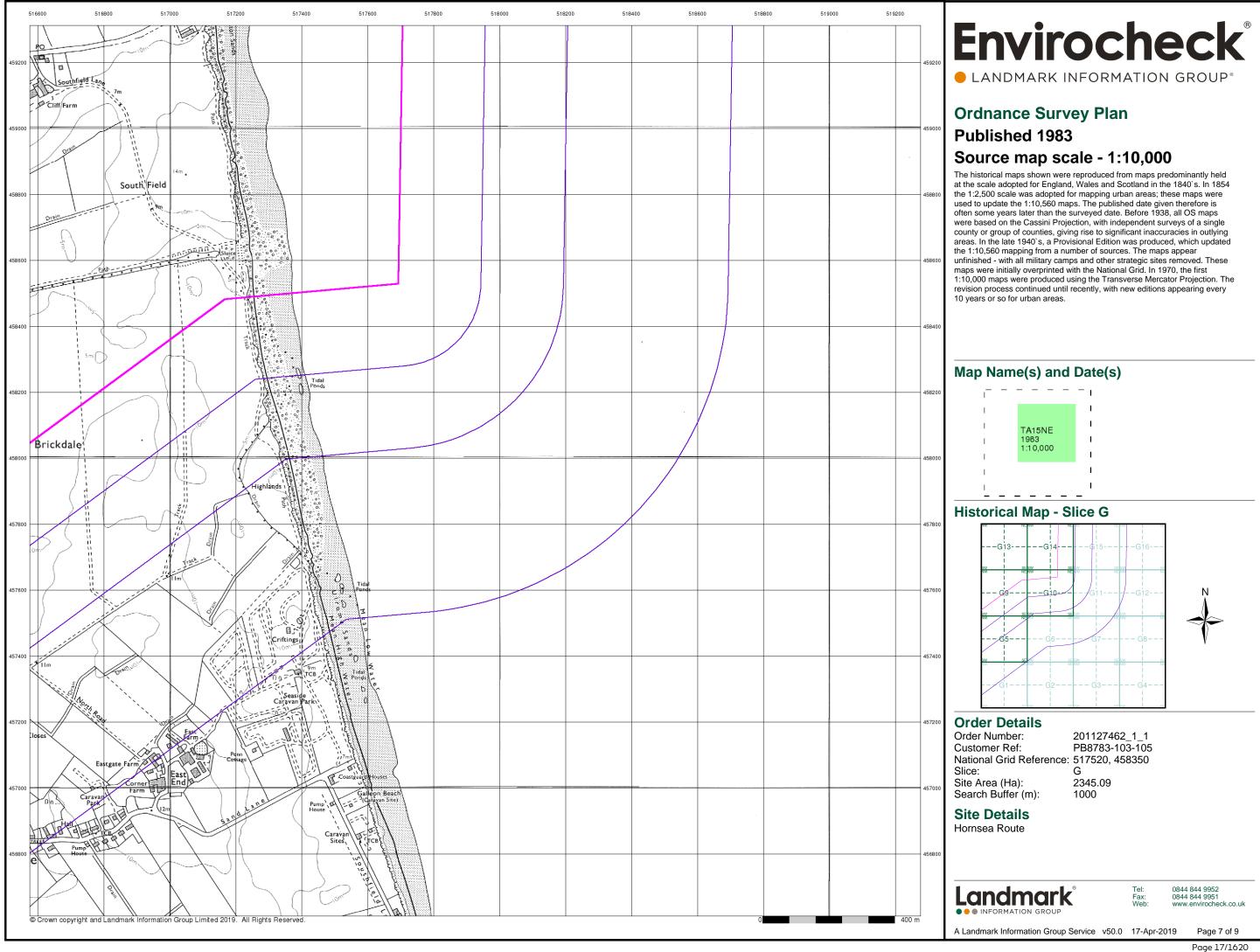














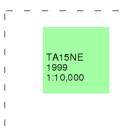
# **10k Raster Mapping**

## Published 1999

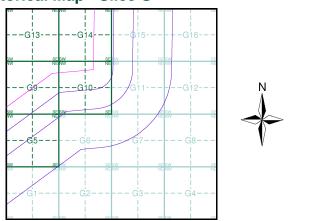
## Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

## Map Name(s) and Date(s)



### Historical Map - Slice G



### **Order Details**

Order Number: Customer Ref: National Grid Reference: 517520, 458350 Slice: Site Area (Ha): Search Buffer (m):

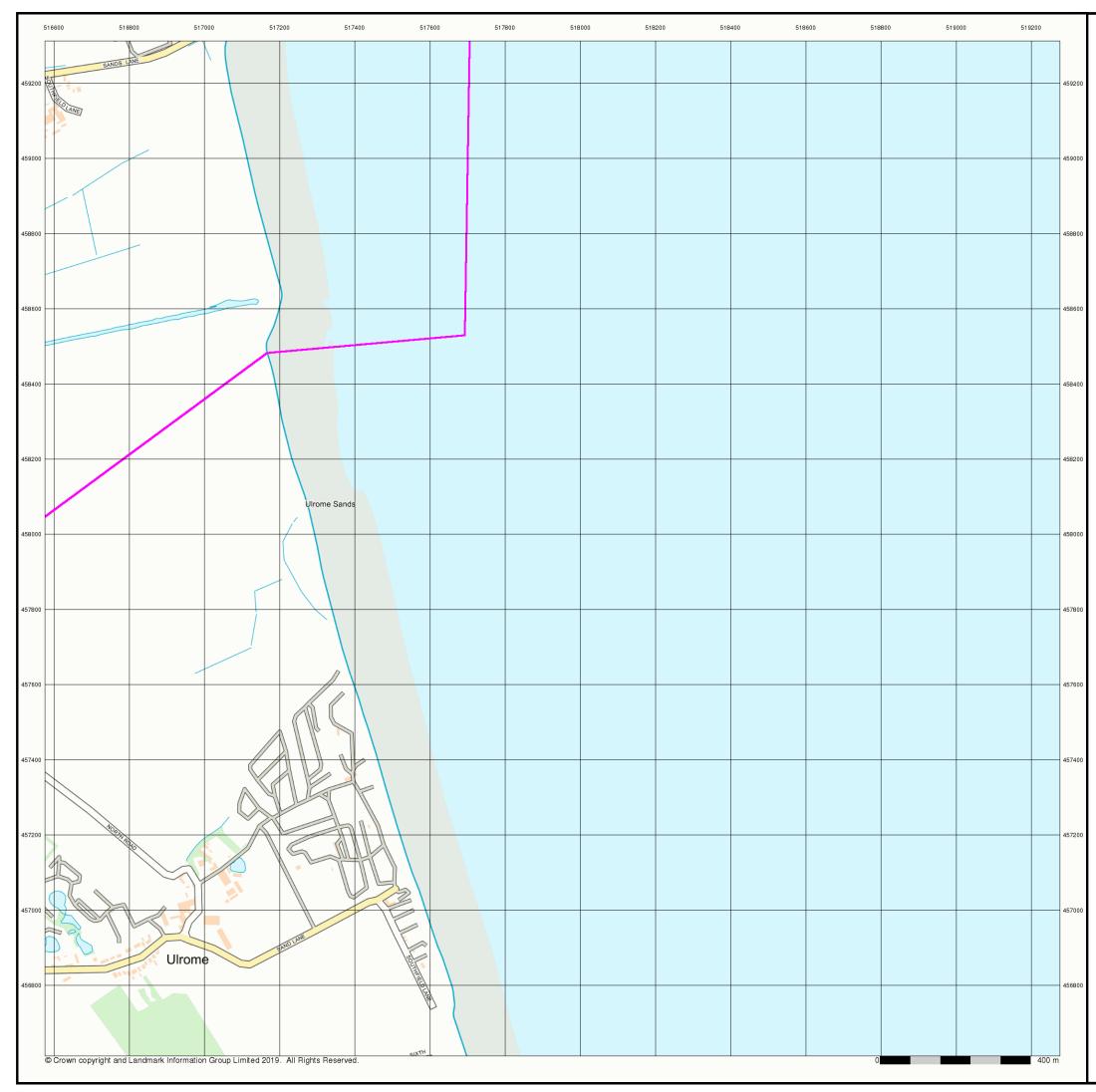
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Tel: Fax: Web:



# **Envirocheck**<sup>®</sup> LANDMARK INFORMATION GROUP\*

# **Street View**

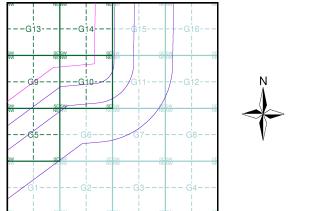
## Published 2019

## Source map scale - 1:10,000

Street View is a street-level map for the whole of Great Britain produced by the Ordnance Survey. These maps are provided at a nominal scale of 1:10,000

## Map Name(s) and Date(s)





### **Order Details**

Order Number: Customer Ref: National Grid Reference: 517520, 458350 Slice: Site Area (Ha): Search Buffer (m):

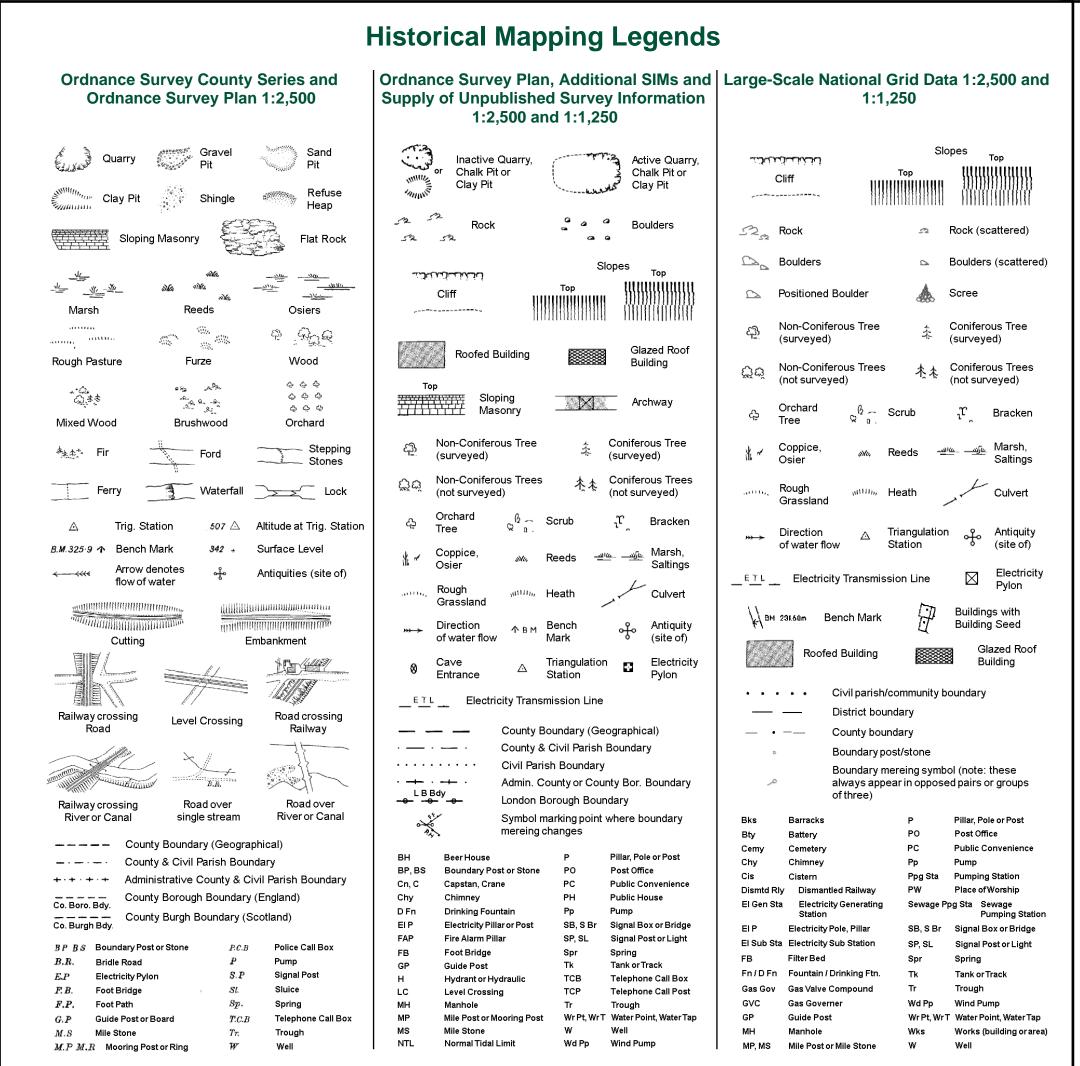
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Tel: Fax: Web:

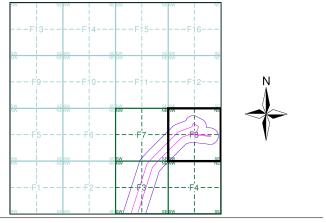


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## **Historical Mapping & Photography included:**

Mapping Type	Scale	Date	Pg
Yorkshire	1:2,500	1891	2
Yorkshire	1:2,500	1910	3
Ordnance Survey Plan	1:2,500	1977 - 1978	4
Large-Scale National Grid Data	1:2,500	1994	5

## **Historical Map - Segment F8**



### **Order Details**

Order Number: Customer Ref: National Grid Reference: 500490, 445860 Slice: Site Area (Ha): Search Buffer (m):

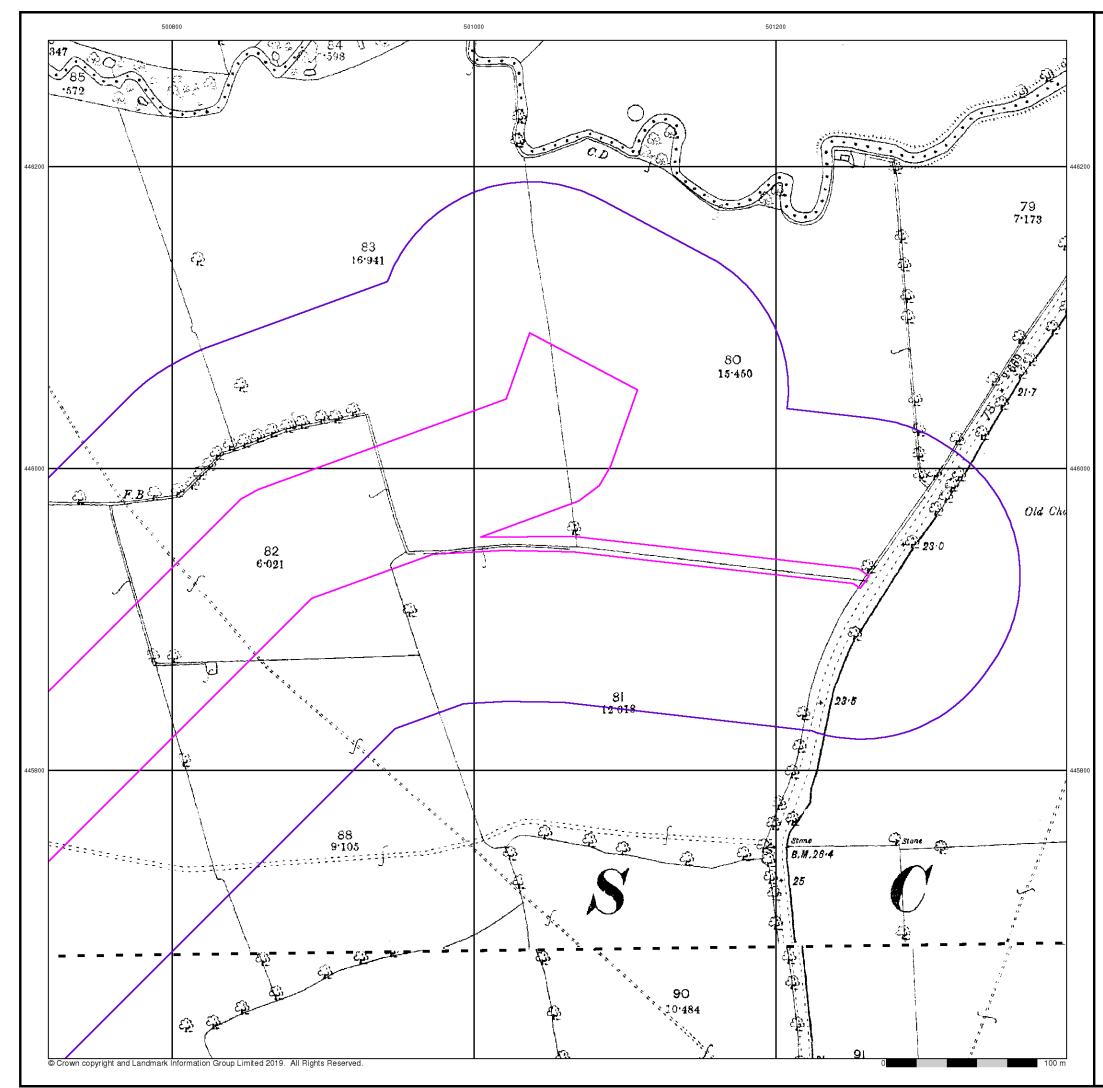
201127560\_1\_1 PB8783-103-105 53.73 100







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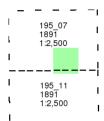
# Yorkshire

# Published 1891

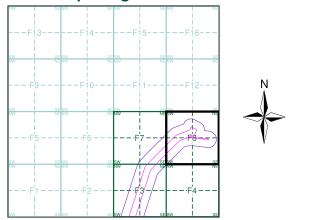
# Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 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 surveyed date. Before 1938, 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 outlying areas.

## Map Name(s) and Date(s)



## **Historical Map - Segment F8**



### **Order Details**

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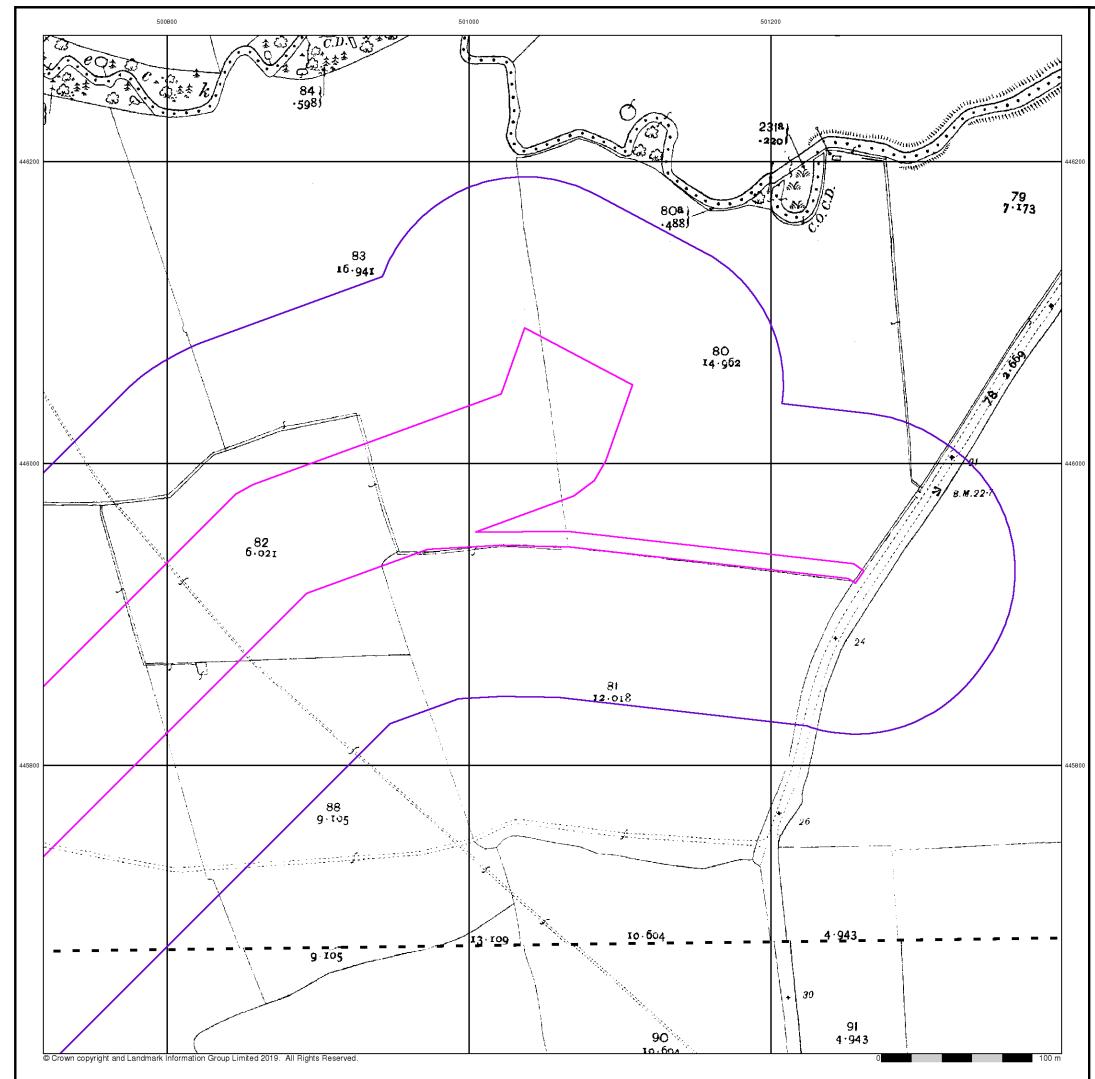
201127560\_1\_1 PB8783-103-105 53.73 100







Tel: Fax: Web:



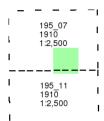
# Yorkshire

# Published 1910

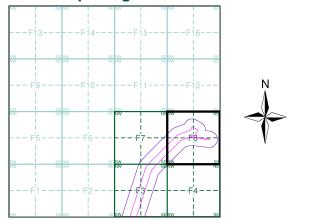
# Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 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 surveyed date. Before 1938, 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 outlying areas.

## Map Name(s) and Date(s)



## **Historical Map - Segment F8**



### **Order Details**

Order Number: Customer Ref: National Grid Reference: 500490, 445860 Slice: F Site Area (Ha): Search Buffer (m): 100

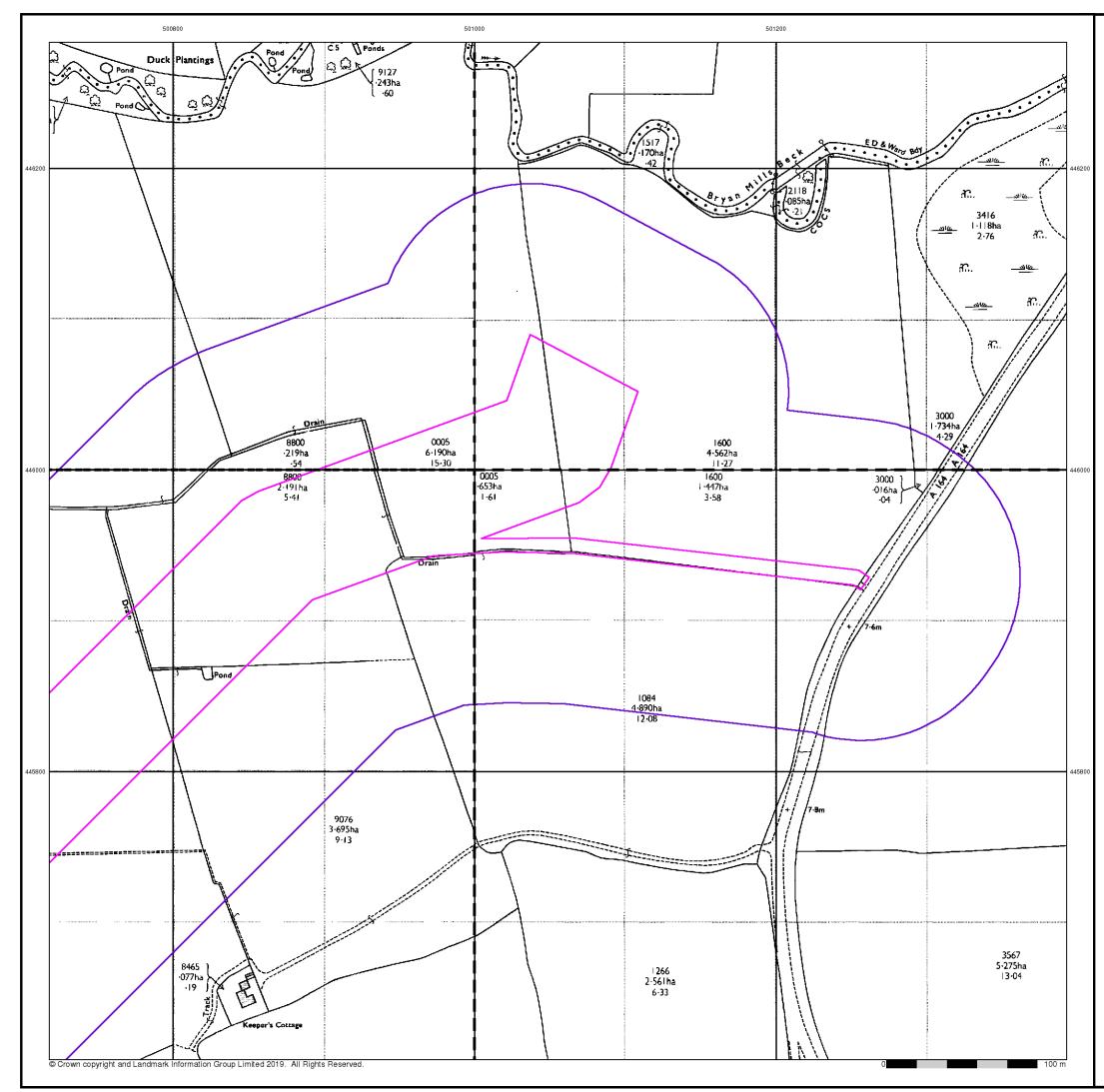
201127560\_1\_1 PB8783-103-105 53.73







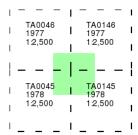
Tel: Fax: Web:



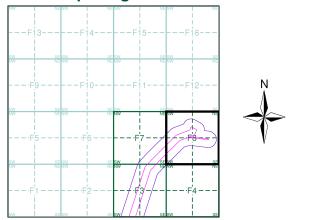
# **Ordnance Survey Plan** Published 1977 - 1978 Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 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 surveyed date. Before 1938, 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 outlying areas.

## Map Name(s) and Date(s)



## **Historical Map - Segment F8**



### **Order Details**

Order Number:	201127560_1_1
Customer Ref:	PB8783-103-105
National Grid Reference:	500490, 445860
Slice:	F
Site Area (Ha):	53.73
Search Buffer (m):	100

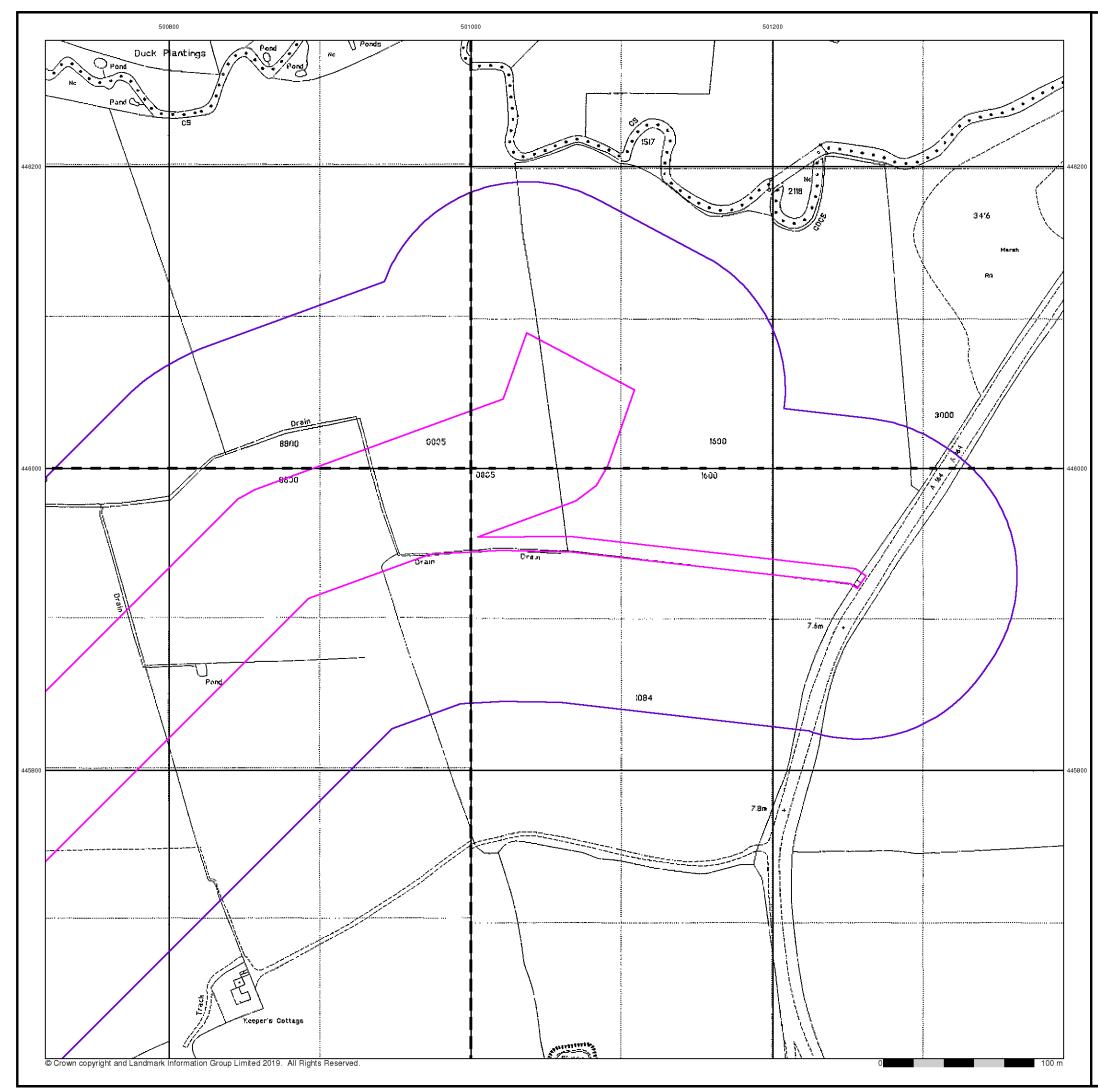




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# Large-Scale National Grid Data

# Published 1994

## Source map scale - 1:2,500

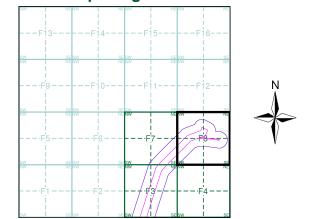
'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

## Map Name(s) and Date(s)

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 	199		   	19		- 1 1

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## Historical Map - Segment F8



### **Order Details**

Order Number:	201127560_1_1
Customer Ref:	PB8783-103-105
National Grid Reference:	500490, 445860
Slice:	F
Site Area (Ha):	53.73
Search Buffer (m):	100

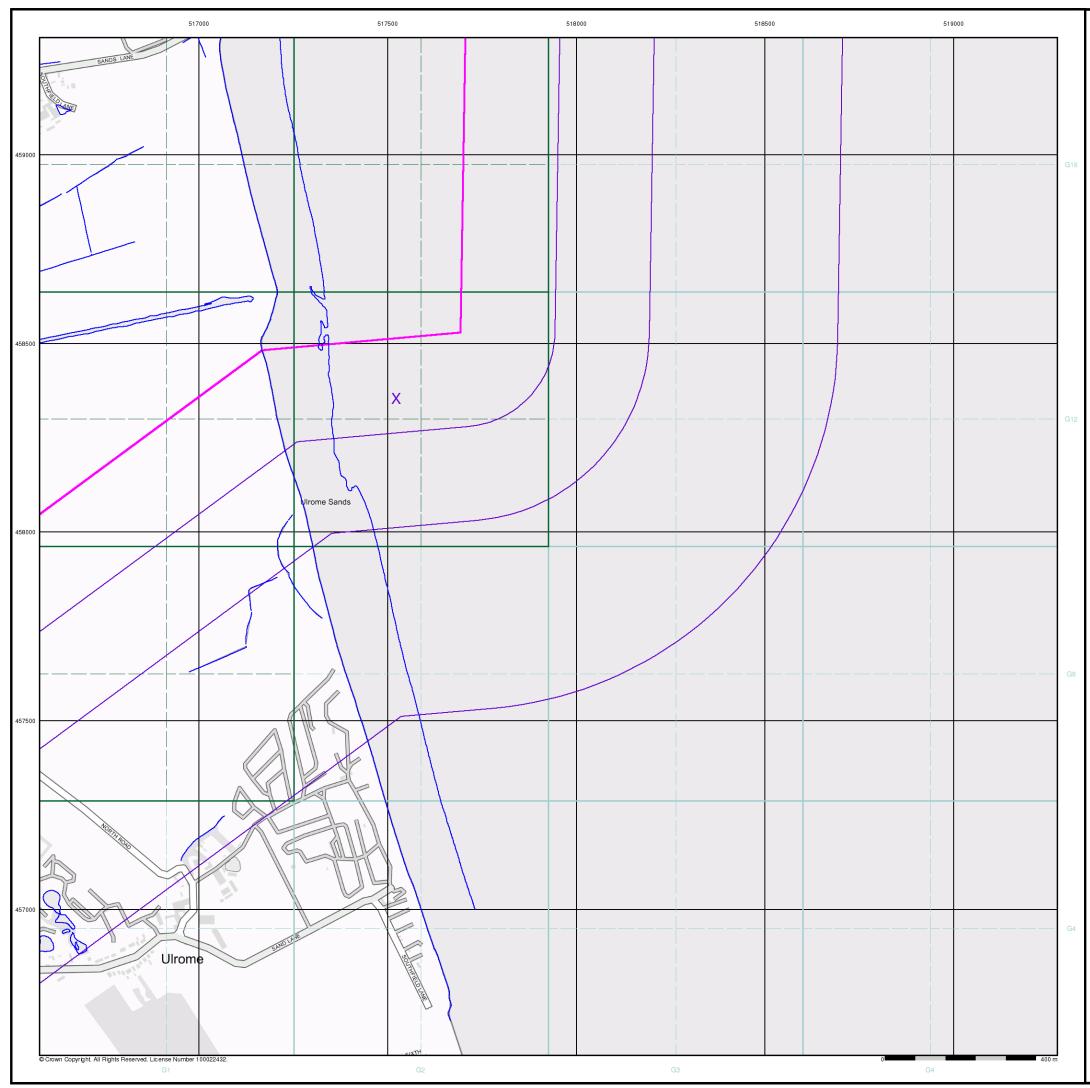
Site Details Hornsea Route



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### General

General					
🛆 Specified Site 🛛 🖒 Specified Buffer(s)	X Bearing Reference Point 🛛 🛽 Map ID				
Several of Type at Location					
Agency and Hydrological	Waste				
Contaminated Land Register Entry or Notice (Location)	BGS Recorded Landfill Site (Location)				
🚫 Contaminated Land Register Entry or Notice	🔀 BGS Recorded Landfill Site				
🔶 Discharge Consent	EA Historic Landfill (Buffered Point)				
Enforcement or Prohibition Notice	EA Historic Landfill (Polygon)				
A Integrated Pollution Control	Integrated Pollution Control Registered Waste Site				
Integrated Pollution Prevention Control	Licensed Waste Management Facility				
Local Authority Integrated Pollution Prevention and Control	Licensed Waste Management Facility (Location)				
🛆 Local Authority Pollution Prevention and Control	Local Authority Recorded Landfill Site (Location)				
Control Enforcement	IIII Local Authority Recorded Landfill Site				
Pollution Incident to Controlled Waters	🚫 Registered Landfill Site				
Prosecution Relating to Authorised Processes	Registered Landfill Site (Location)				
Prosecution Relating to Controlled Waters	Registered Landfill Site (Point Buffered to 100m)				
A Registered Radioactive Substance	Registered Landfill Site (Point Buffered to 250m)				
🥆 River Network or Water Feature	👚 Registered Waste Transfer Site (Location)				
🖶 River Quality Sampling Point	IIII Registered Waste Transfer Site				
合 Substantiated Pollution Incident Register	Registered Waste Treatment or Disposal Site (Location)				
🔷 Water Abstraction	Registered Waste Treatment or Disposal Site				
🔶 Water Industry Act Referral	Hazardous Substances				
Geological	🛃 COMAH Site				
BGS Recorded Mineral Site	🛃 Explosive Site				

### Industrial Land Use

- ★ Contemporary Trade Directory Entry
- 🖈 Fuel Station Entry
- 🗱 Planning Hazardous Substance Enforcement Site Sensitivity Map - Slice G -G13---G14--G10-Gg G5

🙀 NIHHS Site

🗱 Planning Hazardous Substance Consent

### **Order Details**

Order Number: Customer Ref: National Grid Reference: 517520, 458350 Slice: Site Area (Ha): Search Buffer (m):

201127462\_1\_1 PB8783-103-105 G 2345.09 1000



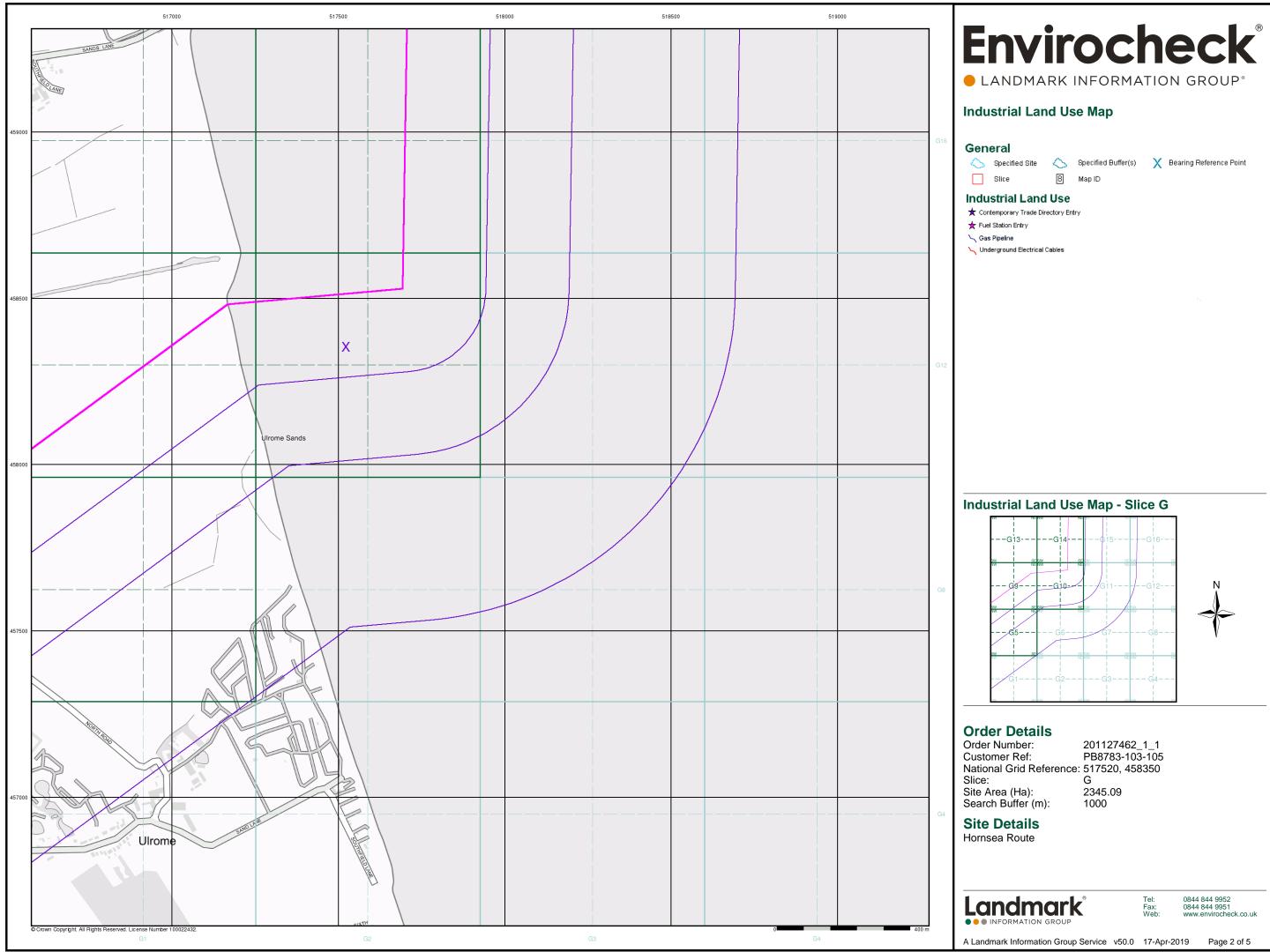




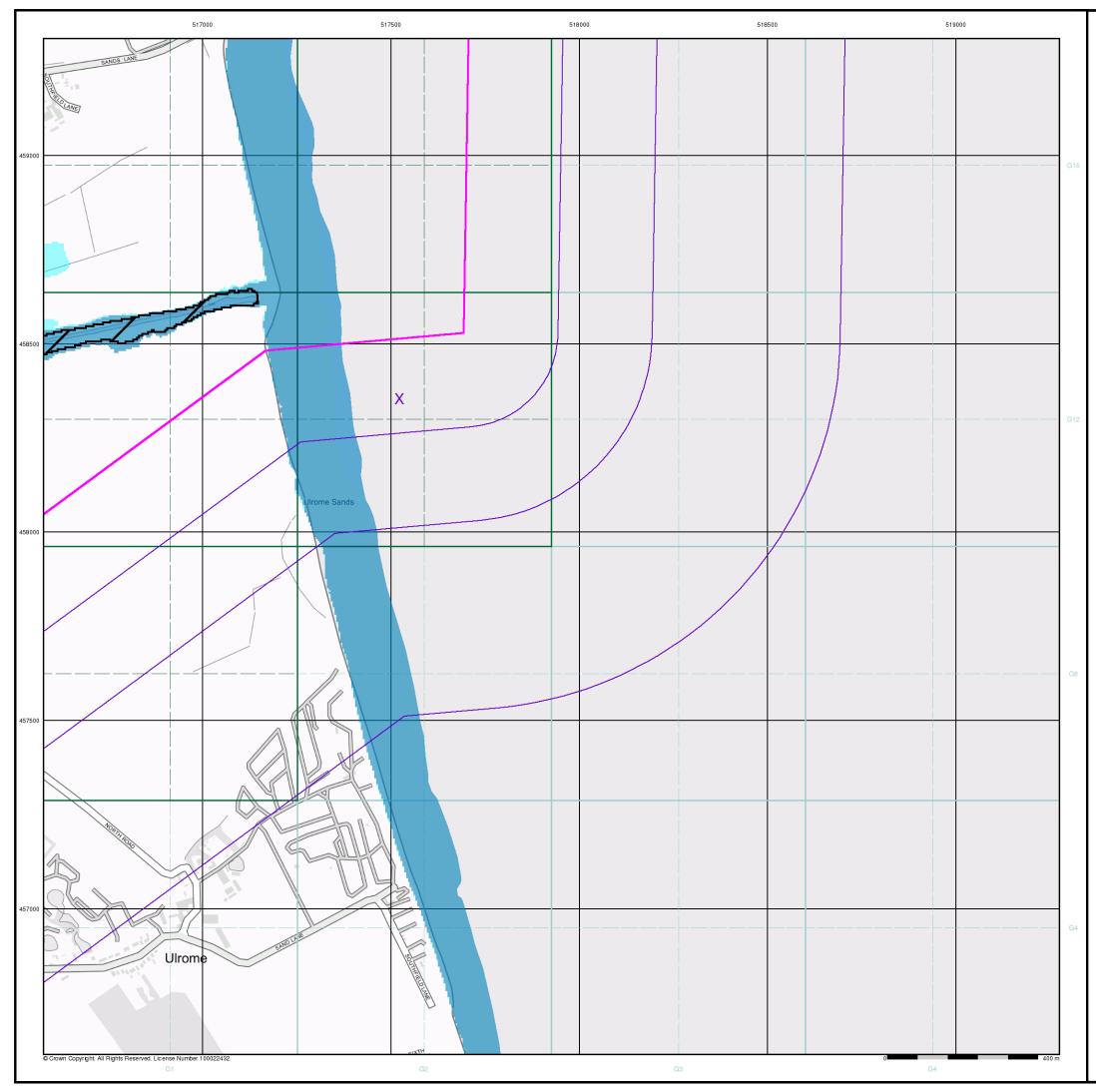
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### General

🔼 Specified Site

- C Specified Buffer(s)
- X Bearing Reference Point

### Agency and Hydrological (Flood)

Extreme Flooding from Rivers or Sea without Defences (Zone 2)

Flooding from Rivers or Sea without Defences (Zone 3)

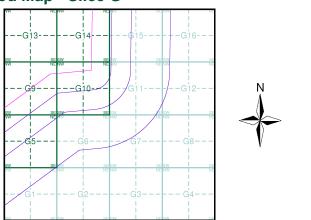
Area Benefiting from Flood Defence



Flood Water Storage Areas

--- Flood Defence

## Flood Map - Slice G



### **Order Details**

 
 Order Number:
 201127462\_1\_1

 Customer Ref:
 PB8783-103-105

 National Grid Reference:
 517520, 458350
 Slice: Site Area (Ha): Search Buffer (m):

G 2345.09 1000







Tel: Fax: Web:



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