

DOGGER BANK D WIND FARM

Preliminary Environmental Information Report

Volume 2

Appendix 19.2 Preliminary Risk Assessment
(Part 1 of 2)

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APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

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Glossary

Term	Definition
Agricultural Land Classification	Agricultural Land Classification is a grading system used to assess and compare the quality of agricultural land in England and Wales. A combination of climate, topography and soil characteristics and their unique interaction determines the grade of the land. The grades range from 1 to 5. Grade 1 being excellent, Grade 2 very good, Grade 3a and 3b good to moderate, Grade 4 poor and Grade 5 very poor.
Birkhill Wood Substation	The onshore grid connection point for DBD identified through the Holistic Network Design process. Birkhill Wood Substation which is being developed by National Grid Electricity Transmission and does not form part of the Project.
Countryside Stewardship Scheme	The Countryside Stewardship Scheme provides financial incentives for farmers, woodland owners, foresters and land managers to look after and improve the environment. Mid Tier Scheme agreements provide a range of options to help deliver environmental benefits. The Higher Tier agreements require more complex management tailored to individual sites.
Development Consent Order (DCO)	A consent required under Section 37 of the Planning Act 2008 to authorise the development of a Nationally Significant Infrastructure Project, which is granted by the relevant Secretary of State following an application to the Planning Inspectorate.
Energy Storage and Balancing Infrastructure (ESBI)	A range of technologies such as battery banks to be co-located with the Onshore Converter Station, which provide valuable services to the electrical grid such as storing energy to meet periods of peak demand and improving overall reliability.
Enhancement	Measures committed to by the Project to create or enhance positive benefits to the environment or communities, as a result of the Project. All enhancement measures adopted by the Project are provided in the Commitments Register.
Environmental Impact Assessment (EIA)	A process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information and includes the publication of an Environmental Statement.

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Term	Definition
Environmental Stewardship Scheme	Environmental Stewardship is an agri-environment scheme run by DEFRA which aims to secure widespread environmental benefits through improving water quality, reducing soil erosion, improving conditions for farmland wildlife, maintaining and enhancing landscape character and protecting the historic environment. The Entry Level aims to encourage large numbers of farmers to deliver effective environmental management in exchange for pay-outs. The Higher Level is designed to support more specific and environmentally beneficial management practices.
Grid Connection	The offshore and onshore electricity transmission network connection to Birkhill Wood Substation.
Haul Roads	Temporary tracks set aside to facilitate transport access during onshore construction works.
High Groundwater Vulnerability	High Groundwater Vulnerability areas can easily transmit pollution to groundwater. They are characterised by high-leaching soils and the absence of low-permeability superficial deposits.
Impact	A change resulting from an activity associated with the Project, defined in terms of magnitude.
Low Groundwater Vulnerability	Low Groundwater Vulnerability areas that provide the greatest protection to groundwater from pollution. They are likely to be characterised by low-leaching soils and/or the presence of low permeability superficial deposits.
Medium Groundwater Vulnerability	Medium Groundwater Vulnerability areas offer some groundwater protection from the transmission of pollution to groundwater.
Mineral Safeguarding Area	Areas of known mineral resources that are of sufficient value (economically or of conservation value) to warrant protection.
Mitigation	Any action or process designed to avoid, prevent, reduce or, if possible, offset potentially significant adverse effects of a development. All mitigation measures adopted by the Project are provided in the Commitments Register.
Monitoring	Measures to ensure the systematic and ongoing collection, analysis and evaluation of data related to the implementation and performance of a development. Monitoring can be undertaken to monitor conditions in the future to verify any environmental effects identified by the EIA, the effectiveness of mitigation or enhancement measures or ensure remedial action are taken should adverse effects above a set threshold occur. All monitoring measures adopted by the Project are provided in the Commitments Register.

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Term	Definition
Onshore Converter Station - OCS	A compound containing electrical equipment required to stabilise and convert electricity generated by the wind turbines and transmitted by the export cables into a more suitable voltage for grid connection into Birkhill Wood Substation.
Onshore Converter Station (OCS) Zone	The area within which the Onshore Converter Station and Energy Storage and Balancing Infrastructure will be located in vicinity of Birkhill Wood Substation.
Onshore Development Area	The area in which all onshore infrastructure associated with the Project will be located, including any temporary works area required during construction and permanent land required for mitigation and enhancement areas, which extends landward of Mean Low Water Springs. There is an overlap with the Offshore Development Area in the intertidal zone.
Onshore Export Cable Corridor (ECC)	The area within which the onshore export cables will be located, extending from the landfall to the Onshore Converter Station zone and onwards to Birkhill Wood Substation.
Principal Aquifer	These are layers of rock or drift deposits that have high intergranular and / or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and / or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifers
Project Design Envelope	<p>A range of design parameters defined where appropriate to enable the identification and assessment of likely significant effects arising from a project's worst-case scenario.</p> <p>The Project Design Envelope incorporates flexibility and addresses uncertainty in the DCO application and will be further refined during the EIA process.</p>
Secondary A Aquifer	These are 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.
Secondary B Aquifer	These are predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
Secondary Undifferentiated Aquifer	These are assigned in cases where it has not been possible to attribute either a Secondary A or B aquifer to the soil type due to the variable characteristics. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifers in different locations due to the variable characteristics of the rock type.

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Term	Definition
Source Protection Zone 1	Inner protection zone - defined as the 50-day travel time from any point below the water table to the abstraction source. This zone has a minimum radius of 50 metres.
Source Protection Zone 2	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 abstraction source, depending on the size of the abstraction.
Source Protection Zone 3	Source catchment protection zone - defined as the area around an abstraction source within which all groundwater recharge is presumed to be discharged at the abstraction source.
Study Areas	A geographical area and / or temporal limit defined for each EIA topic to identify sensitive receptors and assess the relevant likely significant effects.
Temporary Construction Compounds	Areas set aside to facilitate the construction works for the onshore infrastructure, which include the landfall construction compound, main and intermediate construction compounds for onshore export cable works and OCS and ESBi construction compounds.
The Applicant	SSE Renewables and Equinor acting through 'Doggerbank Offshore Wind Farm Project 4 Projco Limited'.
The Project	Dogger Bank D (DBD) Offshore Wind Farm Project, also referred to as DBD in this PEIR.
Trenching	Open cut method for cable or duct installation.
Trenchless Techniques	<p>Trenchless cable or duct installation methods used to bring offshore export cables ashore at landfall, facilitate crossing major onshore obstacles such as roads, railways and watercourses and where trenching may not be suitable.</p> <p>Trenchless techniques included in the Project Design Envelope include Horizontal Directional Drilling (HDD), auger boring, micro-tunnelling, pipe jacking / ramming and Direct Pipe.</p>

19.2 Preliminary Risk Assessment

19.2.1 Introduction

1. This appendix to the Dogger Bank D (DBD) Offshore Wind Farm (hereafter ‘the Project’) Preliminary Environmental Information Report (PEIR) supports **Volume 1, Chapter 19 Geology and Ground Conditions**. This appendix forms part of the PEIR for the onshore elements of the Project.
2. The purpose of this appendix is to present the findings of the Geo Environmental Desk Study and Preliminary Risk Assessment (PRA) conducted as part of the onshore development of the Project. The onshore elements of the Project will include landfall, onshore export cables and the Onshore Converter Station (OCS) and Energy Storage and Balancing Infrastructure (ESBI). A full description of the Project is provided in **Volume 1, Chapter 4 Project Description**.

19.2.2 Approach to Assessment

3. The PRA has been prepared in general accordance with the methodology and guidance set out in the Environment Agency ‘Land Contamination Risk Management Framework’, 2023.
4. The PRA is a desk-based study and forms the initial step in the assessment of potentially contaminated land.
5. The main purpose of the PRA is to identify potential contamination sources within the Onshore Development Area and assist in identifying potential land quality risks and constraints associated with the Project.
6. The assessment methodology has been developed to cover the following scope:
 - Provide information on the current conditions of the site with respect to the potential for ground contamination.
 - Provide an initial Conceptual Site Model (CSM) to identify and assess potential contaminant linkages associated with the Onshore Development Area.
 - Provide high level recommendations for further work and assessments.
7. The following desk-based information sources have been reviewed to inform the PRA:
 - Environmental Database (Envirocheck™) GIS data comprising environmental sensitivity data, historical mapping and permitting records within the Onshore Development Area, September 2024 (Order Reference SR00339234);

- British Geological Survey (BGS) Onshore Geoindex web portal (accessed October 2024);
- BGS Geological Map for Flamborough and Bridlington Solid and Drift (Sheet number 55 and 65), 1985, 1:50,000;
- BGS Geological Map for Great Driffield Solid and Drift (sheet number 64), 1993 1:50,000;
- BGS Geological Map for Beverley Solid and Drift (Sheet number 72), 1995, 1:50,000;
- BGS Geological Map for Hornsea Solid and Drift (Sheet number 73), 1998, 1:50,000;
- BGS Hydrogeological Map of East Yorkshire (Sheet number 10), 1980, 1:100,000;
- Google Earth, accessed October 2024;
- Multi Agency Government Information for the Countryside (MAGIC) map application (accessed October 2024);
- UK Health Security Agency UK maps of Radon, accessed October 2024;
- Zetica UXO Unexploded Bomb (UXB) Risk Map, accessed October 2024;
- East Riding of Yorkshire Council brownfield register, accessed October 2024;
- East Riding of Yorkshire Council Part 2A sites register, accessed October 2024;
- Hull Geological Society and the East Yorkshire RIGS Group, accessed October 2024;
- Information provided from East Riding of Yorkshire Council with respect to private domestic potable groundwater abstractions which are registered with them; and
- Information provided from the Environment Agency with respect to private groundwater abstractions i.e. for irrigation / farming purposes and public potable groundwater supplies.

19.2.3 Limitations

8. The direct assessments and judgements given in this report are limited by both the finite data on which they are based and the proposed works to which they are addressed. The acquisition of data is constrained by both physical and economic factors and, by definition, is subject to limitations. Conditions at the site will change over time due to natural variations and may be affected by human activities.

9. This document has been prepared for the Project and should not be relied upon or used for any other projects. Royal HaskoningDHV accepts no responsibility or liability for the consequences of this document being used for a purpose other than that purpose for which it was commissioned. The assessments and judgements contained herein should not be relied upon as legal opinion.
10. The findings and opinions are relevant to the dates of the information reviewed and should not be relied upon to represent conditions at later dates. The opinions included herein are based on the information obtained from the assessments undertaken in the Study Area and from the experience of the reviewers.

19.2.4 Study Area

19.2.4.1 Site Location and Description

11. The Study Area for the PRA, located within the East Riding of Yorkshire, consists of the Onshore Development Area plus a 250m buffer, as illustrated on **Figure 19.2-1 (Annex A)**. The description of the location of the Onshore Development Area is summarised within **Table 19.2-1**.
12. A 100m buffer has been applied around the Onshore Development Area for the review of geological features and BGS borehole logs. The buffer zone around the Onshore Development Area is extended to 1km for assessing the presence of Control of Major Accident Hazard (COMAH) sites and groundwater abstraction wells. This is due to the higher risk posed by COMAH sites and the sensitivity of groundwater abstraction wells. All other features have been assessed using the 250m buffer (Study Area).
13. The Onshore Development Area, which is located landward of mean high-water springs (MHWS), includes landfall, the onshore export cable corridor (ECC) and the OCS Zones 4 and 8, as shown on **Figure 19.2-1 (Annex A)**.
14. The Onshore Development Area overlaps with the Birkhill Wood Substation to allow for connection of the Project's onshore ECC into the substation, however this is an asset developed by National Grid Electricity Transmission and not part of the Project. Therefore, although the Birkhill Wood Substation is shown on **Figure 19.2-1 (Annex A)** as being inside the Onshore Development Area, it is not discussed within this assessment.

Table 19.2-1 Description of Site Location

Site Location	Landfall	Onshore ECC	OCS zones
Address and what3words	<p>The landfall is located southeast of Skipsea, East Riding of Yorkshire, YO25 8TF (what3words/// paving. Scorched. also).</p> <p>At the landfall the Onshore Development Area extends north to Ulrome, East Riding of Yorkshire, YO25 8TT (what3words ///supposes. walked. slung), which is included for emergency beach access only.</p>	<p>The onshore ECC is located from Skipsea, East Riding of Yorkshire, YO25 8TF (what3words/// chats. ambushes. building) to South of Beverley, East Riding of Yorkshire, HU17 8PP (what3words/// cheek. deprive. amphibian).</p>	<p>OCS Zone 4 is located south of the A164 between Beverley and Bentley, HU17 8PP (what3words/// samples. bulletins. amending).</p> <p>OCS Zone 8 is located between Walkington and Risby, HU16 5TL (what3words/// cakewalk. cherished. grace).</p>
Ordnance Survey Grid Reference	<p>Skipsea, 518169E, 454852N.</p> <p>Ulrome, 517378E 457189N.</p>	<p>Skipsea, 518169E, 454852N.</p> <p>South of Beverley, 502616E, 436068N.</p>	<p>OCS Zone 4, 502803E 436552N.</p> <p>OCS Zone 8, 500590E, 436143N.</p>

19.2.4.2 Background and Walkover Survey Information

15. A site walkover survey was carried out by Royal HaskoningDHV from 21 October to 23 October 2024 in order to check for visible signs of contamination across targeted locations along the Study Area. A series of photographs are presented within **Annex B** and are cross referenced as appropriate in the following sections. The photograph locations are shown on **Figure 19.2-2 (Annex A)**. For the purpose of the walkover survey, only features surveyed within the Study Area are included within the writeup below.

19.2.4.2.1 Current Land Use in the Study Area

16. The Study Area is predominantly agricultural land, intersecting approximately 60 farming operations (refer to **Annex A, Figure 19.2-6**) with associated farm buildings at isolated areas across site.
17. The route of the onshore ECC crosses several public roads, private accesses, Public Rights of Way (PRoW), and a railway line. OCS Zone 8 intersects a PRoW and is close to Risby Park and an area of woodland (Briarpit Plantation). OCS Zone 4 intersects with Autherd Drain and is close to Beverley Parks Nature Reserve.

18. In addition to the above, within the 250m buffer zone, localised commercial, residential and holiday properties, public open spaces and educational establishments are located.

19.2.4.2.2 Access and Boundaries

19. There are multiple access points across the Onshore Development Area. The main emergency access roads to landfall are Hornsea Road and Mill Lane in Skipsea and Sand Lane in Ulrome. However, the end of Hornsea Road has collapsed along the coastline; see photographs one (showing the road ending) and two (showing the cliff face) in **Annex B**.
20. The landfall is bounded by Sandhills Farm to the north and Far Grange Park & Golf Club to the south. The eastern edge of the landfall interacts with the King Charles III England Coastal Path (Easington to Filey Brigg branch). The eastern border of the landfall is bounded by Skipsea Sands and coastline up to Ulrome Sands to the north. Skipsea drain, agricultural fields, Skipsea Sands Holiday Park and Seaside Caravan Park are located to the west of the landfall.
21. The main emergency access roads into the onshore ECC are the A165 south of Beeford, Frodingham Road north of Brandesburton, New Road west of Burshell, Carr Lane east of Beverley Airfield (refer to photograph three, **Annex B**), the A1035 between Tickton and Routh, the A164 through Scarborough, the B1248 north of Cherry Burton, York Road (A1079) east and west of Bishop Burton, the B1230 and Little Weighton Road west of Walkington and the A164 east of Bentley. The Onshore ECC is generally bounded along agricultural fields and field boundaries and associated farm buildings, along with woodlands and registered parks and gardens (shown on **Figure 19.2-4 (Annex A)**).
22. The main emergency access to OCS Zone 4 is via Shepherd Lane (refer to photograph four, **Annex B**) north of Beverley Parks Nature Reserve.
23. OCS Zone 4 covers nine farmed fields with field boundaries predominantly electric and wooden fences and hedgerows (refer to photographs five and six, **Annex B**). The A164 is located adjacent to the northern boundary of OCS Zone 4 and the A1079 is located along the southeast border. The eastern boundary of site is located mainly along agricultural fields and field boundaries.
24. The main emergency access to OCS Zone 8 is via Coppleflat Lane (refer to photograph seven, **Annex B**). OCS Zone 8 covers 11 farmed fields with field boundaries comprising well-established hedgerows and shrubbery (refer to photograph eight, **Annex B**). Coppleflat Lane is located adjacent to the eastern boundary of OCS Zone 8 and Folly Wood's and associated plantations are located along the southern boundary. Agricultural field boundaries and the Sodwall Plantation are located along the western boundary of OCS Zone 8 and Briarpit Plantation is adjacent to the northern boundary.

19.2.4.2.3 Topography

25. The topography information below summarises observations made during the walkover and Google Earth topography profiles (Google Earth, 2024). The landfall site level varies from sea level along the eastern border of Withow Gap Site of Special Scientific Interest (SSSI) and along the coastline from Skipsea Sands to Ulrome Sands up to 11m above ordnance datum (AOD) further inland towards the village of Skipsea. The rise in topography across the landfall is shown in photograph 10, **Annex B**.
26. The onshore ECC site elevation varies from 0m AOD to 20m AOD between Skipsea and Scarborough. As the onshore ECC progresses from Scarborough to Walkington, the elevation generally increases from 20m AOD to 75m AOD, west of Walkington. The elevation generally decreases towards Bentley and the OCS zones.
27. A railway line approximately 1km north of Arram station bisects the onshore ECC, which lies at the same level as the surrounding landscape (3m AOD). Scarborough Beck is located approximately 25m along the eastern side of the railway line (refer to photograph 11, **Annex B**) which drops in elevation to approximately 2m AOD.
28. A historical landfill site named 'Towend Pit' is located north of West End Road within the Study Area (shown on **Figure 19.2-3 (Annex A)**). It is now a park used for recreational purposes. The park generally sits topographically lower than the surrounding area indicating that it has not been fully infilled. The topographically low point of the park (5m AOD below the north of the park) has a drainage pipe towards the western side of the park (refer to photograph 12, **Annex B**). This area was dry at the time of the visit.
29. OCS Zone 4 generally decreases from 18m AOD in the south to 13m AOD in the north and from 20m AOD in the west to 13m AOD in the east.
30. OCS Zone 8 generally decreases in the centre of the site from 33m AOD to a maximum of 53m AOD from north to south (refer to photograph 8, **Annex B** which shows the extent of the elevation change). The site undulates from 38m AOD to 42m AOD from west to east as shown in photographs 14 and 15, **Annex B**.

19.2.4.2.4 Ground Cover and Vegetation

31. The landfall is mainly comprised of private agricultural land (refer to photographs 16 and 18, **Annex B**) with some recreational land use e.g. a private caravan site along the coastline adjacent to Driffeld Beach (refer to photograph 17, **Annex B**). Withow Gap SSSI/ RIGS partly overlaps with the landfall (shown on **Figure 19.2-4 (Annex A)**, refer to photograph 16, **Annex B**). Skipsea drain Local Geological Site (LGS) is located to the west of the landfall (shown on **Figure 19.2-4 (Annex A)**), where the Onshore Development Area overlaps with the B1242 and is predominantly composed of agricultural land, with surface water recorded across the southern field (refer to photograph 18, **Annex B**).
32. The onshore ECC is presently used predominantly for agricultural purposes including arable farming, livestock farming and vineyards. Multiple roads are located across the onshore ECC, associated with residential, commercial and industrial land access. Watercourses including drains, rivers, becks, dikes and sewers also cross the Onshore Development Area (refer to **Table 19.2-39**) including the River Hull which crosses approximately 720m east of Aike.
33. OCS Zone 8 comprised of agricultural fields (refer to photographs 14 and 20 **Annex B**). Boggy ground and standing water were observed in areas of low ground including heavily tracked locations (northern access road (refer to photograph 22, **Annex B**) and the southern access road (refer to photograph 21, **Annex B**).

19.2.4.2.5 Structures and Fuel Tanks

34. Above ground petroleum storage tanks are located approximately 190m north of the onshore ECC within Beverley Airfield (refer to photograph 23, **Annex B**). Additionally, an unknown circular tank feature is located in northeastern corner of OCS Zone 8 (refer to photograph 24, **Annex B**) adjacent to the most northerly access road off Coppleflat Lane (refer to photograph 21, **Annex B**). Further details of structures within the Onshore Development Area including industrial land use, energy features, fuel station entries and tanks can be found in **Table 19.2-14** and **Table 19.2-17**.

19.2.4.2.6 Electricity Substations

35. There were no electricity substations observed within the Onshore Development Area during the walkover, however, following a review of the Envirocheck data, historical and current electrical substations within the Study Area are listed in **Table 19.2-15** and **Table 19.2-18** respectively.

19.2.4.2.7 Asbestos Containing Materials

36. The age of the buildings within the Study Area would suggest asbestos containing materials may be present however, none was observed during the site walkover.

19.2.4.2.8 Signs of Contamination

37. Possible signs of contamination observed approximately 200m north of the landfall included a sheen on the water surface of the drain northeast of Withow Gap SSSI (refer to photograph 26, **Annex B**) and localised fly tipping was also observed (refer to photograph 27, **Annex B**).
38. A sheen and a brown sludgy material (possibly cut grass) and oily sheen was observed along Holderness Drain (refer to photographs 28 and 29, **Annex B**) located on the onshore ECC, perpendicular to Carr Lane. Localised fly tipping was noted within the 250m buffer zone, within Beverley Airfield located within the area outside the barn on the south side of Linleyhill Road (refer to photographs 30, 31 and 23, **Annex B**).

19.2.5 Environmental Setting

19.2.5.1 Introduction

39. Regulatory authority information relevant to the site and its surroundings has been obtained from the undertaking of an environmental database search including information provided by Envirocheck. Distances stated are approximate and are taken from the boundary of the site to the database recorded entries.
40. The following summary is generally limited to locations within the Study Area unless it is considered that installations or activities beyond that range could potentially have an impact on the Onshore Development Area or be affected by the Project activities.

19.2.5.2 Pollution Control

41. The presence (or absence) of active pollution controls related to industrial processes within the Study Area is summarised in **Table 19.2-2** with further detail of pollution controls in **Table 19.2-3**.

Table 19.2-2 Summary of Active Pollution Controls

Control Type	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Contamination Land Register Entries and Notices	No	No	No	No

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Control Type	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Integrated Pollution Controls (IPC)	No	No	No	No
Integrated Pollution Prevention Controls (IPPC)	No	No	No	Yes
Local Authority Integrated Pollution Prevention Controls	No	No	No	No
Local Authority Pollution Prevention Controls (LAPPC)	No	No	No	Yes

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Table 19.2-3 Details of Pollution Controls within the 250m Buffer Zone

Control Type	Site Name and Location	Distance and Direction from Onshore Development Area	Detail
IPPC	Raventhorpe Nursery, Bygott Road, Beverley, HU177RB	240m west. Northwest of Miles Lane	Provider: Environment Agency (EA), Northeast Region Effective date: 05/08/2022 Permit reference: We6762ab
LAPPC	Manor Farm Feeds Ltd Skipsea Lane, Dunnington, YO25 8EG	240m south. South of Manor Farm	Provider: East Riding of Yorkshire Council (ERYC), Public Protection Division Reference: 330/5.1/241016 Status: Permitted Process: PG1/12 Combustion of fuel manufactured from/or comprised of solid waste in appliances

19.2.5.3 Waste

42. The presence (or absence) of waste facilities within the Study Area is summarised in **Table 19.2-4** below with further detail in **Table 19.2-5** and **Table 19.2-6**. Identified waste facilities are illustrated on **Figure 19.2-3 (Annex A)**.

Table 19.2-4 Summary of Waste Facilities

Facility Type	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Active or recent landfill	No	No	No	No
Historical landfill (BGS records)	No	No	No	Yes
Historical Landfill (EA records)	No	Yes	Yes	Yes
Licensed Waste Management facilities (Landfill Boundaries)	No	No	No	No
Licensed Waste Management Facilities (Locations)	No	No	No	No
Registered Waste Transfer Sites	No	No	No	No
Registered Waste Treatment or Disposal Sites	No	No	No	No

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Table 19.2-5 Details of Waste Facilities within the Onshore Development Area

Facility Type	Name	Location	Detail
Onshore ECC			
Historical Landfill (EA records)	West End Farm	Located north of West End Farm	Provider: EA, Head Office Licence Holder Name: Mr P Wiles First input: 31 12 1983; Last input: 31 12 1990; Permit Reference: EAHLD34377 Permitted Waste: Deposited Waste included Inert and Industrial Waste Recorded Mineral Site: Bentley Chalk Pit (refer to Table 19.2-31)
OCS zones			
Historical Landfill (EA records)	Bentley (Manor Farm A164 Realignment)	OCS Zone 4 located east of Beverley Bypass	Provider: EA, Head Office Licence Holder Name: Mowlem First input: 31 12 1979; Last input: 31 12 1990; Permit Reference: EAHLD34377 Permitted Waste: Deposited Waste included Inert Waste

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Table 19.2-6 Details of Waste Facilities within the 250m Buffer Zone

Facility Type	Name	Location	Detail
Adjacent to the Onshore ECC			
Historical landfill (BGS records and EA Records)	Pot and Ladle Pit	Adjacent south of Walkington Heads Road	Provider: EA, Head Office and BGS Licence Holder Name: Mr P Wiles First input: 31 12 1948; Last input: 31 12 1979; Permit Reference: EAHLD05010 Permitted Waste: Deposited Waste included Inert, Industrial, Commercial and Household Waste
	Townend Pit	240m west Adjacent to West End Road	Provider: EA, Head Office and BGS Licence Holder Name: Unknown First input: 31 12 1948; Last input: 31 12 1975; Permit Reference: EAHLD05013 Permitted Waste: Deposited Waste included Industrial, Commercial and Household Waste
Historical Landfill (EA records)	Risby Wood	210m south-west. North of Dunflat Road	Provider: EA, Head Office Licence Holder Name: Unknown First input: Unknown; Last input: Unknown; Permit Reference: EAHLD05139

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Facility Type	Name	Location	Detail
			Permitted Waste: Deposited Waste included Industrial Waste

19.2.5.4 Hazardous Substances and Health and Safety

43. The presence (or absence) of sites subject to restrictions in relation to Health and Safety within the Study Area (and the 1km buffer zone specifically for COMAH) is summarised in **Table 19.2-7** below.

Table 19.2-7 Summary of Facilities Subject to Active Consents

Facility Type	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone and 1km buffer zone for COMAH
COMAH	No	No	No	No
Regulated explosive sites	No	No	No	No
Registered Radioactive Substances	No	No	No	No
Notification of Installations Handling Hazardous Substances (NIHHS)	No	No	No	No
Planning Hazardous Substance Consents	No	No	No	No
Planning Hazardous Substance Enforcements	No	No	No	No

19.2.5.5 Environmentally Sensitive Areas and Visual/ Cultural Designations

44. The presence (or absence) of environmentally sensitive areas within the Study Area is summarised in **Table 19.2-8** below with further detail in **Table 19.2-9** and **Table 19.2-10**. Identified environmentally sensitive areas are illustrated on **Figure 19.2-4 (Annex A)**.

Table 19.2-8 Summary of Environmentally Sensitive Areas, Visual and Cultural Designations

Feature or Designation	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
SSSI	Yes	Yes	No	Yes
Conserved wetland sites (Ramsar)	No	No	No	No
Special Areas of Conservation (SAC)	No	No	No	No
Special Protected Areas (SPA)	Yes	No	No	Yes
National Nature Reserves (NNR)	No	No	No	No
Local Nature Reserves (LNR)	No	No	No	No
Designated Local Wildlife Sites	No	Yes	No	Yes
Candidate Local Wildlife Sites	No	No	No	Yes
Designated ancient woodland	No	No	No	Yes
Biosphere reserves	No	No	No	No
Marine Conservation Zone (MCZ)	Yes	No	No	No
Green belt	No	No	No	No
Proposed Ramsar sites	No	No	No	No
Possible SACs (pSAC)	No	No	No	No
Potential SPAs (pSPA)	No	No	No	No
Nitrate sensitive areas	No	No	No	No
Nitrate vulnerable zones (NVZ)	Yes	Yes	Yes	Yes
SSSI impact risk zones*	Yes	Yes	Yes	Yes
World heritage sites	No	No	No	No
Areas of Outstanding Natural Beauty	No	No	No	No
National parks	No	No	No	No
Listed buildings	No	No	No	Yes

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Feature or Designation	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Conservation areas	No	No	No	Yes
Scheduled ancient monuments	No	No	No	Yes
Registered parks and gardens	No	No	No	Yes
Priority habitat inventory	Yes	Yes	No	Yes
Habitat networks	Yes	Yes	Yes	Yes
Open mosaic habitat	No	No	No	No
Limestone pavement orders	No	No	No	No
Local Geological Sites	Yes	No	No	Yes
Regionally Important Geological Sites (RIGS)	Yes	No	No	Yes

* SSSI impact risk zones are not on **Figure 19.2-4 (Annex A)** because the whole route is affected.

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Table 19.2-9 Details of Environmentally Sensitive Areas and Visual Cultural Designations within the Onshore Development Area

Feature or Designation	Name and Location	Detail
Landfall		
SSSI	Withow Gap. South of Hornsea Road	Designated as a site of geological interest.
SPA	Greater Wash	Habitats: Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins). Species of interest present: Red-throated diver; Black (common) scoter; Little gull; Sandwich tern; Common tern; Little tern. Present along the entire coastal edge of landfall.
MCZ	Holderness Inshore	Features within this area are protected and marine activities may be regulated if necessary.
NVZ	Barmston Sea Drain from Skipsea Drain to North Sea NVZ	
SSSI impact risk zones	SSSI impact risk zones are present throughout the Onshore Development Area.	
Priority Habitat Inventory	Adjacent to the shoreline	Main habitat present: maritime cliff and slope.
Habitat networks	Primary habitat: maritime Cliff and slope. Network Enhancement zone 1 and 2: habitat not specified.	
LoGS	Skipsea Drain	Landfall and onshore ECC located along Hornsea Road (B1242) and northwest of the site.
Onshore ECC		
SSSI	Leven Canal, Aike, East Riding of Yorkshire	Designated as a site of biological interest.
dLWS	Beeford – Dunnington	Conserving and enhancing biodiversity and geodiversity.

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Feature or Designation	Name and Location	Detail
cLWS	Bealey’s Beck, Lockington	
dLWS	Bealey’s Lane	
	Leman Road Corner – Moorbeck Road (a and b)	
	Raventhorpe Embankment	
NVZ	Barmston Sea Drain from Skipsea Drain to North Sea NVZ.	
	Holderness Drain from Fordyke Stream to Humber NVZ.	
	River Hull from Arram Beck to Humber NVZ.	
	Yorkshire Chalk.	
SSSI impact risk zones	SSSI impact risk zones are present throughout the Onshore Development Area.	
Priority Habitat Inventory	Main habitat present: coastal and floodplain grazing marsh. Present in areas surrounding Boundary Drain.	
	Main habitat present: deciduous woodland. Present in areas surrounding and in Dunnington Grange, north of Dunnington Lane, south of Leven South Carr Drain, Bealey’s Beck, Etton Dikes, Walkington Plantation, South of A1079.	
	Main habitat present: no main habitat but additional habitats present. Present in areas south of Heigholme drain.	
Habitat networks	Network Enhancement Zone 2: habitat not specified (located in various areas within the Onshore Development Area)	

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Feature or Designation	Name and Location	Detail
Priority Habitat Inventory	Main habitat present: Traditional orchard.	
OCS zones		
NVZ	OCS Zone 4 and 8	River Hull from Arram Beck to Humber NVZ.
	OCS Zone 4 and 8	Yorkshire Chalk.
SSSI impact risk zones	SSSI impact risk zones are present throughout the OCS zones	
Habitat networks	OCS Zone 4	Network Enhancement Zone 1: habitat not specified (located areas adjacent to A1079).

Table 19.2-10 Details of Environmentally Sensitive Areas and Visual Designations within the 250m Buffer Zone

Feature or Designation	Name and Location	Location and Distance from the Onshore Development Area	Detail
Landfall			
SSSI	Withow Gap.	Adjacent to the north	Designated as a site of geological interest.
SPA	Greater Wash.	Adjacent to the east	Habitats: Marine areas, Sea inlets; Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins). Species of interest present: Red-throated diver; Black (common) scoter; Little gull; Sandwich tern; Common tern; Little tern.

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Feature or Designation	Name and Location	Location and Distance from the Onshore Development Area	Detail
Scheduled ancient monuments	Royal Observer Corps underground monitoring post and World War II visual spotting post, 200m north of Southfield House.	200m north	List entry: 1021192; Located to the east of Hornsea Road.
Habitat networks	Adjacent to landfall.		Primary habitat: maritime Cliff and slope. Network Enhancement zone 1 and 2: habitat not specified. The priority habitats extent to the north and south of the landfall.
Priority Habitat Inventory	Adjacent to Landfall		Main habitat present: maritime cliff and slope.
Onshore ECC			
Listed Buildings (All Grade II listed)	Skipsea Grange	80m south. Adjacent to the B1242	List date: 07.17.1987 List entry: 1 083 825
NVZ	Barmston Sea Drain from Skipsea Drain to North Sea NVZ.	Adjacent to landfall and the onshore ECC	Present to the north, south and west of landfall and the onshore ECC.
RIGS/ SSSI	Skipsea Bail Mere	240m to 250m north	Dry mere with pollen record of lake sediments from the late Devensian. Present within the Landfall and onshore ECC located east and west of Hornsea Road (B1242) and northwest of the site.
SSSI	Bryan Mills Field	40m north. Adjacent to the A164	Designated as a site of biological interest.

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Feature or Designation	Name and Location	Location and Distance from the Onshore Development Area	Detail
Conservation Areas	Dunnington	210m south	Designation date: 1994 Local Planning Authority: ERYC Located north of Monor Farm Feed Limited
dLWS	Brandsburton – Frodingham Road	115m south	Conserving and enhancing biodiversity and geodiversity.
cLWS	Alderman's Gorse	70m south	
	Lambfold Wood	150m west	
Designated Ancient Woodland	Bygot Wood	80m east	Area of an ancient and semi-natural to ancient replanted woodland.
NVZ	Holderness Drain from Fordyke Stream to Humber NVZ	Adjacent to 250m	Present to the north, east, south and west of the onshore ECC.
	River Hull from Arram Beck to Humber NVZ	Adjacent to 250m	Present to the north, east, south and west of the onshore ECC.
Conservation Areas	Leven	Adjacent to 250m	Designation date: 2005 Local Planning Authority: EYRC Located around West Street, Little Leven
Listed Buildings (All Grade 11 listed)	Sunnyside	110m north. Adjacent to Aike Lane.	List date: 02.09.1987 List entry: 1 160 665

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Feature or Designation	Name and Location	Location and Distance from the Onshore Development Area	Detail
	Gravestone at Hall Garth	75m north. North of Carr Lane	List date: 02.09.1987 List entry: 1 103 457
	Causeway Bridge	210m east. Adjacent to West Street	List date: 02.09.1987 List entry: 1 1346 971
	White House Farm	165m south. Adjacent to A164	List date: 02.09.1987 List entry: 1 160 555
	Killingwold Graves	75m east. South of Beverley Road	List date: 03.26.1987 List entry: 1 161 275
	Bishop Burton Grange	10m north. Northeast of Finchcroft Lane	List date: 05.06.1952 List entry: 1 103 431
dLWS	Bryan Mills Beck	10m south and 210m north	Conserving and enhancing biodiversity and geodiversity.
	Scorborough Lane	5m south	
	Lake's Wood	5m east	
NVZ	Yorkshire Chalk	Adjacent to 250m	Present to the north, east, south and west.
Conservation Areas	Cherry Burton	200m west	Designation date: 06.2005 Local Planning Authority: East Riding of Yorkshire Located west of the B1248

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Feature or Designation	Name and Location	Location and Distance from the Onshore Development Area	Detail
	Bishop Burton	230m west	Designation date: 1974 (updated date 08.10.2008) Local Planning Authority: East Riding of Yorkshire Located on York Road (A1079)
	Walkington	240m north	Designation date: 1974 Local Planning Authority: East Riding of Yorkshire Located adjacent to Townend Road and Little Weighton Road.
dLWS	Leman Wood	Adjacent. West of B1248	Conserving and enhancing biodiversity and geodiversity
	Bygot Wood Lane, Leconfield	5m north	
	Newbald Road	5m east	
	Risby Park	Adjacent to 250m	
	Fishpond Wood, Risby Estate	Adjacent to 250m	
	Jillywood Lane	Adjacent and north	
cLWS	Drove Road	125m south	
Designated Ancient Woodland	Leman Wood	Adjacent. West of B1248.	Area of an ancient and semi-natural woodland.

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Feature or Designation	Name and Location	Location and Distance from the Onshore Development Area	Detail
	Unnamed	65m east. East of B1248.	Area of an ancient to ancient replanted woodland.
	Birkhill Wood	Adjacent to 250m	Area of an ancient and semi-natural to ancient replanted woodland.
Scheduled ancient monuments	Barf Hill Moated Site	100m northeast. North of Aike Lane	List date: 08.07.1997 List entry: 1021192; Named Moat Hill located approximately 100m north of Coal Dike.
	Moated site	150m south. 310m north east of Scorborough church	List date: Unknown List entry: 1015818; Named Moat Hill located approximately 100m north of Coal Dike.
Priority Habitat Inventory	Adjacent to 250m		Main habitat present: deciduous woodland. Various locations.
			Main habitat present: coastal and floodplain grazing marsh. Various locations.
			Main habitat present: no main habitat but additional habitats present. Various locations.
			Main habitat present: lowland fens. Various locations.
			Main habitat present: Reedbeds. Present in areas northwest of A164.

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Feature or Designation	Name and Location	Location and Distance from the Onshore Development Area	Detail
Habitat networks	Adjacent.		Network Enhancement Zone 1 and 2: habitat not specified. Habitat Restoration. Network Expansion Zone. Restorable habitat: habitat not specified. Lowland fens. Network Expansion Zone. Ancient Woodland. The priority habitats are present to the north and south of the onshore ECC in the areas surrounding Mickey Dike, west of Leven, North of Tickton, Scarborough, east of Etton and Bentley.
LoGS	Skipsea Drain	Adjacent to 250m northwest	Strategy Document: Conserving and enhancing biodiversity and geodiversity.
RIGS	Skipsea Bail Mere	Adjacent to 250m northwest	Dry mere with pollen record of lake sediments from the late Devensian.
OCS zones			
Listed Buildings (All Grade 11 listed)	Folly in Fishpond Wood	145m southeast of the OCS Zone 8 adjacent to Risby Park Folly	List date: 05.16.1998 List entry: 1 161 815
NVZ	River Hull from Arram Beck to Humber NVZ	Adjacent to 250m	Present to the north, east, south and west of the OCS zones.
	Yorkshire Chalk	Adjacent to 250m	Present to the north, east, south and west of the OCS zones.

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Feature or Designation	Name and Location	Location and Distance from the Onshore Development Area	Detail
Priority Habitat Inventory	Adjacent to 250m		Main habitat present: no main habitat but additional habitats present. Present in areas west of Zone 8.
			Main habitat present: deciduous woodland. Present in areas in and surrounding Blackdike Plantation, Yewtree Plantation, Folly Wood, Old Moor, Briarpit Plantation and Eleven Acre Plantation.
Scheduled ancient monuments	'Cellar Heads' moated site and related ridge and furrow earthworks at Risby Park, 700m northwest of Risby Park Farm	140m west of the OCS Zone 8	List date: 03.14.1997 List entry: 1015312; located approximately 300m east of Park Lane Road.
	Risby Jacobean gardens, hall and medieval settlement remains	70m west of the OCS Zone 8	List date: 12.02.1998 List entry: 1018600; located approximately 140m north of Dunflat Road.
Registered Parks and Gardens	Risby Hall	Located adjacent to the OCS Zone 8 southern boundary.	List date: 03.12.1999 List entry: 1001419; located north of Dunflat Road.
Habitat networks	Adjacent to OCS Zone 4		Network Enhancement Zone 1: habitat not specified (located areas adjacent to A1079).

19.2.5.6 Agricultural Designations

45. The presence of agricultural designations within the Study Area has been summarised in **Table 19.2-11**, with further details of agricultural designations within the Onshore Development Area provided in **Table 19.2-12**.

Table 19.2-11 Summary of Agricultural Designations

Designation Type	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Agricultural designation	Yes	Yes	Yes	Yes
Environmental stewardship schemes	Yes	Yes	Yes	Yes
Countryside stewardship schemes	Yes	Yes	Yes	Yes

Table 19.2-12 Details of Agricultural Designations within the Onshore Development Area

Designation Type	Detail
Landfall	
Agricultural designations (as illustrated on Volume 1, Chapter 22 Soils and Land Use, Figure 22-2)	Agricultural Land Classification (ALC) Grades 2 and 3 are present.
Environmental stewardship schemes (as illustrated on Volume 1, Chapter 22 Soils and Land Use, Figure 22-5)	Entry Level plus Higher Level; Reference: AG00472712; Start date: 01/10/2013; End date: 30/09/2023*. Located east of Hornsea Road.
Countryside stewardship schemes (as illustrated on Volume 1, Chapter 22 Soils and Land Use, Figure 22-5)	Middle Tier; Reference: 1269464; Start date: 01 / 01 / 2022; End date: 31/12/2026. Located east of Hornsea Road.
Onshore ECC	
Agricultural designations (as illustrated on Volume 1, Chapter 22 Soils and Land Use, Figure 22-2)	ALC Grades 2, 3 and 4 are present throughout.
Environmental stewardship schemes (as illustrated on Volume 1, Chapter 22 Soils and Land Use, Figure 22-5)	Entry Level plus Higher Level; Reference: AG00413898; Start date: 01/10/2012; End date: 30/09/2023*. Located east of Hempholme Lane, west of Frodingham Road.
	Entry Level plus Higher Level; Reference: AG00451023; Start date: 01/07/2013; End date: 30/06/2023*. Located east of Beverley and Bamston Drain, west of Holderness Drain.
	Entry Level plus Higher Level; Reference: AG00254889; Start date: 01/05/2009; End date: 30/04/2023.

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Designation Type	Detail
	Located east of Bealey's Lane, west of Bealey's Plantation.
Countryside stewardship schemes (as illustrated on Volume 1, Chapter 22 Soils and Land Use, Figure 22-5)	Middle Tier; Reference: 1256852; Start date: 01 / 01 / 2022; End date: 31/12/2026. Various locations.
OCS zones	
Agricultural designations (as illustrated on Volume 1, Chapter 22 Soils and Land Use, Figure 22-2)	ALC Grades 2 are present throughout.
Countryside stewardship schemes (as illustrated on Volume 1, Chapter 22 Soils and Land Use, Figure 22-5)	Middle Tier; Reference: 1484198; Start date: 01 / 01 / 2023; End date: 31/12/2027. Located south of Briarpit Plantation, west of Coppleflat Lane.
Environmental stewardship schemes (as illustrated on Volume 1, Chapter 22 Soils and Land Use, Figure 22-5)	Entry Level plus Higher Level; Reference: AG00304833; Start date: 01/03/2010; End date: 28/02/2023*. Located north of Folly Wood, west of Coppleflat Lane.
* The designation may still be active but it's not possible to determine from the available information.	

46. All designation types stated are located within the Study Area, however the stewardship schemes data within the Study Area is currently unavailable and therefore has not been included.

19.2.5.7 Historical Industrial Land Use

47. The presence (or absence) of historical industrial land uses, tanks, energy features (e.g. electricity substations and gas works), petrol stations, garages and military land within the Study Area has been summarised in **Table 19.2-13** with further details provided in **Table 19.2-14** and **Table 19.2-15**. The locations of potentially contaminative historical land uses are illustrated on **Figure 19.2-5 (Annex A)**.

Table 19.2-13 Summary of Historical Industrial Land Uses

Features	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Industrial land uses	Yes	Yes	Yes	Yes
Tanks	No	No	No	Yes
Energy Features	No	No	No	Yes
Military Land	No	No	No	Yes

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Table 19.2-14 Details of Historical Industrial Land Uses within the Onshore Development Area

Feature	Location	Detail	Feature Number (Annex A Figure Reference 19.2-5)
Landfall			
Industrial land use	East of Hornsea Road (B1242).	Feature: Clay bricks & tiles manufacturer; Date: 1855 - 1910	5
Onshore ECC			
Industrial land use	Located east of Dunnington Lane.	Feature: Old gravel pit; Date: 1890 - 1994.	6
	Located south-west of Hallytreeholme Road.	Feature: Old gravel pit (Recorded Mineral Site: Burshill Gravel Pit refer to Table 19.2-31); Date: 1890 - 1994.	7
	Located east of the River Hull.	Feature: Sand pit and Recorded Mineral Site: Aike Sand Pit Hall Garth Pit (refer to Table 19.2-31); Date: 1855 - 1910.	8
	Located east of the River Hull.	Feature: Gravel pit; Date: 1855 - 1891.	9
	Located north-west of the Aike Lane.	Feature: Unknown filled ground and Recorded Mineral: Site Hall Garth Pit (refer to Table 19.2-31); Date: 1890 - 1910.	10
	Located west of Miles Lane	Feature: Gravel pit and Recorded Mineral Site: Gills Charity Gravel Pit (refer to Table 19.2-31); Date: 1852 - 1972 (named old sand pit in 1911).	11
	Located adjacent to Hudson Way.	Feature Cutting; Date: 1891 - 1994.	12

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Feature	Location	Detail	Feature Number (Annex A Figure Reference 19.2-5)
	Located west of Finchcroft Lane.	Feature: Chalk pit and Recorded Mineral Site: Bishop Burton Grange (refer to Table 19.2-31); Date 1854 - 1908.	13
	West of Copplesflat Lane within Briarpit Plantation.	Feature: Clay and shale (Aulherd) pit 1854 - 1893 By 1893 the pit is covered in forested area and no longer present.	14
OCS zones			
Industrial land use	Located within OCS Zone 8.	Feature: Old chalk pit and Recorded Mineral Site: Cupola Hill Plantation (refer to Table 19.2-31). In 1965 the pit contains forested areas; Date: 1855 - 1994.	15
	Located within OCS Zone 8.	Feature: Unknown pit; Date: 1908-1947.	16
	Located within OCS Zone 8.	Feature: Old chalk pit and Recorded Mineral Site: Bentley (refer to Table 19.2-31); Date: 1854 - 1889.	17
	Located within OCS Zone 8 - east of Copplesflat Lane.	Feature: Chalk pit and Recorded Mineral Site: Bentley (refer to Table 19.2-31); Date: 1854 - 1981.	18

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Table 19.2-15 Details of Historical Industrial Land Uses within the 250m Buffer Zone

Feature	Location and Distance from Onshore Development Area	Detail	Feature Number (Annex A Figure 19.2-5)
Landfall			
Energy Features	55m west– located on Skipsea sands.	Feature: Electrical Substation Facility; Date: 1947 -1977.	19
Industrial land use	30m and 90m east – east of Southfield Lane.	Feature: Coastguard station; Date: 1909- 1952.	20
	180m south – west of North Road.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1909 - 1956.	21
Onshore ECC			
Industrial land use	100m southwest – west of Hornsea Road.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1891 - 1976.	22
	125m east – west of Bewholme Lane.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1855 - 1948.	23
	155m east – east of Gardham Lane.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1890 - 1975.	24
	150m south – west of Gardham Lane.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1890 - 1948	25

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Feature	Location and Distance from Onshore Development Area	Detail	Feature Number (Annex A Figure 19.2-5)
	170m south – west of Bewholme Lane.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1891 - 1927.	26
	95m east – west of Hornsea Road (B1242).	Feature: Skipsea Hill Sand Pit; Date: 1890 - 1910.	27
	5m north – north of Coal Dike.	Feature: Lockington Station; Date: 1852 - 1978.	28
	70m north – north of Coal Dike.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1890 - 1982.	29
	125m south – north of Ella Dike.	Feature: Unknown filled ground and Recorded Mineral Site: Parkhouse Farm Gravel Pit (refer to Table 19.2-31); Date: 1893 - 1983.	30
	180m northwest – west of Dunnington Lane.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1890 - 1995.	31
	240m south – east of Dunnington Lane.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1890 - 1976.	32
	245m south – east of Beverley Road.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1892 - 1911.	33
	100m north – south of Leven South Carr Drain.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1892 - 1909.	34
	30m south – south of Coal Dike.	Feature: Coal storage and depot; Date: 1852 - 1855.	35

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Feature	Location and Distance from Onshore Development Area	Detail	Feature Number (Annex A Figure 19.2-5)
	10m south – south of New Farm.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1890 - 1910.	36
	25m south – south of Station Road.	Feature: Old brick field and Recorded Mineral Site: Lockington Station Brick Field (refer to Table 19.2-31); Date: 1852 - 1855.	37
	Adjacent – 100m – west of Beverley Road.	Feature: Old gravel pit and Recorded Mineral Site: Four Cottage Pasture Gravel and Sand pits (refer to Table 19.2-31); Date 1852 - 1956.	38
	20m north – east of Beverley Road.	Feature: Old chalk pit and Recorded Mineral Site: Bryan Mills (refer to Table 19.2-31); Date: 1855 - 1956.	39
	115m east – south of Beverley Road.	Feature: Unknown filled ground (ponds marsh, river, stream, dock); Date: 1956 - 1970.	40
	200m south – south of Beverley Road.	Feature: quarrying of sand & clay, operation of sand and gravel; Date:1854 - 1973.	41
	30m southwest – north of Woodhouse Farm.	Feature: Old gravel pit and Recorded Mineral Site: Wood House Gravel Pit (refer to Table 19.2-31); Date: 1852 - 1994.	42
	90m east – east of Etton Dikes Road.	Feature: Old Wife Pit, Located A review of Google Earth imagery shows a covering of trees in the former pit area which appears to be topographically lower than the surrounding land suggesting it has not been infilled; Date: 1852 - 1994.	43
	180m west – west of Etton Dikes (B1248).	Feature: Unknown filled ground (pit, quarry etc); Date: 1979.	44

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Feature	Location and Distance from Onshore Development Area	Detail	Feature Number (Annex A Figure 19.2-5)
	50m south – south and adjacent to Hudson Way.	Feature: Dismantled railway, (labelled Cherry Burton station in 1910 and dismantled railway in 1969. Area currently used for residential purposes); Date: 1891 -1994.	45
	30m east – east of Miles Lane.	Feature: Chalk/ Gravel pit and Recorded Mineral Site: Gills Charity (refer to Table 19.2-31); Date:1852 - 1972.	46
	170m east – east of Miles Lane.	Feature: Chalk/ Gravel pit; Date:1852 - 1972.	47
	30m southeast – north of A1035.	Feature: Chalk pit and Recorded Mineral Site: Molescroft Gate (refer to Table 19.2-31); Date:1854 - 1892.	48
	145m east – east of Mickley Dike.	Feature: Unknown filled ground (Pond, marsh, river, stream, dock etc); Date: 1892 - 1910.	49
	60m southeast – west of Finchcroft Lane.	Feature: Chalk pit and Recorded Mineral Site: Bishop Burton Grange (refer to Table 19.2-31); Date: 1854 - 1908.	50
	190m northwest – west of Finchcroft Lane.	Feature: Old chalk pit; Date: 1855 - 1892.	51
	230m west – north of Middlehowe Road.	Feature: Old chalk pit; Date: 1891 - 1994.	144
	200m northwest – east of Dale Gate Road.	Feature: Old chalk pit; Date: 1855-1892.	52
	70m southwest – northeast of Park Lane within Walkington Plantation.	Feature: Gravel pit and Recorded Mineral Site: Green Street Pit (refer to Table 19.2-31); Date: 1854-1889.	53

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Feature	Location and Distance from Onshore Development Area	Detail	Feature Number (Annex A Figure 19.2-5)
	30m west – northeast of Park Lane within Walkington Plantation.	By 1889 the pits were covered in forested area and no longer present.	54
	80m west – north of Dunflat Road.	Feature: Sand pit; Date: 1890-1927.	56
	50m north – east of Beverley Road (A164).	Feature: Old chalk pit; Date: 1854-1889.	57
Tank	180m west – west of Beverley Road.	Feature: Tank; Date: 1976.	149
	155m south – west of the Bridlington Road (A165)	Feature: Potential tank; Date: 1976	150
OCS zones			
Industrial land use	5m west of OCS Zone 8 – north of Sodwall Plantation	Feature: Old Chalk pit; Date: 1855-1994	55
Tank	250m east of OCS Zone 4 – south of Shepherds Lane	Feature: Tank; Date: 1965-1973	151
Military Land	205m west of the OCS Zone 4 – west of Victoria Road	Feature: Military Land; Date: 1956	Military Land

19.2.5.8 Current Industrial Land Use

48. The presence (or absence) of current industrial land uses, petrol stations, electricity cables and gas pipelines within the Study Area is summarised in **Table 19.2-16** below with further detail in the subsequent **Table 19.2-17** and **Table 19.2-18**. The locations of potentially contaminative land uses are illustrated on **Figure 19.2-6 (Annex A)**.

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Table 19.2-16 Summary of Current Industrial Land Uses

Features	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Industrial land uses	No	Yes	No	Yes
Active Contemporary Trade Directory Entries	No	No	No	No
Fuel Station Entries	No	No	No	Yes
Underground Electricity cables *	No	No	No	No
Gas pipelines*	No	Yes	Yes	Yes

*As defined by the database and does not constitute a utility search.

Table 19.2-17 Details of Industrial Land Uses within the Onshore Development Area

Feature	Name	Location	Detail	Feature Number (Annex A Figure 19.2-6)
Onshore ECC				
Industrial land uses	Hempholme Water pumping station	Northeast of Barff Hill.	Date: 1978 - present.	61

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Name	Location	Detail	Feature Number (Annex A Figure 19.2-6)
	Old gravel pit	Adjacent to 5m south – West of Hempholme Lane.	Date: 1890 - present.	62
	Quarrying of sand and clay, operation of sand and gravel pits	Adjacent to 240m north – east of Barff hill.	Date: 1946 - present.	63
	Old chalk pit	Located east of Etton Dikes.	Date: 1852 - present (labelled disused in 1975).	59
		Located east of Beverley Road (A164).	Date: 1854 - present (labelled pond in 1967).	60
Gas pipelines*	Pipe name - Burton Agnes to Paull	National Grid high pressure gas pipeline running north south bisecting the onshore ECC at Catfoss Road and west of Dunnington Lane.		National Grid High Pressure Gas Pipeline
	Pipe name - Unknown	National Grid high pressure gas pipeline running north south bisecting the onshore ECC at Harrison's Drain and east of Frodingham Road.		National Grid High Pressure Gas Pipeline
Industrial land uses	Electrical features – pylon	All running parallel to the A1079; Located southwest of the A1079.		National Grid Pylons
Gas pipelines*	Pipe name - Unknown	Regional high pressure gas pipeline running southwest to northeast south of the OCS zones.		National Grid High Pressure Gas Pipeline

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Name	Location	Detail	Feature Number (Annex A Figure 19.2-6)
OCS zones				
Industrial land uses	Cutting	OSC Zone 4 located along Beverley Bypass (A1079).	Date: 1967 to present day.	64
Gas pipelines*	Pipe name- Easington to Asselby	Onshore ECC and OCS Zone 4.	National Grid high pressure gas pipeline running northeast to west.	National Grid High Pressure Gas Pipeline
Industrial land uses	Electrical features – pylon	Southwest of OCS Zone 4.	One record –running parallel to the A1079; Located southwest of the A1079.	National Grid High Pressure Gas Pipeline

Table 19.2-18 Details of Current Industrial Land Uses within the 250m Buffer Zone

Feature	Site Name and, or Location	Location and Distance from Onshore Development Area	Detail	Feature Number (Annex A Figure 19.2-6)
Onshore ECC				
Industrial land use	Gas valve compound or Gas monitoring facility	95m south – south of Dunnington Lane.	Date: 1976- present day.	65

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Site Name and, or Location	Location and Distance from Onshore Development Area	Detail	Feature Number (Annex A Figure 19.2-6)
	Hempholme Water pumping station	Adjacent – northeast of Barff Hill.	Date: 1978 to present.	66
	Potential pits, ponds, chalk pits, old gravel pits	30m to 130m – east and west of Hempholme Lane.	Date: 1854- present.	67
	Quarrying of sand and clay, operation of sand and gravel pits	240m east – north of West End.	Date: 1953- present.	68
	Electrical features – pylon	Adjacent – south of Walkington Heads.	National grid tower.	National Grid Pylons
Fuel Station Entries	Mfg Beverley West Service Station Killingwood Graves Roundabout, Beverley	140m east – between the A1035 and York Road adjacent to Killingworld graves Roundabout.	Status: Open Provider: Catalist Ltd, Experian Fuel Brand: Bp Premises: Petrol Station	147
OCS zones				
Industrial land use	Cellar Head	150m west of OCS Zone 8- southwest of Sodwall Plantation	Date: 1855-present	69
	Electrical features – pylon.	Adjacent to the onshore ECC and OCS Zone 4 – south of the A1079	National grid tower	National Grid Pylons

19.2.6 Historical Land Use

19.2.6.1 Introduction

49. The historical development of the Study Area has been assessed using information available from historical Ordnance Survey (OS) maps within the Envirocheck data.
50. In the context of the summary of historical development of the surrounding area, the descriptions are limited to the Study Area, unless specified in the following section.

19.2.6.2 Site History (within the Onshore Development Area)

51. **Table 19.2-19** below provides a detailed account of the review of available OS mapping coverage and historical aerial imagery for the site dating back to 1852. The identified features below are illustrated on **Figure 19.2-5 (Annex A)**.

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Table 19.2-19 Summary of Historical Data within the Onshore Development Area

Feature	Map Years	Notes	Feature Number (Annex A Figure Reference 19.2-5)
Landfall			
Agricultural Land	1890 - present.	Agricultural land is present throughout the Landfall.	N/A
Potential pit, pond, infilled land	1890 - 1976	Adjacent to the southern border.	70
	1890 - 1993	Named Folly Hole located in the centre of the Landfall.	71
Onshore ECC			
Agricultural Land and Farm Buildings	1852 - present.	Farm buildings and associated agricultural land is located throughout the onshore ECC.	Current farm buildings within the Study Area are shown on Figure 19.2-6 (Annex A) .
Potential pits, ponds, chalk pits, old gravel pits	1889 - 1981.	Located east of Bewholme Lane.	72
	1891 - 1948.	Located east of Dunnington Lane.	73
	1892 - 1976.	Located east of Beverley Road ((A165).	74
	1855 - 1891.	Located east of the River Hull.	75
	1854 - 1994.	Recorded Mineral Site: Bentley Chalk Pit (refer to Table 19.2-31). Located north of Coppleflat Lane.	76
	1994 - unknown.	Located east of Bealey's Lane.	77

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Map Years	Notes	Feature Number (Annex A Figure Reference 19.2-5)
	1994 - unknown.	Located east of Bealey's Lane.	78
	1852 - present.	Located east of Etton Dikes. Labelled pond in 1975. A review of Google Earth imagery shows a covering of trees in the former pit area which appears to be topographically lower than the surrounding land suggesting it has not been infilled.	79
	1852 - present.	Located east of Etton Dikes.	80
	1910 - present.	Located south of Rootas Lane. Labelled water in 1969. A review of Google Earth imagery shows a covering of trees in the former water area suggesting it has not been infilled.	81
	1890 - 1994.	Located southeast of Copleflat Lane.	83
	1855 - 1972.	Located west of A1035.	84
OCS zones			
Agricultural Land and Farm Buildings	1852 - present.	Farm buildings and associated agricultural land is located throughout the OCZ Zones.	Current farm buildings within the Study Area are shown on Figure 19.2-6 (Annex A) .
Potential pits, ponds, chalk pits, old gravel pits	1893 - 1977.	Located within the OCS Zone 8. A review of Google Earth imagery shows little evidence of the pit suggesting it has been infilled.	86
	1893 - most recent mapping.		87

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Map Years	Notes	Feature Number (Annex A Figure Reference 19.2-5)
	1893 - most recent mapping.		88
	1927 - 1992.	Located within the OCS Zone 8.	89
	1893 - most recent mapping.	Located within the OCS Zone 8. A review of Google Earth imagery shows little evidence of the pit suggesting it has been infilled.	90
	1855 - 1964.	Located within the OCS Zone 4.	91
	1889 - 1981.		92
	1855 - 1973.		93

19.2.6.3 Surrounding History (within the 250m buffer zone)

52. There are a number of potentially contaminative land uses within the 250m buffer zone (unless stated otherwise); the main ones are listed in **Table 19.2-20** below.

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Table 19.2-20 Summary of Historical Data within the 250m Buffer Zone

Feature	Map Years	Distance from the Onshore Development Area	Notes	Feature Number (Annex A Figure 19.2-5)
Agricultural Land and farm buildings	1890 – present.	Farm buildings and associated agricultural land is present surrounding the Onshore Development Area.	Notably, poultry houses are located 45m east of the onshore ECC.	As shown on labels shown on Figure 19.2-5 (Annex A)
Onshore ECC				
Potential pits, ponds, chalk pits, old gravel pits	1891 - 1975	60m north.	Located west of Bewholme Lane.	95
	1890 - 1975	Adjacent to 10m north.		96
	1890 - 1975	85m south.		97
	1890 - 1975	25m south.	Located south of Gardham Lane.	98
	1890 - 1976	40m north.	Located north of Dunnington Lane.	99
	1890 - present	100m south.		100

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Map Years	Distance from the Onshore Development Area	Notes	Feature Number (Annex A Figure 19.2-5)
	1892 - 1979	45m northwest.	Located south of Mickley Dike.	101
	1855 - 1978	95m north.	Recorded Mineral Site: Hall Garth Clay pit (refer to Table 19.2-31) Located east of Heigholme Lane. Labelled disused in 1976.	102
	1891 - 1976	25m north.	Located east of Heigholme Lane.	103
	1855 - Present	100m north.	Located north of Carr Lane.	104
	1891 - present	5m south.	Located south of Carr Lane. A review of Google Earth imagery shows the former pit area possibly topographically lower than the surrounding land suggesting it has not been infilled.	105
	1889 - 1976	45m north.	Located north of Carr Lane.	106
	1889 - 1976	40m north.		107
	1892 - 1995	80m south.	Located east of the River Hull.	108

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Map Years	Distance from the Onshore Development Area	Notes	Feature Number (Annex A Figure 19.2-5)
	1891 - present	Adjacent to 10m.	Located north of Hudson Way. A review of Google Earth imagery shows the former pit area possibly topographically lower than the surrounding land suggesting it has not been infilled.	109
Potential pits, ponds, chalk pits, old gravel pits	1852 - 1978	145m north.	Located north of Station Road.	112
	1891 - present	10m north.	Located east of Etton Dikes Road. A review of Google Earth imagery shows a covering of trees in the former pit area which appears to be topographically lower than the surrounding land suggesting it has not been infilled.	114
	1852 - present	130m west.	Recorded Mineral Site: Etton (refer to Table 19.2-31). Located east of Etton Dikes Road. A review of Google Earth imagery shows a covering of trees in the former pit area which appears to be topographically lower than the surrounding land suggesting it has not been infilled.	115

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Map Years	Distance from the Onshore Development Area	Notes	Feature Number (Annex A Figure 19.2-5)
Clay bricks & tiles manufacturer	1852 - 1892	150m west.	Recorded Mineral Site: Rootas Brickfield (refer to Table 19.2-31). Located south of Rootas Lane.	116
Potential pits, ponds, chalk pits, old gravel pits	1893 - present	150m east.	Recorded Mineral Site: Dog Kennel Farm (refer to Table 19.2-31) Located east of A1035	117
	1855 - 1972	5m west.	Located west of A1035.	118
	1855 - present	65m east.	Located west of A1035. A review of Google Earth imagery shows a partial pit area which appears to be topographically lower than the surrounding land suggesting it may've not been infilled.	119
	1910 - present	Adjacent to 50m north.	Located south of Rootas Lane. Labelled water in 1969. A review of Google Earth imagery shows a covering of trees in the former water area suggesting it has not been infilled.	81
	1893 - 1994	5m southwest.	Located west of the A1035.	121
	1893 - 1994	1km west.		122
	1891 - 1950	75m northeast.		123

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Map Years	Distance from the Onshore Development Area	Notes	Feature Number (Annex A Figure 19.2-5)
	1891 - 1972	20m west.	Located east of Finchcroft Lane.	124
	1891 - 1972	15m east.	Located east of Finchcroft Lane.	125
	1854 - 1994	Adjacent to 50m.	Recorded Mineral Site: Pot and Ladle Pit (refer to Table 19.2-31). Located south of Finchcroft Lane. Labelled disused in 1972.	126
	1891 - 1994	25m north.	Located north of Middlehowe Road.	127
	1891 - 1928	50m east.	Located south of Middlehowe Road. A review of Google Earth imagery shows a covering of trees in the former pit area suggesting it has not been infilled.	128
	1891 - 1994	5m southeast.	Located southeast of Little Weighton Road.	129
	1893 - 1889	65m east.	Located south of Beverley Bypass (A1079)	130
	1890 - 1956	80m west.	Located north of Dunflat Road	131

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Map Years	Distance from the Onshore Development Area	Notes	Feature Number (Annex A Figure 19.2-5)
Old fishing pond	1855 - 1970	80m north.	Located west of Coppleflat Lane. A review of Google Earth imagery shows a covering of trees in the former pond area which appears to be topographically lower than the surrounding land suggesting it has not been infilled.	132
Potential pits, ponds, chalk pits, old gravel pits	1890 - 1994	20m southwest.	Located southeast of Coppleflat Lane. A review of Google Earth imagery shows a covering of trees in the former pit area which appears to be topographically lower than the surrounding land suggesting it has not been infilled.	133
	1890 - present	65m east.	Located south of A1079. A review of Google Earth imagery shows a pond in the former pit area suggesting it has not been infilled.	134

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Feature	Map Years	Distance from the Onshore Development Area	Notes	Feature Number (Annex A Figure 19.2-5)
	1855 - 1995	125m south.	Located east of Beverley Road. A review of Google Earth imagery shows a covering of trees in the former pit area which appears to be topographically lower than the surrounding land suggesting it has not been infilled.	135
	1855 - 1970	175m south.	Located south of the proposed Birkhill Substation Location.	136
OCS zones				
Potential pits, ponds, chalk pits, old gravel pits	1889 - 1947	60m south of the OCS Zone 4.	Located southwest of Beverley Bypass.	138
	1893 - 1992	70m east of the OCS Zone 4.	Located south of A164.	139
	1893 - 1992	30m east of the OCS Zone 4.		140
	1893 - 1965	130m east of the OCS Zone 4.	Located southwest of Shepards Lane.	141
	1893 - 1965	200m east of the OCS Zone 4.		142
	1855 - 1992	180m east of the OCS Zone 4.	Located southwest of Shepards Lane. A review of Google Earth imagery shows a pond in the former pit area suggesting it has not been infilled.	143

53. There are multiple residential houses and commercial buildings surrounding the Onshore Development Area, however these are not considered to pose a contamination risk to site. The farms and associated farm buildings within the Study Area are shown on **Figure 19.2-6 (Annex A)**.
54. There are a number of wells and springs within the 250m buffer zone; the main ones are listed in **Table 19.2-21**.

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Table 19.2-21 Summary of Wells and Springs within the 250m Buffer Zone

Feature	Map Years	Distance from the Onshore Development Area	Notes	Feature Number (Annex A Figure 19.2-4)
Onshore ECC				
Well	1852 - 1978	170m north.	Located north of Station Road.	110
Spring	1852 - 1982	200m north.		111
Springs	1852 - 1977	160m north.	Located in and around Scarborough.	113
Springs	1852 - 1977	200m north.		145

19.2.6.4 Unexploded Ordnance

55. An Unexploded Bomb (UXB) risk map has been obtained from Zetica and is presented as **Annex C**. The UXB map identifies the Onshore Development Area being within an area deemed as at a low risk of encountering UXB.

19.2.7 Geology, Soil Background, Groundwater, Hydrology and Radon

19.2.7.1 Geology

19.2.7.1.1 Geological Conditions

56. Information on geological conditions below the Onshore Development Area has been collated from the Envirocheck data and BGS datasets, including the 1:50,000 scale geological mapping. Geological conditions are summarised in **Table 19.2-22** and illustrated on **Figure 19.2-7** and **Figure 19.2-8 (Annex A)**. It must be noted, however, that the proportions of each stratum may be variable along the length of the Onshore Development Area. Geological conditions within the Onshore Development Area, including Source Protection Zones (discussed in **Section 19.2.7.3.1**), are illustrated on **Figure 19.2-11 (Annex A)**.

Table 19.2-22 Anticipated Geology

Stratum	Unit	Description
Superficial deposits (illustrated on Figure 19.2-8 (Annex A))	Glacial Till	Located throughout landfall, the onshore ECC and OCS zones.
	Alluvium	Isolated areas of Alluvium within landfall, the onshore ECC and OCS zones.
	Lacustrine Deposits	Isolated areas within the landfall and the onshore ECC.
	Glaciofluvial Deposits	Isolated areas of Glaciofluvial Deposits within the onshore ECC.
	Sand and gravel (of uncertain age and origin)	Isolated areas within the onshore ECC and OCS zones.
	Head	Isolated areas within the onshore ECC and OCS zones.
Bedrock (illustrated on Figure 19.2-7 (Annex A))	Rowe Chalk Formation	Located throughout landfall and within the initial section of the onshore ECC east of Dunnington.
	Flamborough Chalk Formation	Located throughout the onshore ECC (west of Dunnington) and OCS zones. Recorded on BGS geological cross sections as underlying the Rowe Chalk Formation.

Stratum	Unit	Description
	Burnham Chalk Formation	Located along the southern edge of the OCS zones. Recorded on BGS geological cross sections as underlying the Flamborough Chalk Formation.

57. BGS logs have been referred to for information only. The presence of BGS logs within the Onshore Development Area and within the 100m buffer zone have been summarised in **Table 19.2-23** below with further detail of the identified strata in **Table 19.2-24** and **Table 19.2-25**. Copies of the BGS borehole logs are presented as **Annex D** and borehole locations are illustrated on **Figure 19.2-9 (Annex A)**. All coordinates are to National Grid Eastings and Northings.

Table 19.2-23 Summary of BGS Borehole Logs

Feature	Landfall	Onshore ECC	OCS zones	Within the 100m buffer zone
Presence of BGS borehole logs	No	Yes	Yes	Yes

Table 19.2-24 Details of BGS Borehole Logs within the Onshore Development Area

Reference Number (Hole Type and Depth) National Grid Coordinates	Details
TA04NE35 (borehole, 39.6m bgl) 509500E, 449460N	Topsoil: to 0.18m bgl; Sand and Gravel: to 4.5m bgl; hard Clay: to 10.7m bgl; soft Clay: to 15.0m bgl; chalk Gravel: to 18.3m bgl; Gravel: to 19.8m bgl; broken Chalk: to 21.3m bgl; Chalk: to 39.6m bgl.
TA04NE37 (borehole, 11.2m bgl) 505500E, 445600N (west of the River Hull)	Topsoil: to 0.15m bgl; sandy Clay: to 0.9m bgl; silty Sand and Clay: to 3.05m bgl; boulder Clay: to 7.62m bgl; laminated Clay: to 8.23m bgl; boulder Clay: to 9.75m bgl; Chalk: to 11.2m bgl;
TA04NE67 (borehole, 6.1m bgl) 505100E, 445700N (west of the River Hull)	Clay: to 0.60m bgl; strong Clay: to 3.8m bgl; Clay with gravel: to 6.1m bgl.

Table 19.2-25 Details of BGS Borehole Logs within the 100m buffer zone

Reference Number (Hole Type and Depth) Coordinates	Distance and Direction from Onshore Development Area	Details
TA04NE79 (borehole, 45.0m bgl) 505462E, 446069N	Adjacent to the Onshore Cable Corridor east of the River Hull.	Topsoil: to 0.4m bgl; Clay: to 17.80m bgl; Chalk: to 45m bgl.
TA04NW2 (borehole, 24.4m bgl) 504830E, 445980N	5m west of the onshore ECC west of Aike Lane.	Clay: to 1.8m bgl; chalky Gravel: to 8.23m bgl; Chalk: to 24.4m bgl.
TA04NW4_B TA04NW18 (borehole, 26.5m bgl) 503340E, 446970N	10m north of the onshore ECC north of Aike Lane.	Topsoil: 0.3m bgl; Gravel: to 4.3m bgl; Clay: to 8.5m bgl; Gravel: 12.2m bgl; Chalk: to 26.5m bgl.
TA04NW24 TA04NW6 (borehole, 23.5m bgl) 501440E, 446700N	30m west of onshore ECC west of Beverley Road (A164).	Topsoil: 0.3m bgl; Gravel: to 4.3m bgl; Clay: to 8.5m bgl; Gravel: to 12m bgl; Chalk: to 23.5m bgl.
TA04NW14 (borehole, 5.5m bgl) 503080E, 445574N	20m north of the onshore ECC west of Scarborough Beck.	Topsoil: 0.2m bgl; soft silty Clay: 0.9m bgl; stiff red Clay; soft sandy gravelly Clay: to 1.5m bgl; firm boulder Clay: to 5.5m bgl; Chalk: to base of borehole.
TA04NW13 (borehole, 9.3m bgl) 503003E, 445985N	5m north of the Onshore Cable Corridor on Scarborough Lane.	Topsoil: 0.2m bgl; sandy Clay: to 2.3m bgl; boulder Clay: 7.0m bgl; soft silty Clay with chalk gravel: to 8.84m bgl; Chalk: 9.3m bgl.
SE93NE9 (borehole, 71.0m bgl) 499560E, 439260N	80m north of the onshore ECC. East of Finchcroft Lane.	Fill: to 0.3m bgl; Clay: to 2.1m bgl; soft sandy Clay: to 3.6m bgl; Clay: to 5.5m bgl; soft Chalk: to 6.3m bgl; Chalk: to 71.0m bgl.
TA04NW26 TA04NW11A (borehole, 52.7m bgl) 504960E, 445760N	25m north of the onshore ECC adjacent to Aike Lane	Topsoil: to 0.3m bgl; sandy Clay: to 1.6m bgl; blue artificially induced alluvium (warp): to 1.68m bgl; stiff Silt: to 2.3m bgl; boulder Clay: to 7.3m bgl; blue Marl: to 7.92m bgl; laminated boulder Clay: to 8.8m bgl; Marl with band of boulders: to 10.4m bgl; boulder Clay: to 12.2m bgl; sandy Marl: to 13.1 m bgl; chalk Marl: to 12.9m bgl; putty Chalk: to 15.3m bgl; harder Chalk: to 17.1m bgl; chalk Gravel: to 27.4m bgl; Chalk: to 52.7m bgl.

Reference Number (Hole Type and Depth) Coordinates	Distance and Direction from Onshore Development Area	Details
TA04NW27 TA04NW11 B (borehole, 54.9m bgl) 504970E, 445750N	30m north of the onshore ECC adjacent to Aike Lane	Sandy clay: to 1.8m bgl; boulder Clay: to 7.3m bgl; Clay and Marl: to 12.2m bgl; sandy Marl: to 13.1m bgl; chalk Marl and putty Chalk: to 15.24m bgl; harder putty Chalk: to 17.1m bgl; gravel Chalk: to 18.9m bgl; soft Chalk: 30.5m bgl; firm Chalk: to 54.9m bgl.
TA03NW3 TA03NW150 TA03NW177 (borehole, 33.5m bgl) 503619E, 435653N	20m northeast of the onshore ECC around Popular Farm.	Topsoil: 0.6m bgl; Clay: to 6.7m bgl; boulder Clay: to 10.7m bgl; Chalk: to 33.5m bgl.

58. Additional boreholes are located on and within 100m of the Onshore Development Area, however the logs are marked as confidential or are not presently available online and so cannot be viewed (as of 2nd December 2024).
59. The potential ground stability hazards within the Onshore Development Area, as obtained from the environmental database have been summarised in **Table 19.2-26** below.

Table 19.2-26 Ground Stability Hazards

Ground Stability Hazard	Risk		
	Landfall	Onshore ECC	OCS zones
Potential for Collapsible Ground Stability Hazard	No Hazard to Very Low*	No Hazard to Very Low	No Hazard to Very Low
Potential for Compressible Ground Stability Hazard	No Hazard to Moderate	No Hazard to Moderate	No Hazard to Moderate
Potential for Ground Dissolution Ground Stability Hazard	No Hazard to Very Low	No Hazard to Very Low	No Hazard to Very Low
Potential for Landslide Ground Stability Hazard	Very Low to Moderate	No Hazard to Low	No Hazard to Very Low

*Hornsea Road end collapsed along the cliff face (refer to photographs 1 and 2 in **Annex B**)

60. Structural geological features have been identified within the Study Area, as obtained from the BGS data sets and summarised in
61. **Table 19.2-27** with further details provided in **Table 19.2-28**. The feature is illustrated on **Figure 19.2-4 (Annex A)**.

Table 19.2-27 Summary of Structural Geological Features

Features	Landfall	Onshore ECC	OCS zones	Within 250m buffer zone
Linear Features	No	No	No	Yes

Table 19.2-28 Details of Structural Features within the Onshore Development Area and the 250m Buffer Zone

Feature	Location	Details
Linear Feature	110m east of the Landfall	<p>Details: Back-feature marking former coastline.</p> <p>North south orientation.</p> <p>A review of geological maps indicates that the linear feature is a single continuous feature of Ipswichian age. This feature extends to the north and south of the Onshore Development Area.</p>

19.2.7.1.2 Mining and Mineral Extraction

62. The Study Area is not located in an area which may be affected by coal mining.
63. The presence (or absence) of mining, ground workings and natural cavities within the Study Area has been summarised in **Table 19.2-29** below with further detail in **Table 19.2-30** and **Table 19.2-31**. The locations of the Mineral Safeguarding Areas (MSA) are illustrated on **Figure 19.2-10 (Annex A)**. The Recorded Mineral Sites are illustrated on **Figure 19.2-5 (Annex A)**.

Table 19.2-29 Summary of Ground Workings and Natural Cavities

Features	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Natural cavities	No	No	No	No
Surface ground workings	Yes	Yes	Yes	Yes

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Features	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Underground workings	No	No	No	No
Recorded Minerals Sites (Surface Workings)	No	Yes	Yes	Yes
Non-coal mining activities	No	No	No	No
Mining activities	No	No	No	No
Coal Mining	No	No	No	No
Brine areas	No	No	No	No
Gypsum areas	No	No	No	No
Tin mining	No	No	No	No
Clay mining	No	No	No	No
MSA	Yes	Yes	Yes	Yes

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Table 19.2-30 Details of Features and Cavities within the Onshore Development Area

Feature	Name	Location	Detail
Surface ground workings (all locations)	For further details of onsite surface ground workings, including pits, ponds and cuttings, please see Table 19.2-14 , Table 19.2-17 and Table 19.2-19 .		
Onshore ECC			
Mineral Safeguarding Areas	Mineral Safeguarding Areas are illustrated on Figure 19.2-10 (Annex A) are located in isolated areas throughout the Onshore Development Area including Ulrome, Skipsea, Burshill, Scarborough, Bishop Burton and Beverley.		
Recorded Minerals Sites (Surface Workings)	Hempholme Bridge Gravel Pit	Hempholme, Driffield, East Riding of Yorkshire. Located to the northeast of Hempholme Lane.	Commodity: Sand and gravel; Status: Ceased
	Burshill Gravel Pit	Burshill, Brandesburton, Driffield, East Riding of Yorkshire. Located to the west of Hempholme Lane.	Commodity: Sand and gravel; Status: Ceased
	Sand Hill Sand Pit	Aike, Driffield, East Riding of Yorkshire. Located to the east of River Hull.	Commodity: Sand; Status: Ceased
	Aikedale Sand Pit	Aike, Beverley, East Riding of Yorkshire. Located to the east of River Hull.	Commodity: Sand; Status: Ceased
OCS zones			

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Feature	Name	Location	Detail
Recorded Minerals Sites (Surface Workings)	Cupola Hill Plantation	Risby, Bentley, Cottingham, East Riding of Yorkshire. Located within OCS Zone 8	Commodity: Chalk; Status: Ceased
	Bentley	Bentley, Beverley, East Riding of Yorkshire. Located within OCS Zone 8	Commodity: Chalk; Status: Ceased

Table 19.2-31 Details of Features and Cavities within the 250m Buffer Zone

Feature	Name	Location	Detail
Surface ground workings	For further details of surface ground workings surrounding the site, including pits, ponds, and brick works, please see Table 19.2-15,Table 19.2-18 and Table 19.2-20 .		
Landfall			
Recorded Minerals Sites (Surface Workings)	Skipsea Brick Works	40m north - east of B1242	Commodity: Common Clay and Shale, Status: Ceased
Onshore ECC			
Recorded Minerals Sites (Surface Workings)	Skipsea Hill Sand Pit	90m south	Commodity: Sand, Status: Ceased
	Burshill Gravel Pit	Located adjacent to 220m. East and west of Hempholme Lane	Commodity: Sand and gravel, Status: Ceased
	Hall Garth Clay pit	200m northeast. East of Heigholme Lane	Commodity: Common Clay and Shale, Status: Ceased

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Feature	Name	Location	Detail
	Hall Garth Pit	85m north. North of Carr Lane	Commodity: Sand and gravel, Status: Ceased
	Waterloo Bridge Sand pit	85m south. North of Leven Canal	Commodity: Sand, Status: Ceased
	Lockington Station Brick Field	85m south. South of Station Road	Commodity: Common Clay and Shale, Status: Ceased
	Lockington Gravel pit	130m west. West of Beverley Road	Commodity: Sand and gravel, Status: Ceased
	Four Cottage Pasture Gravel and Sand pits	From 30m to 105m west. West of Beverley Road	Commodity: Sand and gravel, Status: Ceased
	Park Farm Gravel pit	105m to 1015m south. North of Ella Dike	Commodity: Sand and gravel, Status: Ceased
	Bryan Mills	30m north. East of Beverley Road (A164)	Commodity: Chalk, Status: Ceased
	Wood House Gravel Pit	30m southwest. North of Woodhouse Farm	Commodity: Sand and gravel, Status: Ceased
	Etton	5m west. East of Etton Dikes	Commodity: Chalk, Status: Ceased
	Etton	160m to 250m west. West of Etton Dikes	Commodity: Chalk, Status: Ceased
	Rootas Brickfield	175m west. West of Malton Road	Commodity: Common Clay and Shale, Status: Ceased
	Gills Charity Gravel pit	5m to 230m north. North of Hudson way	Commodity: Sand and gravel, Status: Ceased

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Feature	Name	Location	Detail
	Gills Charity	25m east. North of Hudson way	Commodity: Chalk, Status: Ceased
	Molescroft Gate	10m south. North of A1035	Commodity: Chalk, Status: Ceased
	Dog kennel Farm	165m southeast. East of A1035	Commodity: Chalk, Status: Ceased
	Bishop Burton Grange	185m-210m northwest. West of Finchcroft Lane	Commodity: Chalk, Status: Ceased
	Bishop Burton Grange	10m - 55m southeast. West of Finchcroft Lane	Commodity: Chalk, Status: Ceased
	Pot and Ladle Pit	10m south. South of Walkington Heads	Commodity: Chalk, Status: Ceased
	Dale Gate	205m northwest. North of Walkington Heads	Commodity: Chalk, Status: Ceased
	Walkington	135m west. South of The Avenue	Commodity: Chalk, Status: Ceased
	Green Street Pit	10m west. East of Park Lane	Commodity: Sand and gravel, Status: Ceased
	Aulherd Pit	10m north. South of Coppleflat Lane	Commodity: Common Clay and Shale, Status: Ceased
	Cupola Hill Plantation	10m west. North of Sodwall Plantation	Commodity: Chalk, Status: Ceased
	Fishpond Wood Sand Pit	85m west. North of Dunflat Road	Commodity: Sand, Status: Ceased
	Bentley Chalk Pit	45m north. North of Coppleflat Lane	Commodity: Chalk, Status: Ceased

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Feature	Name	Location	Detail
	Bentley Moor Wood	15m to 65m north. East of Beverley Road (A164)	Commodity: Chalk, Status: Ceased
Mineral Safeguarding Areas	N/A	Adjacent to 250m	Isolated areas of Mineral Safeguarding Areas are located within the Study Area shown on Figure 19.2-10 (Annex A) .
OCS zones			
Recorded Minerals Sites (Surface Workings)	Old Hall Gravel Pit	135m east of OCS Zone 4	Commodity: Sand and gravel, Status: Ceased

19.2.7.2 Groundwater

19.2.7.2.1 Hydrogeology and Ground Vulnerability

64. Hydrogeological information for land within the Onshore Development Area boundary has been collated from the Environmental Database GIS data, BGS hydrogeological maps and DEFRA MAGIC map application. Superficial and bedrock strata are classified by the Environment Agency according to their resource value and vulnerability as shown in **Table 19.2-32** and illustrated on **Volume 1, Chapter 21 Water Resources and Flood Risk, Figure 21-4**.

Table 19.2-32 Environmental Agency Groundwater Classification

Stratum	Unit	Class	Groundwater Vulnerability
Superficial deposits (illustrated on Figure 19.2-8 (Annex A))	Glacial Till	Secondary Undifferentiated Aquifer	Medium
	Alluvium	Secondary A Aquifer	High
	Lacustrine Deposits	Secondary B Aquifer	High
	Glaciofluvial Deposits	Secondary A Aquifer	High
	Sand and gravel (of uncertain age and origin)	Secondary A Aquifer	Medium
	Head	Secondary Undifferentiated Aquifer	Medium
Bedrock (illustrated on Figure 19.2-7 (Annex A))	Rowe Chalk Formation	Principal Aquifer	Low to high
	Flamborough Chalk Formation		Low to high
	Burnham Chalk Formation		Low to high

19.2.7.3 Active Groundwater Abstractions

65. The presence (or absence) of active groundwater abstraction wells at or within 1km buffer zone of the Onshore Development Area has been summarised in **Table 19.2-33** below with further detail in **Table 19.2-34** and illustrated on **Figure 19.2-11 (Annex A)**.

Table 19.2-33 Summary of Groundwater Abstraction Wells

Abstraction Type	Regulator	Landfall	Onshore ECC	OCS zones	Within the 1km buffer zone
Domestic Potable	East Riding of Yorkshire Council	No	No	No	Yes
Public Potable	EA	No	No	No	Yes
Abstraction wells related to farming, irrigation and commercial usage i.e. not potable.	EA	No	No	No	Yes

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Table 19.2-34 Details of Active Abstraction Wells (boreholes) within the 1km Buffer Zone

Licence Number	Location and Distance from Onshore Development Area	Details	Potable Abstraction	Feature Number if not the Licence Number (Figure 19.2-11 (Annex A))
Onshore ECC				
2/26/32/154	Adjacent	Details: General agricultural, domestic. Source: Chalk; Name: Hotham Family Trust; Coordinates: 503600 446100.	Yes	N/A
Not applicable	Scorborough YO25 9BB – 5m north	Details: Single dwelling domestic abstraction. Coordinates: 502989 445988	Yes	1
Not applicable	Cottingham HU16 5SA - 5m west. Adjacent to the proposed Birkhill Substation area.	Details: Single dwelling domestic abstraction. Coordinates: 503612 435662	Yes	2
NE/026/0032/021	30m - 380m northwest	Details: Spray irrigation-direct, general agriculture. Name: W Lee & Co; Coordinates: 508620 449320; 508720 448880	No	N/A

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Licence Number	Location and Distance from Onshore Development Area	Details	Potable Abstraction	Feature Number if not the Licence Number (Figure 19.2-11 (Annex A))
NE/026/0032/074	Minimum of 50m north	Details: Spray irrigation-direct, general agriculture. Name: Albanwise Farming Ltd; Coordinates: 508011 444263; 508425 444263; 508425 444044; 508011 444044.	No	N/A
2/26/ 32/303	55m southeast	Details: Spray irrigation-direct, general agriculture. Source: Chalk; Name: J S R Farms Ltd; Coordinates: 500560 444810.	No	N/A
Not applicable	Cherry Burton HU17 7LU - 100m west	Details: Unknown abstraction, status unknown. Coordinates: 499784 442197	Yes*	3
NE/026/0032/021	150m (minimum) south	Details: Spray irrigation – direct; general agricultural. name: W Lee & Co; Coordinates: 509790 448560	No	N/A
Not applicable	Scorborough YO25 9BB – 230m north	Details: Commercial abstraction.	No	4

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Licence Number	Location and Distance from Onshore Development Area	Details	Potable Abstraction	Feature Number if not the Licence Number (Figure 19.2-11 (Annex A))
		Coordinates: 502552 446061		
Not applicable	Lockington YO25 9AY – 255m south and 405m north	Details: Commercial abstraction. Source Borehole; Coordinates: 501543 446355	No	5
Not applicable	North Frodingham YO25 8LR – 295m north	Details: Single dwelling domestic abstraction. Source: Borehole; Coordinates: 510282 450702	Yes	6
2/26/32/122	380m east	Details: Spray irrigation – direct; horticulture and nurseries. Source: Chalk; Name: Raventhorpe Nursery Ltd; Coordinates: 499891 443451.	No	N/A
No2/26/32/324	445m north	Details: General agricultural, domestic. Source: Chalk; Name: J C G Bloom & Son; Coordinates: 503680 446020.	Yes	N/A

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Licence Number	Location and Distance from Onshore Development Area	Details	Potable Abstraction	Feature Number if not the Licence Number (Figure 19.2-11 (Annex A))
NE/026/0032/062	460m east	Details: General use relating to secondary category (high loss) Source: Borehole – at Creyke Beck conversion station.	No	N/A
Not applicable	Burshill YO25 8LY – 495m northwest	Details: Unknown Coordinates: 508062 448549	Yes*	7
NE/026/0031/031	560m north	Details: General farming and domestic Name: C N Warkup & Sons (pigs) Limited; Coordinates: 508062 448549	Yes	N/A
Not applicable	Bishop Burton HU17 8QY – 710m east	Details: Single dwelling domestic abstraction. Coordinates: 500606 440081	Yes	8
Not applicable	North Frodingham YO25 8LS – 710m north.	Details: Single dwelling domestic abstraction. Coordinates: 510401 451211.	Yes	9

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Licence Number	Location and Distance from Onshore Development Area	Details	Potable Abstraction	Feature Number if not the Licence Number (Figure 19.2-11 (Annex A))
2/26/32/372	780m east	Details: General farming and domestic. Chalk; Name: Clive Soanes Broilers Ltd; Coordinates: 500950 442000.	Yes	N/A
2/26/32/283	780m east	Details: Spray irrigation – direct; general farming and domestic. Source: Borehole – Chalk; Name: T Soanes and Sons; Coordinates: 500950 442000.	No	N/A
Not applicable	Routh Carrs, Hu17 5LP – 875m southeast	Coordinates: 508871 444640	Yes*	10
2/26/32/354	880m west	Details: industrial, commercial and public services. Chalk; Name: Bishop Burton College; Coordinates: 498568 440355	Yes	N/A
Not applicable	Tickton HU17 9SG – 950m southwest	Details: Single dwelling domestic abstraction.	Yes	12

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Licence Number	Location and Distance from Onshore Development Area	Details	Potable Abstraction	Feature Number if not the Licence Number (Figure 19.2-11 (Annex A))
		Coordinates: 506948 443250		
Not applicable	Beswick YO25 9AX – 950m north	Details: Commercial abstraction. Coordinates: 503204 447856	No	13
OCS zones				
Not applicable	Woodmansey HU17 0RN – 995m east of OCS Zone 4	Details: Single dwelling domestic abstraction. Source: Borehole; Coordinates: 504559 437751	Yes	14
Not applicable	Beverley HU17 8PJ – 160m west of the OCS Zone 4	Details: Unknown abstraction, status Unknown; Coordinates: 502808 437349	Yes*	15
Not applicable	Beverley HU17 0RN – 200m east of OCS Zone 4	Details: Single dwelling domestic abstraction. Coordinates: 503814 437221	Yes	16
Not applicable	Woodmansey HU17 0RN – 700m northwest of the OCS Zone 4.	Details: Single dwelling domestic abstraction.	Yes	17

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Licence Number	Location and Distance from Onshore Development Area	Details	Potable Abstraction	Feature Number if not the Licence Number (Figure 19.2-11 (Annex A))
		Coordinates: 504041 438104		
Not applicable	Woodmansey HU17 0RW. 885m east of OCS Zone 4.	Details: Unknown abstraction, status unknown. Coordinates: 504513 437150	Yes*	11

*Assumed to be potable groundwater abstraction as a worst-case scenario.

66. It should be noted that the data search in relation to EA licenced abstractions has not included identification of unlicenced water supplies abstracting less than 20m³ of water per day. For abstractions below 20m³ per day an EA abstraction licence is not required provided that the abstraction is part of a single operation.
67. Where the licence number is “not applicable” these records relate to abstractions registered with ERYC. It is likely that the groundwater abstractions registered with the council abstract less than 20m³ per day and do not require a licence.

19.2.7.3.1 Groundwater Source Protection Zones

68. Groundwater Source Protection Zones (SPZs) are defined around abstraction boreholes used for potable water supply to delineate the area where release of a contaminant into the aquifer could impact on the abstraction. The location of the abstractions within the Onshore Development Area and 1km buffer zone are illustrated on **Figure 19.2-11 (Annex A)**.
69. The landfall and the onshore ECC located east of Bealey’s Lane are not located within an SPZ. The SPZs within the Study Area are illustrated on **Figure 19.2-11 (Annex A)**.
70. The SPZ1 located around Scarborough Lane is likely related to groundwater abstraction licence number 2/26/32/154 (illustrated on **Figure 19.2-11 (Annex A)**) located adjacent to the onshore ECC whereby groundwater is extracted as a single dwelling domestic abstraction for use as a potable water supply.
71. It should also be noted that where potable groundwater abstractions are present an automatic SPZ1 with a 50m buffer zone (or 250m buffer zone if supplying multiple properties) is applied around the abstraction. This buffer zones applies to the potable groundwater abstraction located around Scarborough Lane (licence number 2/26/32/154), and the abstraction with licence number NE/026/0032/020 and the abstraction in Cottingham HU16 5SA (ref 2) shown on **Figure 19.2-11 (Annex A)**.

19.2.7.4 Groundwater Bodies

72. The presence (or absence) of groundwater bodies within the Study Area have been summarised in **Table 19.2-35** with further details provided in **Table 19.2-36** and **Table 19.2-37**.

Table 19.2-35 Summary of Groundwater Bodies

Features	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
WER groundwater bodies	Yes	Yes	Yes	Yes

Table 19.2-36 Details of Groundwater Bodies within the Onshore Development Area

Feature	Details
WER groundwater bodies	<p>Located throughout the Onshore Development Area.</p> <p>Name: Hull and East Riding Chalk (Waterbody ID: GB40401G700700).</p> <p>Overall waterbody classification: Poor.</p>

Table 19.2-37 Details of Groundwater Bodies within the 250m Buffer Zone

Feature	Location	Details
WER groundwater bodies	Adjacent (all directions)	Name: Hull and East Riding Chalk (Waterbody ID: GB40401G700700). Overall waterbody classification: Poor.

19.2.7.5 Hydrology

19.2.7.5.1 Surface Waters and Monitoring

73. The presence (or absence) of surface water features within the Study Area is summarised in **Table 19.2-38** with further detail in **Table 19.2-39** and **Table 19.2-40**.

Table 19.2-38 Summary of Surface Water Features

Features	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Surface Water Features	Yes	Yes	Yes	Yes
WER surface water body catchments	Yes	Yes	Yes	Yes

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Features	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
WER surface water bodies	Yes	Yes	Yes	Yes
OS Water Network Lines	No	No	No	No
River Quality	No	No	No	No
River Quality Biology Sampling Points	No	No	No	No
River Quality Chemistry Sampling points	No	No	No	No

Table 19.2-39 Details of Surface Water Features within the Onshore Development Area

Feature	Details
Surface water features (onshore ECC unless otherwise stated). (as illustrated on Volume 1, Chapter 21 Water Resources and Flood Risk, Figure 21-1)	<p>Stream and ditches associated with agriculture are present throughout the Onshore Development Area include:</p> <ul style="list-style-type: none"> • Skipsea Drain; • Dunnington Sewer; • Catchmoor Gutter; • Towns Drain; • Mickley Dike; • Weedland Drain; • Hull River; • North Side Drain; • Beverley and Bramston Drain; • Scarborough Beck; • Bealey's Beck; and • Autherd Drain. <p>The Onshore Development Area also crosses the following drains which are part of the Beverley and North Holderness Internal Drainage Board (IDB):</p> <ul style="list-style-type: none"> • Dunnington Sewer; • Harrison's Drain; • Roam Drain; • Halls Drain; • Holt's Drain • Hallytreeholme Farm;

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Feature	Details
	<ul style="list-style-type: none"> • Holderness Drain; • Heigholme Drain; • Leven South Carr Drain; • Hall Farm Drain; • Coal Dike; • Boundary Drain; and • Whitewater Drain. <p>There are a number of ponds and lakes located within the Onshore Development Area.</p>
<p>WER surface water body catchments (Ecological and WER classification 2022 all Moderate unless otherwise stated).*(as illustrated on Volume 1, Chapter 21 Water Resources and Flood Risk, Figure 21-1)</p>	<p>Name: Coastal Catchment (name not recorded); Waterbody ID: 291; Location: Present across the Landfall.</p>
	<p>Name: Barmston Sea Drain from Skipsea Drain to N Sea; Waterbody ID: GB104026077780; Chemical Classification: Fail (2019) due to concentrations of mercury (and its compounds) and polybrominated diphenyls ethers (PBDE); Location: Present across the Landfall.</p>
	<p>Name: Barmston Sea Drain to Skipsea Drain to Confluence; Waterbody ID: GB104026077770; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDE; Location: Present across the Landfall and onshore ECC east of Dunnington Lane.</p>
	<p>Name: Old Howe to Frodingham Beck to R Hull; Waterbody ID: GB104026067021; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: Present within the onshore ECC east of Dunnington Lane to the north of Grange Road.</p>
	<p>Name: Mickley Dike Catchment; Waterbody ID: GB104026066990; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: Present within the onshore ECC to the north of Grange Road to east of Hempholme Lane.</p>
	<p>Name: Holderness Drain Source to Foredyke Stream; Waterbody ID: GB104026066950; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: Present within the onshore ECC east of Hempholme Lane to the east of the River Hull.</p>

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Feature	Details
	Name: Foredyke Stream Lower to Holderness Dr; Waterbody ID: GB104026066910; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds), perfluorooctane sulphonate (PFOS) and PBDEs; Location: Present within the onshore ECC east of Hempholme Lane to the east of the River Hull.
	Name: Hull from west Beck to Arram Beck; Waterbody ID: GB104026067000; Chemical Classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: Present within the onshore ECC east and west of the River Hull.
	Name: Beverley and Barmston Drain; Waterbody ID: GB104026067211; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: Present within the onshore ECC west of the River Hull to the east of Scarborough Beck. Also present south of Walkington Heads, adjacent to Middlehowe Road and east and west of Little Weighton Road. Present within the onshore ECC southwest and adjacent to the A1079, south of OCS Zone 4.
	Name: Bryan Mills Beck Source to Bryan Mills Farm; Waterbody ID: GB104026066960; Chemical classification: Fail (2019) due to concentrations of mercury (and its compound) and PBDEs; Location: Present east and west of Scarborough Beck and north and south of Scarborough Lane. Also present east of Beverley Road and north of Bealey's Beck.
	Name: Ella Dyke; Waterbody ID: GB104026066941; Chemical classification: Fail (2019) due to concentrations of mercury (and its compound) and PBDEs; Location: Present north of Scarborough Lane.
	Name: Scarborough Beck; Waterbody ID: GB104026066901; Chemical classification: Fail (2019) due to concentrations of mercury (and its compound) and PBDEs; Location: Present north and south of Scarborough Lane. Also present within the onshore ECC north of Bealey's Beck and west and east of Etton Dikes.
	Name: High Hunsley to Arram Area; Waterbody ID: GB104026066841; Type: River; Chemical classification: Fail (2019) due to concentrations of benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, mercury (and its compounds) and PBDEs; Location: Present within the onshore ECC west and east of Etton Dikes and south of Walkington Heads.

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Feature	Details
	Name: High Hunsley to Woodmansey Area; Waterbody ID: GB104026066820; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: Present within the onshore ECC adjacent to Middlehowe Road and east and west of Little Weighton Road. Also present within the onshore ECC southwest and adjacent to the A1079, south of OCS Zone 4.
WER surface water bodies. *(as illustrated on Volume 1, Chapter 21 Water Resources and Flood Risk, Figure 21-1)	Name: Yorkshire South; Waterbody ID: GB640402491000; Type: Coastal catchment; Chemical classification: Fail (2019) due to concentrations of benzo(g,h,i)perylene, mercury (and its compounds), PBDEs and tributyltin compounds; Location: landfall.
	Name: Barmston Sea Drain and Skipsea Drain to Conf; Waterbody ID: GB104026077770; Type: River; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: onshore ECC.
	Name: Old Howe and Frodingham Beck to R Hull; Waterbody ID: GB104026067021; Type: River; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: onshore ECC.
	Name: Mickley Dike Catchment; Waterbody ID: GB104026066990; Type: River; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: onshore ECC.
	Name: Holderness Drain Source to Foredyke Stream; Waterbody ID: GB104026066950; Type: River; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: onshore ECC.
	Name: Hull from West Beck to Arram Beck; Waterbody ID: GB104026067000; Type: River; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: onshore ECC.
	Name: Beverley and Barmston Drain; Waterbody ID: GB104026067211; Type: River; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: onshore ECC and OCS Zones 4 and 8.
	Name: Bryan Mills Beck Source to Bryan Mills Farm; Waterbody ID: GB104026066960; Type: River; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: onshore ECC.
	Name: Scorbrough Beck; Waterbody ID: GB104026066901; Type: River; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: onshore ECC.

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Feature	Details
	Name: High Hunsley to Arram Area; Waterbody ID: GB104026066841; Type: River; Chemical classification: Fail (2019) due to concentrations of benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, mercury (and its compounds) and PBDEs; Location: onshore ECC.
	Name: High Hunsley to Woodmansey Area; Waterbody ID: GB104026066820; Type: River; Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: onshore ECC and OCS Zone 4.
	Name: Leven Canal; Waterbody ID: GB70410003; Type: Canal, Chemical classification: Fail (2019) due to concentrations of mercury (and its compounds) and PBDEs; Location: onshore ECC.

*Although Ecological and WER classification for each feature are available for 2022, assessment of chemical classification was not required and so data from 2019 has been included in the table above.

Table 19.2-40 Details of Surface Water Features within the 250m Buffer Zone

Feature	Location	Details
Surface water features	Adjacent -250m.	<p>Streams and ditches are located within 250m of landfall, onshore ECC and OCS zones.</p> <ul style="list-style-type: none"> • Named features include: • Skipsea Drain; • Dunnington Sewer; • Catchmoor Gutter; • Towns Drain; • Mickley Dike; • Harrison's Drain; • Roam Drain; • Weedland Drain;

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Feature	Location	Details
		<ul style="list-style-type: none"> • Hull River; • North Side Drain; • Beverley and Bramston Drain; • Scarborough Beck; • Bealey's Beck; and • Autherd Drain. • Dunnington Sewer; • Harrison's Drain; • Roam Drain; • Halls Drain; • Holt's Drain • Hallytreeholme Farm; • Holderness Drain; • Heigholme Drain; • Leven North Carr Drain; • Leven South Carr Drain; • Hall Farm Drain; • Coal Dike; • Boundary Drain; • Whitewater Drain; • White Dike • Ella Dike;

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Feature	Location	Details
		<ul style="list-style-type: none"> • Bryan Mills Beck; • Bealey's Beck; and • Moor Beck.
		Ponds are also located within 250m of the Onshore Development Area.
	Adjacent - 250m	The North Sea is located immediately east of the Landfall.
WER surface water body catchments	Adjacent - 250m	The WER surface waterbody catchments identified within the Onshore Development Area in Table 19.2-39 also extend 250m in all directions. No additional catchments are located within 250m.
WER surface water bodies	Adjacent- 250m	The WER surface waterbodies identified within the Onshore Development Area in Table 19.2-39 also extend to distances up to 250m. No additional WER surface waterbodies are located within 250m.

19.2.7.5.2 Flooding

74. The presence (or absence) of flood potential and events within the Study Area is summarised in **Table 19.2-41** below with further detail in **Table 19.2-42** and **Table 19.2-43**.

Table 19.2-41 Summary of Flooding Potential and Events

Designation Type	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Flooding from Groundwater of Property Below Ground Level	Yes	Yes	Yes	Yes
Flooding from Groundwater of Property at Surface	No	Yes	No	Yes
Extreme Flooding from Rivers or Sea Without Defences	No	Yes	No	Yes
Flooding from Rivers or Sea Without Defences	No	Yes	No	Yes
Areas Benefiting from Flood Defences	No	Yes	No	Yes
Flood Water Storage Area	No	No	No	No
Flood Defences	No	Yes	No	Yes

Table 19.2-42 Details of Flooding Potential and Events within the Onshore Development Area

Designation Type	Detail
Flooding from Groundwater of Property Below Ground Level	Located at landfall and multiple isolated areas throughout the onshore ECC.
Flooding from Groundwater of Property at Surface	Located on the onshore ECC around Scarborough and Cherry Burton.
Extreme Flooding from Rivers or Sea Without Defences	Located along the Onshore Development Area. Tidal floodplain models are associated with the Landfall and fluvial floodplain models are associated with the Onshore ECC and OCS zones.
Flooding from Rivers or Sea Without Defences	
Areas Benefiting from Flood Defences	<p>Areas located along the onshore ECC include:</p> <ul style="list-style-type: none"> • The areas surrounding Holt's Drain and Hall's Drain; • Area between Holderness Drain and North Side Drain; • Area surrounding and between Heigholme Drain, Leven South Carr Drain and River Hull; and • The areas surrounding Boundary Drain.
Flood defences	<p>Areas located along the Onshore ECC include:</p> <ul style="list-style-type: none"> • Mickley Dike Right Bank northeast of Burshill; • River Hull Left and right Bank; and • Unnamed embankment around Scarborough Beck.

Table 19.2-43 Details of Flooding Potential and Events within the 250m Buffer Zone

Designation Type	Location	Detail
Flooding from Groundwater of Property Below Ground Level	Adjacent to 250m.	Predominantly west of the landfall and multiple isolated areas adjacent to the onshore ECC and an isolated area northeast of OCS Zone 4.
Flooding from Groundwater of Property at Surface	Adjacent to 250m.	Located adjacent to the onshore ECC around Scarborough and Cherry Burton.
Extreme Flooding from Rivers or Sea Without Defences	The flood defences located along Mickley Dike, River Hull and Scarborough Beck extend to the north and south of the onshore ECC. No additional flood defences are located within the Study Area.	
Flooding from Rivers or Sea Without Defences	Areas located along the onshore ECC from west of Mickley Dike to Scarborough Beck.	

Designation Type	Location	Detail
Flood Defences	Areas located along the onshore ECC from west of Mickley Dike to Scarborough Beck.	

19.2.7.5.3 Surface Water Abstractions

75. The presence of surface water abstraction wells within the Study Area is summarised in **Table 19.2-44** and detailed in **Table 19.2-45** and **Table 19.2-46**.

Table 19.2-44 Summary of Surface Water Abstractions

Feature	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Surface water abstractions	No	Yes	No	Yes

Table 19.2-45 Details of Active Surface Abstractions within the Onshore Development Area

Licence Number	Location	Details	Feature Number (Annex A Figure 19.2-11)
Onshore ECC			
NE/026/0032/047	Up to 80m north	Details: Environmental, non-remedial river/ wetland support Name: Albanwise Ltd; Coordinates: 505817 445984	Licence Number
2/26/32/189	Up to 35m south	Details: General agricultural spray irrigation Name: Albanwise Farming Ltd. Coordinates: 506733 444244 and 507495 443958	Licence Number

Table 19.2-46 Details of Active Surface Abstractions within the 250m Buffer Zone

Licence Number	Location	Details	Feature Number (Annex A Figure 19.2-11)
NE/026/0032/020	10 to 165m west	Details: Spray irrigation – direct; general agricultural. Source: Surface water; Name: W Lee & Co; Coordinates: 508400 447690; 508300 446970	Licence Number

19.2.7.5.4 Discharges to Controlled Waters

76. The presence (or absence) of discharges to controlled waters within the Study Area is summarised in **Table 19.2-47** below with further detail in **Table 19.2-48** and **Table 19.2-49**.

Table 19.2-47 Summary of Discharges to Controlled Waters

Features	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Licensed Discharges	Yes	Yes	No	Yes

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Table 19.2-48 Details of Discharges to Controlled Waters within the Onshore Development Area

Feature	Details
Landfall	
Licenced Discharges	<p>Operator: Saffron Waghorn</p> <p>Location: Cliff Lane South Stp, Cliff Lane, Skipsea, YO25 8SX</p> <p>Reference: WRA8025n. Issue Date: 20th March 2003</p> <p>Discharge Type: Sewage Discharges- Final Treated Effluent- Not Water Company</p> <p>Receiving Water: Tributary of North Sea. Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)</p>
Onshore ECC	
Licenced Discharges	<p>Operator: Evode Developments Ltd</p> <p>Location: Proposed Dwelling Main Street, Aike, Driffield, North Yorkshire</p> <p>Reference: WA6054. Issue Date: 25th June 1990</p> <p>Discharge Type: Sewage Discharges- Final Treated Effluent- Not Water Company. Receiving Water: Discharge To Land. Status: Transferred from Water Act 1989</p>

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Table 19.2-49 Details of Discharges to controlled Waters within the 250m Buffer Zone

Feature	Location and Direction from Onshore Development Area	Details
Landfall		
Licenced Discharges	200m west. North of Cliff Road	<p>Operator: Saffron Waghorn</p> <p>Location: Cliff Lane North Sto. Cliff Lane, Skipsea, East Yorkshire, YO25 8SX</p> <p>Reference: WRA8024. Issue Date: 20th March 2003</p> <p>Discharge Type: Sewage Discharges- Final Treated Effluent. Receiving Water: Tributary of Skipsea Drain. Status*</p>
Onshore Export Cabel corridor		
Licenced Discharges	230m east. South of New Road	<p>Operator: Weatherhill Farm</p> <p>Location: Weatherhill Farm, Burshill, Brandes Burton, East Yorkshire</p> <p>Reference: WRA9021. Issue Date: 13th December 2006</p> <p>Discharge Type: Sewage Discharges- Final Treated Effluent. Receiving Water: Groundwater via Soakaway. Status*</p>
	100m east. South of New Farm	<p>Operator: Mr And Mrs M Myers</p> <p>Location: Matthews Richard Michael Land, to the West of Main Street, Aike, Driffield</p> <p>Reference: C5515. Issue Date: 3rd May 1989</p> <p>Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving Water: To Land to West of Main Street. Status: Unknown</p>
	75m north. South of New Farm	<p>Operator: Orchard House</p> <p>Location: Proposed Dwelling, Chapel Lane, Aike, North Humberside YO25</p>

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Feature	Location and Direction from Onshore Development Area	Details
		Reference: WA6287. Issue Date: Unknown Discharge Type: Sewage Effluent. Receiving Water: Culverted Tributary of The Aike Beck. Status: Transferred from COPA 1974
	115m northeast. South of New Farm	Operator: David Robert Allison Location: Laurel Farm, Aike Lane, Aike, Driffield, East Riding of Yorkshire Reference: WRA9011. Issue Date: 14 th November 2006 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving Water: Unnamed Tributary of Boundary Drain. Status*
	90m south. South of New Farm	Operator: Mr J Walker Location: Land at Laurel Farm, Main Street, Aike, East Riding of Yorkshire Reference: WRA8853. Issue Date: 12 th July 2005 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving Water: Coal Dike. Status:
	65m south. South of New Farm	Operator: D.G. & J.M. Ashley Location: Proposed Dwelling, High Grange Farm, Aike Lane, Aike Reference: C4439. Issue Date: 26 th July 2012 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving: Land Adjacent to Proposed Dwellings. Status: Transferred from COPA 1974
	35m south. South of New Farm	Operator: Granary Cottage Location: High Grange Farm, Aike, Lockington, West Riding of Yorkshire Reference: C4972. Issue Date: 26 th July 2012

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Feature	Location and Direction from Onshore Development Area	Details
		Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving: Land Adjacent to Proposed Dwellings. Status: Transferred from COPA 1974
	35m south, South of New Farm	Operator: High Grange Farm Location: Highgrange Farm, Aike, Lockington, Beverley, Uk Reference: WA6418. Issue Date: 25 th June 1991 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving: Land Drain Adjacent to Proposed Dwelling. Status: Transferred from Water Act 1989
	45m west. West of New Farm	Operator: Mr David Ian Jowett Location: Manor Farm House Adjacent to High Grange Farm, Aike, Driffield, East Riding of Yorkshire Reference: C3905. Issue Date: 1 st May 1985 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving Water: Soakaway Adjacent to High Grange Farm. Status: Transferred from COPA 1974
	10m east by Aike Lane	Operator: Mrs J. Banks Location: Aike Grange Farm, Lockington, North Driffield, East Riding of Yorkshire Reference: C3905. Issue Date: 18 th June 1991 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving Water: Tributary of Beverley & Barmston Drive. Status: Transferred from Water Act 1989
	15m south by Coal Dike	Operator: East Riding of Yorkshire Council Location: Rid-Yat Cottages, Aike Road, Lockington, East Riding of Yorkshire Reference: WRA7721. Issue Date: 24 th October 2001

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Feature	Location and Direction from Onshore Development Area	Details
		Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving Water: Barmston Drain. Status*
	60m south by Beverley Road	Operator: Stephen Andrew Burley Location: 1 & 2 Bryan Mills, Driffield Road, Lockington, East Riding of Yorkshire Reference: WRA7727. Issue Date: 4 th July 2001 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving Water: Tributary of Bryan Mills Beck. Status*
	80m southwest. Northwest of Woodhouse Farm	Operator: Mr J E Slingsby Location: Golf Clubhouse, Leconfield Road, Cherry Burton, North Humberside Reference: WRA6876. Issue Date: Unknown Discharge Type: Sewage Effluent. Receiving: Land Adjacent to Clubhouse. Status: Unknown
	205m north. South of Raventhorpe	Operator: James Maske Location: Raventhorpe Cottage, Bygot Lane, Cherry Burton, East Riding of Yorkshire Reference: WRA9061. Issue Date: 4 th May 2007 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving: Ground Waters Via Soakaway. Status*
	65m southwest by Hudson Way	Operator: Risby Homes Ltd Location: Plot 2 High Raventhorpe, Malton Road, Cherry Burton, east Riding of Yorkshire Reference: WRA8149. Issue Date: 27 th January 2004 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving: Land. Status*

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Feature	Location and Direction from Onshore Development Area	Details
	180m southwest by Malton Road	Operator: Risby Homes Ltd Location: Plot 1 High Raventhorpe, Malton Road, Cherry Burton, east Riding of Yorkshire Reference: WRA8148. Issue Date: 27 th January 2004 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving: Land. Status*
	80m west by A1035	Operator: Mrs Sheila Birbeck Location: Dog Kennel Farm Malton Road, Cherry Burton, Beverley, HU177RG Reference: NPSWQD002964. Issue Date: 13 th August 2008 Discharge Type: Sewage Discharges - Stw Storm Overflow Storm Tank - Water Company. Receiving Water: Ground Waters Via A Soakaway. Status*
	40m west by A1035	Operator: Ashfield Farm Location: Ashfields, Dog Kennel Lane, Bishop Burton, Beverley Reference: C4396. Issue Date: 15 th September 1986 Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving: Land Adjacent to The Dwelling. Status: Transferred from COPA 1974
	65m west by A1079	Operator: The Occupier Location: Killingworld Graves Farm, Killingworld Grave Lane, Bishop Burton, Humberside Reference: C4796. Issue Date: Unknown Discharge Type: Trade Effluent Discharge-Treated Effluent. Receiving: Land Adjacent to The Proposed Fertilizer Store. Status: Unknown.
	235m east. South of Mill Lane	Operator: Milcote

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Feature	Location and Direction from Onshore Development Area	Details
		<p>Location: Barnes Kenneth Alan Converted Outho, Mill Lane</p> <p>Reference: C5474. Issue Date: 26th July 2012</p> <p>Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving: Land Adjacent to Dwelling. Status: Transferred from COPA 1974</p>
	235m east. South of Mill Lane	<p>Operator: M R Krebs</p> <p>Location: The Mill, Mill Lane, Bishop Burton, East Riding of Yorkshire</p> <p>Reference: WRA8908. Issue Date: 25th October 2005</p> <p>Discharge Type: Sewage Discharges – Final Treated Effluent - Not Water Company. Receiving: Groundwater Via Soakaway. Status: *</p>
	5m west by Walkington Heads	<p>Operator: Yorkshire Water Services Ltd</p> <p>Location: Mansham Swinton Ps, Mansham, Swinton, North Yorkshire</p> <p>Reference: WADC287. Issue Date: Unknown</p> <p>Discharge Type: Storm sewage overflow discharge. Receiving: Swinney Beck. Status: Unknown</p>

* New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)

19.2.7.5.5 Pollution Incidents and Inventories

77. The presence (or absence) of pollution incidents within the Study Area is summarised in **Table 19.2-50**.

Table 19.2-50 Summary of Incidents and Inventories

Features	Landfall	Onshore ECC	OCS zones	Within the 250m buffer zone
Prosecutions Relating to Controlled Waters	No	No	No	No
Prosecutions Relating to Authorised Processes	No	No	No	No
Enforcement and Prohibition Notices	No	No	No	No
Substantiated Pollution Incident Register	No	No	No	No
Water Industry Act Referrals	No	No	No	No
Pollution Incidents	No	No	No	No

19.2.7.6 Radon Gas

78. The presence of radon gas is assessed in the UK according to the number of homes likely to be above the Action Level (200 Becquerel per cubic metre (Bq m³)). Under Building Regulations, the requirement for protection measures (as described in BRE, 2023 in the construction of new buildings, conversions or extension is dependent on radon potential.
79. BGS data indicates that the Onshore Development Area is located within a lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Therefore, no protective measures are necessary in the construction of new buildings.

19.2.8 Preliminary Conceptual Site Model and Qualitative Risk Assessment

80. Land contamination is assessed through the identification of Potential Contaminative Linkages (PCLs). The assessment involves the development of a CSM which describes the relationship between on and offsite potential sources of contamination (and contaminants), potential receptors to such contamination and anticipated pathways between the two. Where all three (source-pathway-receptor linkage) are present or considered to be present, they are described as a PCL which can be subject to the risk assessment process.
81. The following discusses the potential sources, pathways and receptors present.

19.2.8.1 Potential Sources

82. The potential sources of contamination and contaminants of concern within the Study Area are summarised below in **Table 19.2-51** and **Table 19.2-52**. Potential receptors and pathways are outlined in **Table 19.2-53**.

Table 19.2-51 Potential Sources within the Onshore Development Area

Potential Source	Associated Contaminants	Landfall	Onshore ECC	OCS zones
Agricultural land practices for fertilisers, pesticides and herbicides.	Herbicides and pesticides, in addition it is not uncommon for discarded material to be buried on farmland which could potentially contain a range of contaminants including asbestos. Although not recorded on historical mapping, there is the potential for sheep dips to be present within the Onshore Development Area. Contaminants associated with sheep dipping include, but are not limited to, metals, organophosphorus and synthetic pyrethroids.	✓	✓	✓
Potentially infilled pits, ponds.	Localised Made Ground may be present in areas associated with the backfilling of former pits and, or ponds should this have been undertaken within the Onshore Development Area. Potential contaminants include, but are not limited to, asbestos, metals and metalloids, polycyclic aromatic hydrocarbons (PAHs), fuel and oil hydrocarbons, volatile and semi-volatile organic compounds (VOCs and SVOCs), inorganic and organic contaminants, herbicides, polychlorinated biphenyls (PCBs) and ground gas.	✓	✓	✓
Made Ground (including potentially demolished infrastructure).	Asbestos containing materials and associated fibres are commonly identified in Made Ground deposits, particularly localised to where building demolition has occurred, and material has been buried and, or used. Other contaminants of concern that may be present are dependent on the nature of the Made Ground materials present within the Onshore Development Area.	✓	✓	✓

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Potential Source	Associated Contaminants	Landfall	Onshore ECC	OCS zones
Railway land.	Railway land (both current and historical) is a potential source of contamination and Made Ground. Contaminants associated with railway land includes herbicides, metals and metalloids, fuel and oil hydrocarbons, PAHs, PCBs, glycols and sulphates. Asbestos can also be associated with the materials used within the track bedding material, fill used in the formation of embankments and within the trains themselves.	X	✓	X
Historical Landfill	Inorganic and organic contaminants, PCBs, PFAS, landfill leachate and ground gas.	X	✓	✓

Table 19.2-52 Potential Sources within the 250m Buffer Zone

Potential Source	Associated Contaminants	Landfall	Onshore ECC	OCS zones
Agricultural land and historical practices (including intensive poultry farming).	Herbicides, pesticides and fertilisers, in addition it is not uncommon for discarded material to be buried on farmland which could potentially contain a range of contaminants. Contaminants associated with sheep dipping include, but are not limited to, metals, organophosphorus and synthetic pyrethroids. In addition to the above, potential contaminants associated with intensive poultry farming includes nitrates.	✓	✓	✓
Potentially infilled pits, ponds. Made Ground.	Asbestos, metals and metalloids, PAHs, fuel and oil hydrocarbons, VOCs and SVOCs, inorganic and organic contaminants, PCBs vapours and ground gas	✓	✓	✓
Pumping Station	Lubricants and greases, PAHs and metals.	X	✓	X
Airfield	Potential contaminants may include metals, VOCs and SVOCs, glycols, fuel and, or oil hydrocarbons, phenols, lubricants and greases, PFAS and PCBs.	X	✓	X

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Potential Source	Associated Contaminants	Landfall	Onshore ECC	OCS zones
Electrical Substation	Asbestos, metals and metalloids, PAHs, fuel and oil hydrocarbons and PCBs.	✓	X	X
Gas valve compound or Gas monitoring facility	Contaminants of concern include, but are not limited to, asbestos, metals and metalloids, inorganic and organic compounds, fuels, and oil hydrocarbons, PAHs and phenols.	X	✓	X
Dismantled railway	Contaminants associated with railway land includes herbicides, metals and metalloids, fuel and oil hydrocarbons, PAHs, PCBs, glycols and sulphates. Asbestos can also be associated with the materials used within the track bedding material, fill used in the formation of embankments and within the trains themselves.	X	✓	X

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Table 19.2-53 Potential Receptors and Pathways

Receptors	Pathways	Landfall	Onshore ECC	OCS zones
Human Health				
Future site users not involved with the Project (e.g. farmers) during operation.	Direct exposure through dermal contact, ingestion or inhalation of soils, dusts and asbestos fibres. Inhalation of ground gas and volatile contaminants.	✓	✓	✓
Neighbouring site users (commercial and residential) during construction		✓	✓	✓
Construction and, or maintenance workers.	Direct exposure through dermal contact, ingestion or inhalation of soils and dusts during ground-breaking activities. Inhalation of asbestos containing soils and dusts. Inhalation of ground gas and volatile contaminants.	✓	✓	✓
Controlled Waters				
Alluvium and Glaciofluvial Deposits – Secondary A Aquifers	Leaching, dissolution and migration of contaminants from existing unsaturated soils. Vertical migration through the creation of preferential pathways.	✓	✓	✓
Lacustrine Deposits – Secondary B Aquifer.		✓	✓	X
Head and Glacial Till – Secondary Undifferentiated Aquifers.		✓	✓	✓
Rowe Chalk Formation and Flamborough Chalk Formation – Principal Aquifers.		✓	✓	✓

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Receptors	Pathways	Landfall	Onshore ECC	OCS zones
SPZ 1		X	✓	X
SPZ 2		X	✓	✓
SPZ 3		X	✓	X
Surface waters	Lateral migration and discharge of groundwater and surface water runoff.	✓	✓	✓
Buildings and utilities				
Future buildings and, or utilities.	Direct contact with building foundations. Diffusion into services. Explosion due to ground gas accumulation.	X	X	✓
Other				
Environmentally sensitive areas –Greater Wash SPA, Withow Gap SSSI, Leven Canal SSSI and dLWS/ cLWS.	Migration of dissolved contaminants in groundwater and discharge to surface water.	✓	✓	X

19.2.8.2 Preliminary Conceptual Site Model and Qualitative Risk Assessment

83. The CSM and Preliminary Risk Assessment are presented in **Table 19.2-54**. Definitions of probability and consequence have been based on guidance in CIRIA 552 and summarised in **Annex E**.
84. A combination of probability and consequences produces a risk level based on the risk evaluation and likely action required. The land contamination risk, which is a function of the probability and the consequence, can be defined using the risk matrix.

Table 19.2-54 Preliminary Conceptual Site Model

Source	Pathway	Receptor	Associated Hazard	Potential Consequence of Contaminant Linkage	Likelihood of Contaminant Linkage	Risk Classification	Justification
Onsite sources as discussed in Table 19.2-51	Dermal contact, ingestion and inhalation of soils, dust and asbestos fibres. Inhalation of volatile contaminants.	Future site users not involved with the project (e.g. farmers) during operation.	Human health.	Mild	Low likelihood	Low	No significant potential sources of contamination have been identified within the Onshore Development Area. Any potential contamination is likely to be limited to localised areas relating to the sources outlined in Table 19.2-51 . The Onshore Development Area is located within an area comprising predominantly of agricultural or undeveloped land. This represents the potential for contaminants associated with the usage of herbicides and pesticides to be present. Regulations associated with the chemical composition of herbicides and pesticides have evolved over time reducing their impacts to both the environment and human health. It is anticipated that the contaminants associated with past and current usage of herbicides and pesticides may have diluted over time and are considered unlikely to pose an unacceptable risk to human health.
		Neighbouring site users (commercial and residential) during construction.		Mild	Low likelihood	Low	
		Construction and, or maintenance workers.		Medium	Likely	Moderate	In localised areas where potential contamination may be present, there is the potential for buried contaminants to be disturbed and brought to the surface during the construction and O&M phases. The potential risks to construction and, or maintenance workers could be reduced to low through the implementation of appropriate mitigation measures. These measures may include, but are not limited to, targeted ground investigations in areas of potential concern, this would confirm the presence (or absence) of contamination. Should contamination be confirmed, appropriate mitigation measures would be implemented to either reduce or break the contaminant linkage.
	Leaching, dissolution and migration of contaminants from existing unsaturated soils.	Groundwater within superficial deposits:	Controlled waters.	Medium	Low likelihood	Moderate to low	The potential localised sources of contamination identified within the Onshore Development Area have the potential to be disturbed and mobilised as a result of the intrusive nature of the construction phase at isolated locations. Mobilisation of pre-existing contamination has the potential to result in the migration of contaminants into groundwater bearing strata. Therefore, potential risks to groundwater associated with the Secondary A, B and Undifferentiated Aquifers from the disturbance of pre-existing contamination is limited.
	Vertical migration through the creation of preferential pathways.	Alluvium and *Glaciofluvial Deposits *Secondary A Aquifers; *Lacustrine Deposits – Secondary B Aquifer; and Head and Glacial Till – Secondary Undifferentiated Aquifers.		Medium	Low likelihood	Moderate to low	The creation of preferential pathways could occur during the construction of the onshore ECC, however, any works are likely to be above the water table. If piling is required within the Onshore Development Area then there is the potential for preferential pathways to be created albeit the potential sources of contamination within these areas are minimal. If required a piling risk assessment will be completed. There are no East Riding of Yorkshire Council potable groundwater abstractions recorded within the Onshore Development Area, however several are recorded within 1km. Several records do not contain information in relation to which strata the groundwater is abstracted from, therefore the potential consequence of contaminant linkage has been conservatively determined as medium. Should more information become available during the DCO process with regards to which strata the potable abstractions are taken from, i.e. if they are taken from the underlying chalk and not superficial deposits, the potential consequence could be lowered to mild resulting in a low risk classification.

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Source	Pathway	Receptor	Associated Hazard	Potential Consequence of Contaminant Linkage	Likelihood of Contaminant Linkage	Risk Classification	Justification
Onsite sources as discussed in Table 19.2-51	Leaching, dissolution and migration of contaminants from existing unsaturated soils.	Groundwater within bedrock: Rowe Chalk Formation and Flamborough Chalk Formation – Principal Aquifers. SPZs 1, 2 and 3.		Medium	Low likelihood	Moderate to low	The bedrock formations underlying the entirety of the Onshore Development Area are designated as Principal Aquifers. Areas of the onshore ECC to west of Bealey’s Lane through to the northwest of Little Weighton Road, is located within a SPZ 3 Total Catchment. The onshore ECC areas southeast of Little Weighton Road up to the northwest of Birkhill Wood and the Unnamed Farm leading off the A164 is located in a SPZ 2 Outer Catchment. The area of the onshore ECC to the south of Scarborough Lane and from the east of Beverley Road (A164) to the north of Popular Farm is designated as a SPZ 1 Inner Catchment. These zones are not considered to be at risk from the general cable construction works as excavations would generally be shallow in nature, maximum burial depth where restriction are not present would be 2m, with an indicative burial depth of 1.6m. Where trenchless crossing techniques e.g. Horizontal Directional Drilling (HDD)) or pilling are to be undertaken these could present a risk to the Principal Aquifers and SPZs. There is the risk of creating preferential pathways albeit the sources of contamination are limited within the Onshore Development Area. A suitable risk assessment will be undertaken prior to construction which will further lower the risk.
	Vertical migration through the creation of preferential pathways			Medium	Low likelihood	Moderate to low	
	Lateral migration and discharge of groundwater and surface water runoff.	Surface waters and Environmentally Sensitive Areas.		Medium	Low likelihood	Moderate to low	Contaminants present within soils have the potential to be disturbed during construction and maintenance works. There is the potential for these contaminants to be mobilised as a result of disturbance and leach into the surrounding surface water bodies. Mobilisation of contaminated groundwater also has the potential to impact surface water bodies via direct discharge into the feature. Ecological receptors within and adjacent to landfall may be impacted both directly and indirectly by the Project. The sensitive sites are designated due to the unique habitats and species that are supported. Migration of contaminated groundwater into these areas may impact the functionality of the site and render it unsuitable for the species that inhabit it. The specific nature of the species associated with the designations determines how plausible the potential contaminant linkage is. Targeted pre-construction ground investigations would allow for the appropriate management of the risks posed to surface water bodies as a result of the construction and operation of the Project. This would be stipulated in the Outline CoCP (Commitment ID CO39) and later built upon in the CoCP to reduce the potential risk.
	Migration of dissolved contaminants in groundwater and discharge to surface water			Medium	Low likelihood	Moderate to low	
	Direct contact and diffusion through drinking water pipes	Future buildings/ utilities.	Building and foundation corrosion and impact to potable water.	Medium	Low likelihood	Moderate to low	Potential contamination within the OCS zones has the potential to impact the integrity of concrete foundations through creating aggressive ground conditions. Potential organic contaminants could permeate potable water supplies (if proposed in the future) and have detrimental impacts on human health.
	Gas and vapour migration and accumulation in buildings.	Future onsite users working within confined spaces (assumed to be buildings associated with the OCS zone only).	Health risk (methane, carbon dioxide and volatiles).Explosion (methane).	Severe	Low likelihood	Moderate	There is the potential for ground gas and vapours to be produced from materials used in localised areas associated with potentially infilled pits, ponds within the OCS zones. In these areas, contaminants may be brought to the surface or mobilised during construction, which if not mitigated could present an unacceptable risk to human health. The excavation of the onshore ECC has the potential to create a preferential pathway for any gases or vapours to migrate and accumulate in enclosed spaces and present a risk of asphyxia and, or explosion. Re-instating material excavated where possible as part of the construction of the onshore ECC could lower the potential risks associated with creating a preferential pathway as these soils are likely to have a similar porosity to the surrounding soils not directly impacted by the works. The Outline CoCP (Commitment ID CO39), later to be built upon in the CoCP and the commitments register will further support lowering the risk.
				Severe	Low likelihood	Moderate	
		Construction and, or ground workers.		Severe	Low likelihood	Moderate	

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Source	Pathway	Receptor	Associated Hazard	Potential Consequence of Contaminant Linkage	Likelihood of Contaminant Linkage	Risk Classification	Justification
		Maintenance workers during the O&M phase.		Severe	Low likelihood	Moderate	<p>The potential to create contaminant pathways during construction and maintenance activities exist through the excavation works required to create the onshore ECC and the OCS zones. Potential ground gas and vapours could migrate and, without the implementation of mitigation measures, result in acute or chronic effects to workers.</p> <p>Within the onshore converter stations potential ground gas and vapours could accumulate within the buildings which would be accessed by maintenance workers during the O&M phase of the Project.</p> <p>Targeted pre-construction ground investigations and, or a multiple lines of evidence approach could be adopted to determine the plausibility of potential ground gas or vapour sources identified at the specific locations the risks relate to. This will be incorporated into Outline CoCP (Commitment ID CO39) and later built upon in the CoCP.</p> <p>To mitigate the risks to construction workers during excavation activities (particularly if entry into confined spaces is required) the use of appropriate working methods incorporated into the Outline CoCP (Commitment ID CO39) and later built upon in the CoCP and use of Personal Protective Equipment (PPE) would reduce the potential risk to low.</p> <p>The potential risks to maintenance workers could also be reduced to low through the use of appropriate working methods and PPE.</p>
		Future buildings and, or/ utilities.		Severe	Low likelihood	Moderate	<p>There is the potential for ground gas and vapours to be produced from materials used in localised areas associated with potentially infilled pits and, or ponds within the OCS zones. Therefore, there is the potential for ground gases and vapours generated to accumulate within buildings during the O&M phase of the Project which could lead to destruction of the building through explosion. Targeted pre-construction ground investigations and, or a multiple lines of evidence approach could be adopted to determine the plausibility of potential ground gas or vapour sources identified at the specific locations the risks relate to. The information gathered through targeted ground investigation and, or multiple lines of evidence will allow for appropriate mitigation measures to be identified, e.g. installation of ground gas protection measures. This would reduce the potential risks to buildings to low.</p>
Offsite sources as discussed in Table 19.2-51	Lateral migration of dissolved phase contaminants in groundwater and migration. Leaching and migration from unsaturated contaminated soils.	Groundwater within superficial deposits (Secondary A, B and Undifferentiated Aquifers).	Controlled waters.	Medium	Low likelihood	Moderate to low	<p>Areas of localised potential contamination lie adjacent to the Onshore Development Area (e.g. tanks, landfills and potentially infilled pits). There is the potential for contaminants within soils, leachates or groundwater to migrate into the Onshore Development Area and be encountered, exposed or mobilised during construction works. Where potential offsite sources of contamination have been identified, pre-construction targeted ground investigations would help to establish whether areas of the Onshore Development Area have been impacted by offsite sources. This will be incorporated in the Outline CoCP (Commitment ID CO39), later to be built upon in the CoCP and the commitment register.</p>
		Bedrock (Principal Aquifers), SPZs 1, 2 and 3.		Severe	Low likelihood	Moderate	
	Gas and vapour migration.	Construction and, or / ground workers.	Health risk (methane, carbon dioxide and volatiles). Explosion (methane)	Severe	Low likelihood	Moderate	<p>There is the potential for ground gas and vapours to migrate into the Onshore Development Area from offsite sources (e.g. where landfilling is adjacent to work areas) through permeable strata. Without mitigation, construction workers working in confined spaces may be exposed to the migrating ground gas and vapours during excavation works. Maintenance workers could also be exposed to migrating ground gas and vapours, should they be required to enter confined spaces (e.g. Joint Bays along the onshore ECC). The potential risks to construction and maintenance workers could be lowered through the implementation of appropriate working methods and correct usage of PPE.</p>
		Maintenance workers during the O&M phase.		Severe	Low likelihood	Moderate	

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Source	Pathway	Receptor	Associated Hazard	Potential Consequence of Contaminant Linkage	Likelihood of Contaminant Linkage	Risk Classification	Justification
		Future buildings and, or / utilities.	Explosion (methane).	Severe	Low likelihood	Moderate	Migrating ground gases from offsite sources have the potential to accumulate within the buildings associated with the onshore substations. Without mitigation, there is the potential for accumulated gases to result in destruction of the buildings through explosions. The potential risks to the onshore buildings could be lowered by developing an understanding of the ground gas regime through pre-construction ground investigations and, or adoption of a multiple lines of evidence approach to determine whether plausible pathways are present. This will be incorporated in the Outline CoCP (Commitment ID CO39) and later built upon in the CoCP.

19.2.9 Conclusions and Recommendations

19.2.9.1 Conclusions

85. The key objectives of the PRA were to provide information on the current condition of the Onshore Development Area with respect to contamination, characterise the environmental setting and identify potential land quality risks and constraints associated with the Project.

19.2.9.2 Summary of Human Health Risk Assessment

86. Based on the findings of the PRA, the risk posed to future and neighbouring site users from localised potential onsite sources of contamination is considered to be **moderate to low**. Potential risks to future onsite users in relation to ground gas and vapours from onsite sources of contamination is considered **moderate**. Potential risks to construction and maintenance workers from both onsite and offsite sources of contamination are considered to be **moderate to low**, inclusive of risks associated with ground gas.

19.2.9.3 Summary of Controlled Waters Risk Assessment

87. Based on the findings of the PRA, the potential risks posed to superficial Secondary A, B and Undifferentiated Aquifers from localised potential onsite and offsite sources of contamination are considered to be **moderate to low**. Potential risks to the Principal Aquifers associated with the bedrock of the Onshore Development Area and SPZs 1, 2 and 3 are considered to be **moderate to low** in relation to potential onsite and offsite sources of contamination.
88. Potential risks to surface water bodies from potential onsite sources of contamination are considered to be **moderate to low**.

19.2.9.3.1 Summary of Other Receptors

89. The risks posed to environmentally sensitive areas from potential onsite sources of contamination are considered to be **moderate to low**.
90. The risks posed to future buildings and utilities from potential sources of contamination and ground gas accumulation are considered to be **moderate** in relation to potential onsite sources of contamination. Potential risks to future buildings in relation to ground gas and vapours is considered to be **moderate** from both potential onsite and offsite sources of contamination.

19.2.9.3.2 Other Identified Risks

91. The risk posed by UXO is considered to be **low**.

92. A 50m buffer around SPZ1 buffer zone has been applied to the potable groundwater abstractions with the licence number 2/26/32/154, NE/026/0032/020 and the abstraction in Cottingham HU16 5SA (ref 2). The groundwater abstraction well (licence number 2/26/32/154) and associated SPZ1 located south of Scarborough Lane is located along the onshore ECC and adjacent to Scarborough Beck and the railway. Therefore, trenchless crossing techniques may be required e.g. HDD. Where trenchless crossing is to be undertaken, there may be a contamination risk to the Principal Aquifers and SPZs.
93. Where trenchless crossing techniques are proposed and there is an interaction with a sensitive watercourse, location specific risk assessments should be undertaken to assess the potential risk posed by contamination and generally in relation to potential pathway creation / plausibility.

19.2.9.4 Recommendations and Next Steps

94. Based on the findings of the PRA the following recommendations are made:
- A post consent targeted intrusive ground investigation and, or a multiple lines of evidence approach could be adopted in potential source areas and generic quantitative risk assessment to help better determine the presence, magnitude and extent of contaminants within the Study Area and inform discussions on appropriate mitigation measures to lower the risk to the potential receptors identified within this PRA;
 - Continued engagement and consultation with the Regulators (e.g. Environment Agency) at an early stage (pre intrusive ground investigation) to agree a scope of works and gain agreement to the proposed approach;
 - Refinement of the Outline CoCP to produce a CoCP post-consent for use during construction works to protect construction workers, neighbouring site users, groundwater and surface water. The report should be informed by the results of the targeted intrusive ground investigation;
 - To protect construction workers, the works should be undertaken in accordance with the requirements of the Health and Safety at Work Act 1974 and the Construction (Design and Management) (CDM) Regulation 2015;
 - Should contamination be identified and piling be required in a sensitive water environment receptor, Principal Aquifer or SPZ such as the groundwater abstraction well and associated SPZ1 within the Onshore Development Area (located south of Scarborough Lane), a post consent hydrogeological piling risk assessment would be undertaken (potentially associated with the construction of the OCS) to protect the water environment;

- Should contamination be identified and trenchless crossings be required in a sensitive water environment receptor such as a watercourse, a post consent hydrogeological risk assessment should be undertaken to protect the water environment;
- The movement and reuse of materials on the Onshore Development Area should be undertaken in accordance with the CL:AIRE Code of Practice (CL:AIRE 2011) 'The definition of waste: Development Industry Code of Practice', where applicable; or an environmental permit that authorises the deposit of excavated material for recovery; and
- The management of any waste material off the Onshore Development Area must be at a site with a valid environmental permit and any waste activity must consider the waste hierarchy; hazardous waste must be managed in accordance with Hazardous Waste Regulations 2005; and any disposal of materials off the Onshore Development Area to landfill should be undertaken in accordance with the Landfill Regulations 2002 (**Appendix 19.3 Onshore Waste and Resources Technical Report**).

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List of Acronyms

Term	Definition
ALC	Agricultural Land Classification
AOD	Above Ordnance Datum
BGS	British Geological Survey
BRE	Building Research Establishment
CDM	Construction Design Management
CIRIA	Construction Industry Research Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
CoCP	Code of Construction Practice
COMAH	Control of Major Accident Hazards
CSM	Conceptual Site Model
DBD	Dogger Bank D
DCO	Development Consent Order
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ERYC	East Riding of Yorkshire Council
ESBI	Energy Storage and Balancing Infrastructure
GIS	Geographical Information System
HDD	Horizontal Directional Drilling
IDB	Internal Drainage Board
IPC	Integrated Pollution Controls
IPPC	Integrated Pollution Prevention Controls

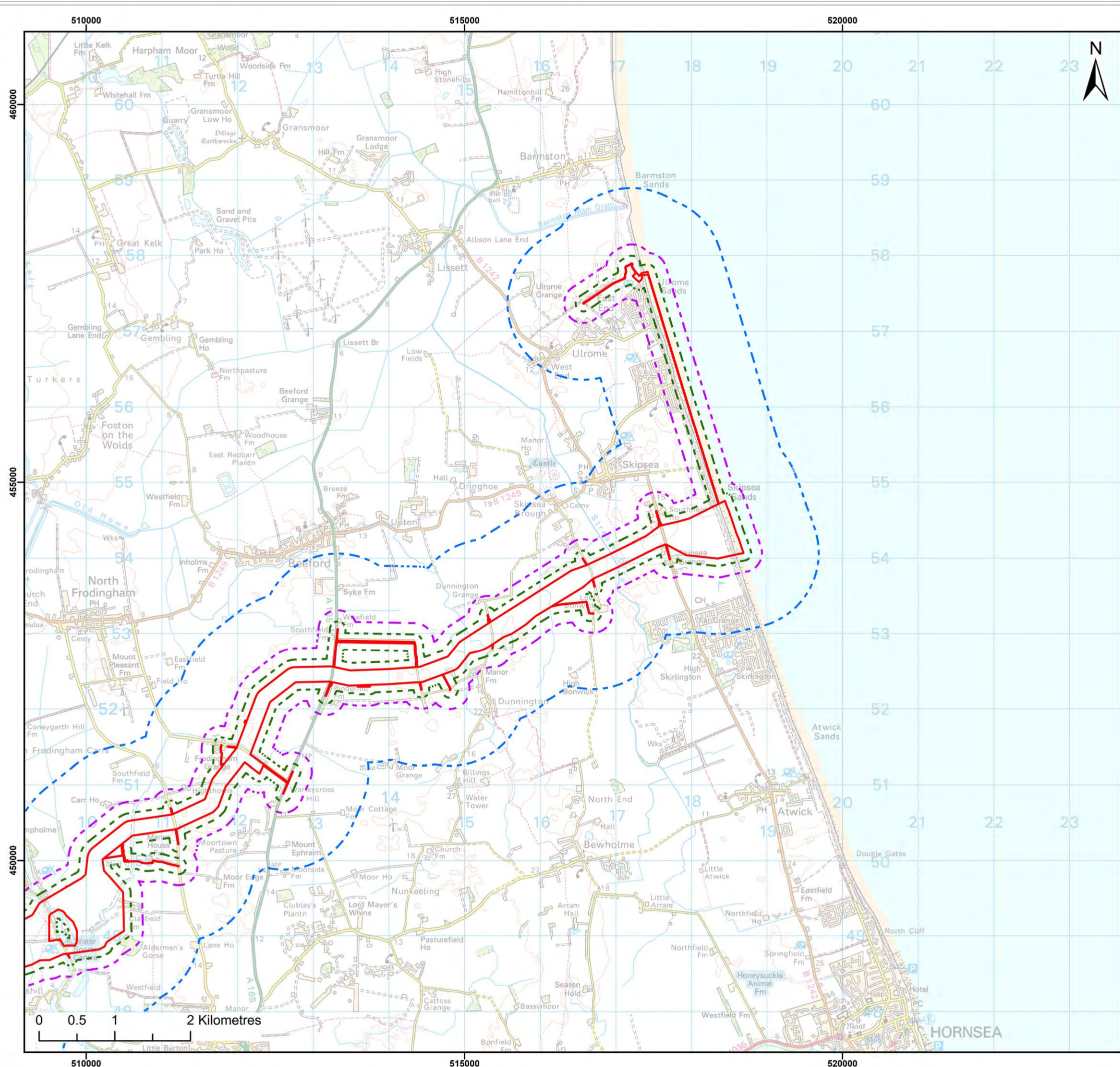
APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Term	Definition
LAPPC	Local Authority Pollution Prevention Controls
LNR	Local Nature Reserve
LGS	Local Geological Site
MAGIC	Multi Agency Government Information for the Countryside
MHWS	Mean High Water Springs
MSA	Mineral Safeguarding Area
NIHHS	Notification of Installations Handling Hazardous Substances
NNR	National Nature Reserve
NVZ	Nitrate Vulnerable Zone
OCS	Onshore Converter Station
OS	Ordnance Survey
PAH	Polycyclic Aromatic Hydrocarbons
PBDE	Polybrominated Diphenyls Ethers
PCB	Polychlorinated Biphenyls
PCL	Potential Contaminant Linkage
PEIR	Preliminary Environmental Information Report
PFOS	Perfluorooctane Sulphonate
PPE	Personal Protective Equipment
pSAC	Possible Special Area of Conservation
pSPA	Possible Special Protection Area
PRA	Preliminary Risk Assessment
PRoW	Public Right of Way
RIGS	Regionally Important Geological Sites
SAC	Special Area of Conservation
SPA	Special Protection Area

APPENDIX 19.2 PRELIMINARY RISK ASSESSMENT

Term	Definition
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
SVOC	Semi-Volatile Organic Compounds
TJB	Transition Joint Bay
UK	United Kingdom
UXB	Unexploded Bomb
UXO	Unexploded Ordnance
VOC	Volatile Organic Compounds
WER	Water Environment Regulations

Annex A Supporting Figures



Legend:

- Onshore Development Area
- Onshore Development Area 100m Buffer
- Onshore Development Area 250m Buffer
- Onshore Development Area 1km Buffer

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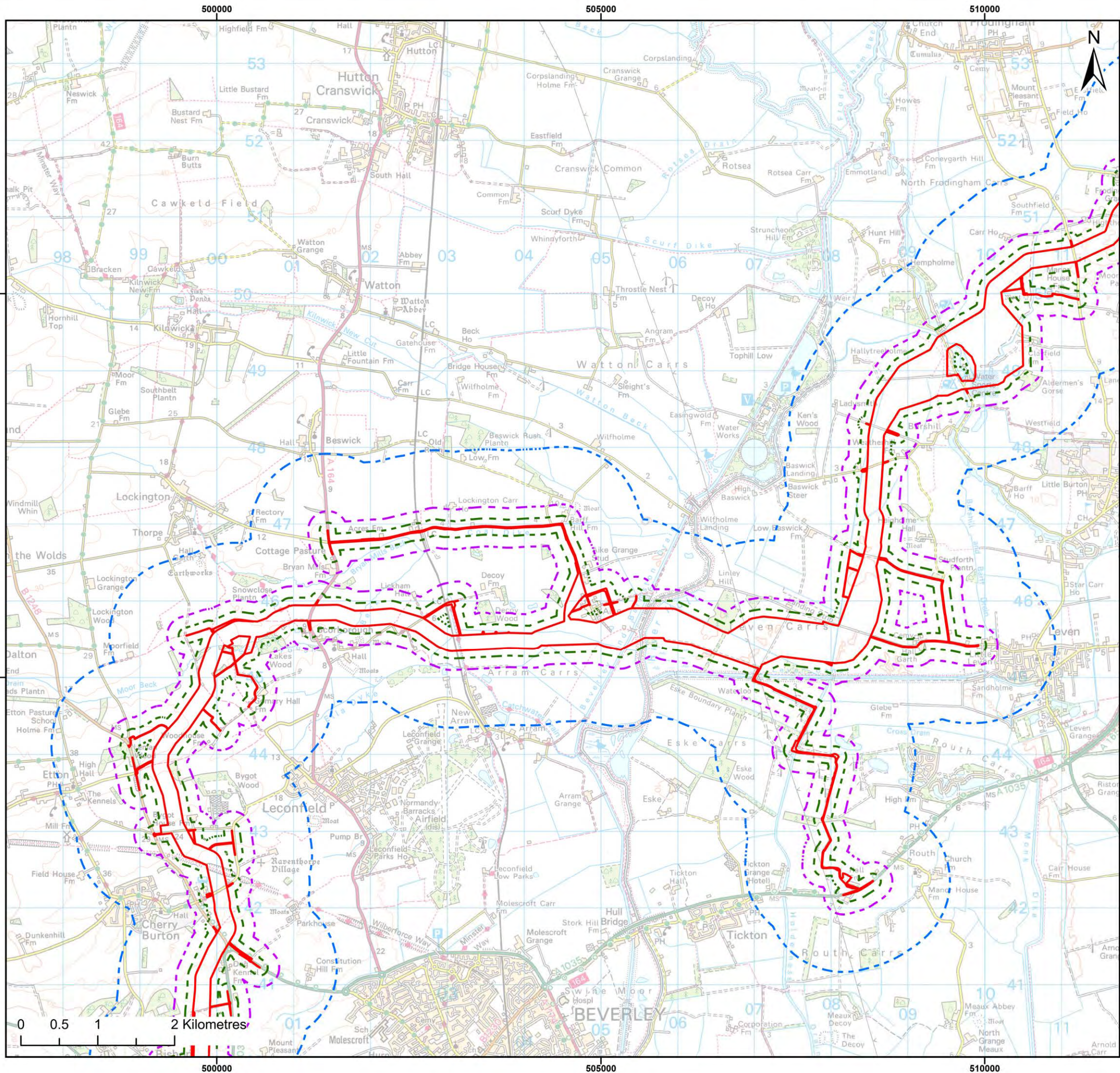
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Onshore Development Area and Buffer Zones
- Sheet 1 of 3

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Co-ordinate system: British National Grid



- Legend:
- Onshore Development Area
 - Onshore Development Area 100m Buffer
 - Onshore Development Area 250m Buffer
 - Onshore Development Area 1km Buffer

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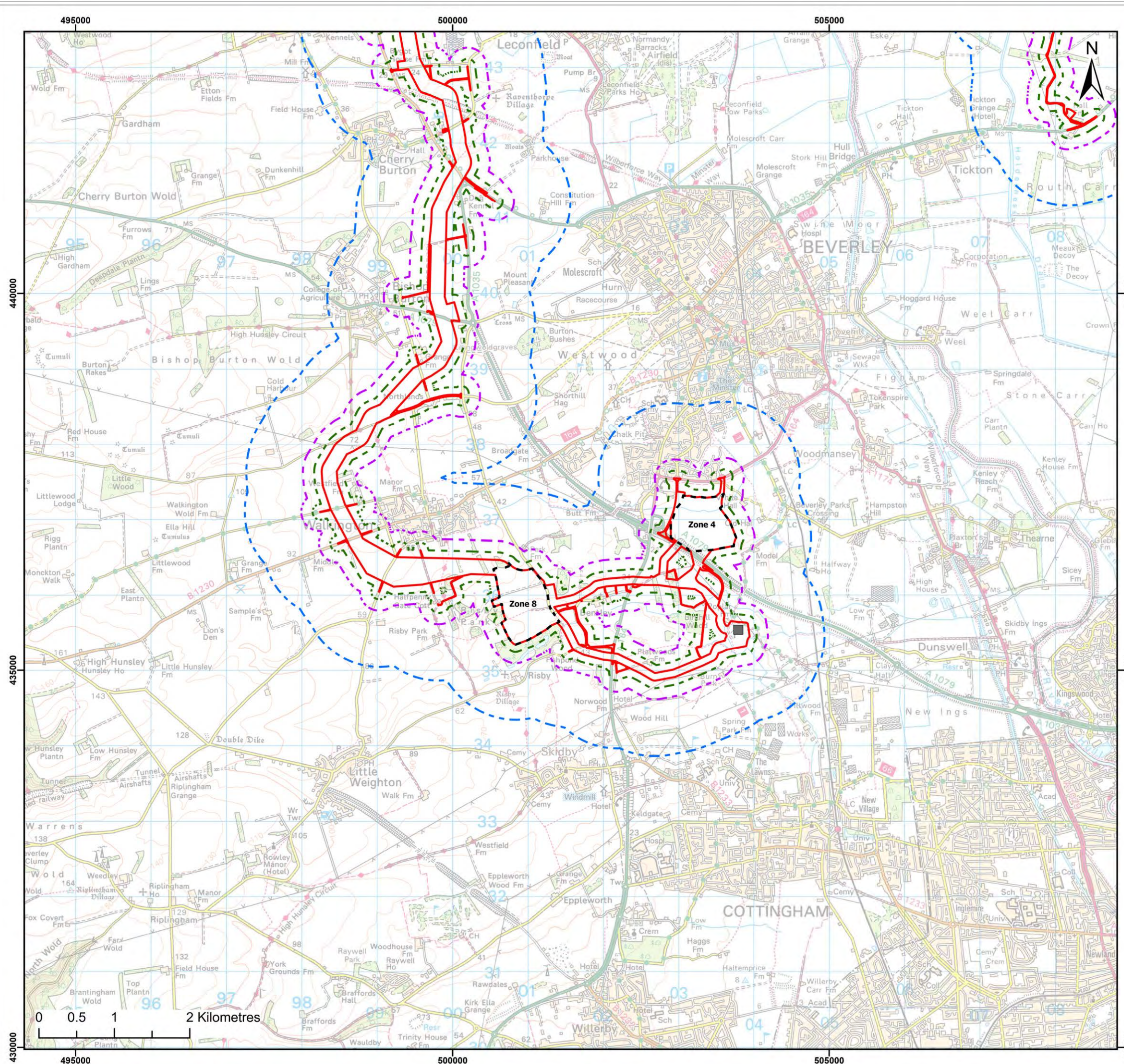
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- Sheet 2 of 3

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Legend:

- Onshore Development Area
- Onshore Development Area 100m Buffer
- Onshore Development Area 250m Buffer
- Onshore Development Area 1km Buffer
- Onshore Converter Station Zone Options
- Indicative Birkhill Wood Substation Location

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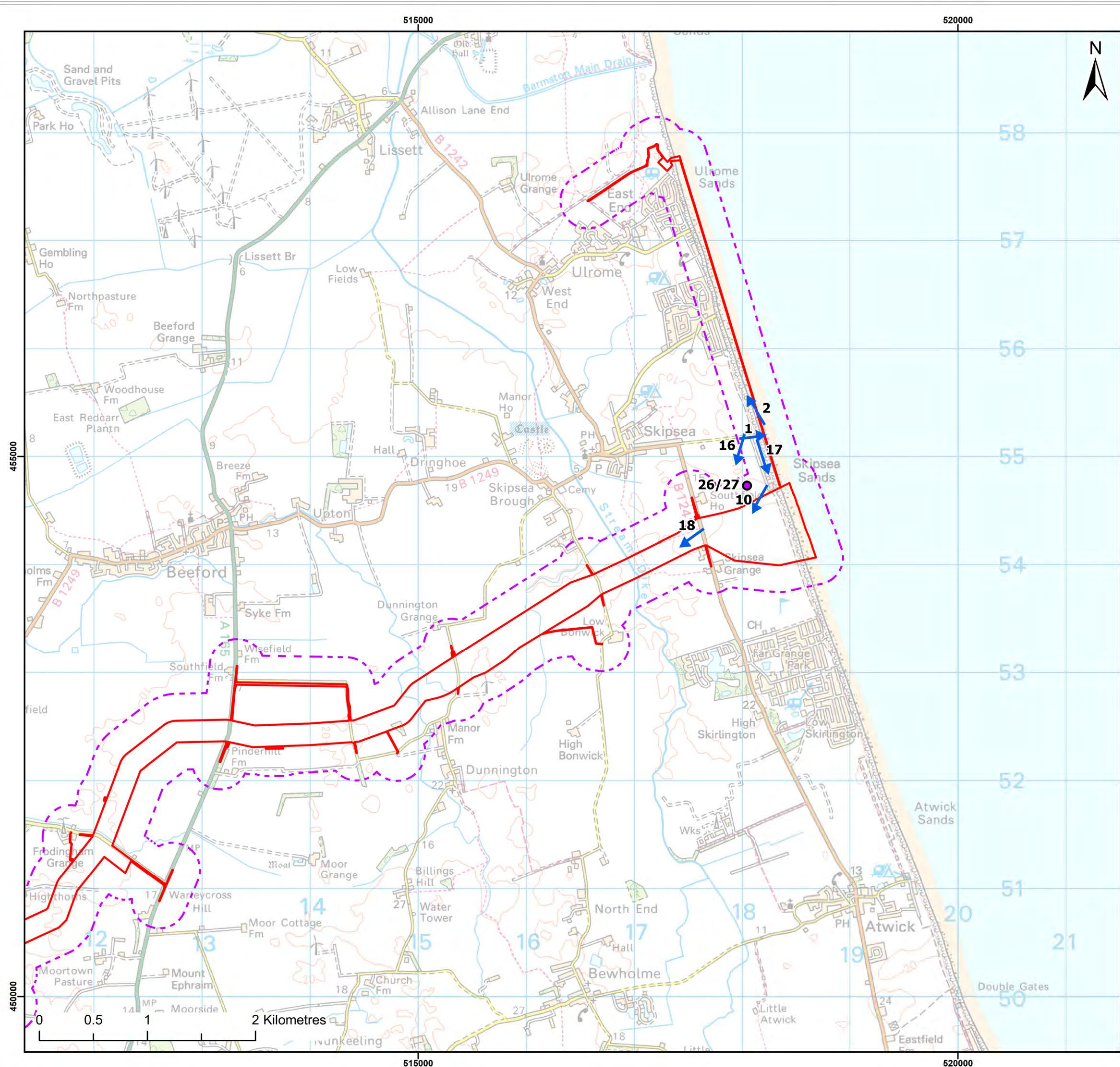
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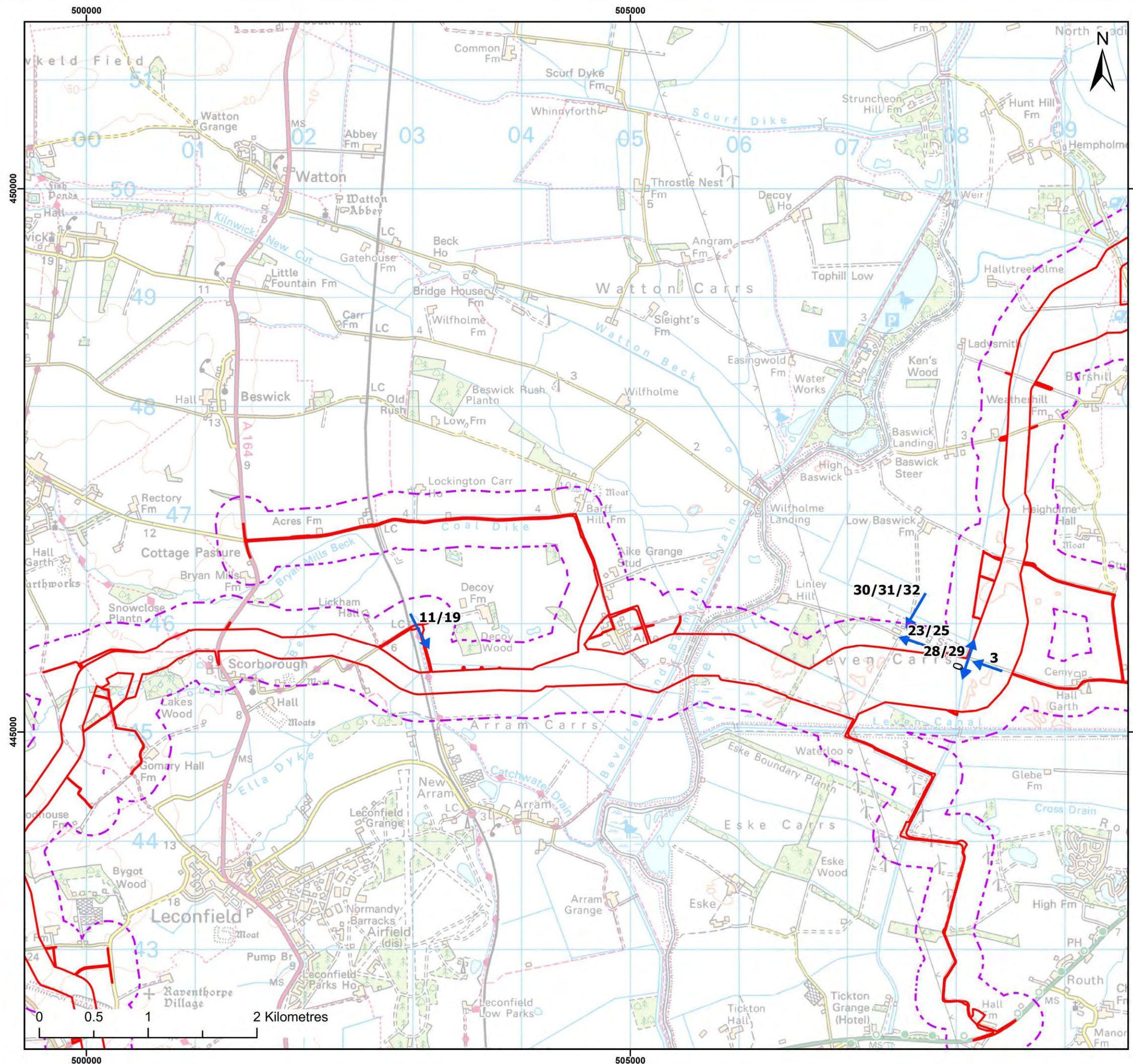
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Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer
- Approximate Photo Location and Direction
- Approximate Photo Location





- Legend:
- Onshore Development Area
 - Onshore Development Area 250m Buffer
 - Approximate Photo Location and Direction

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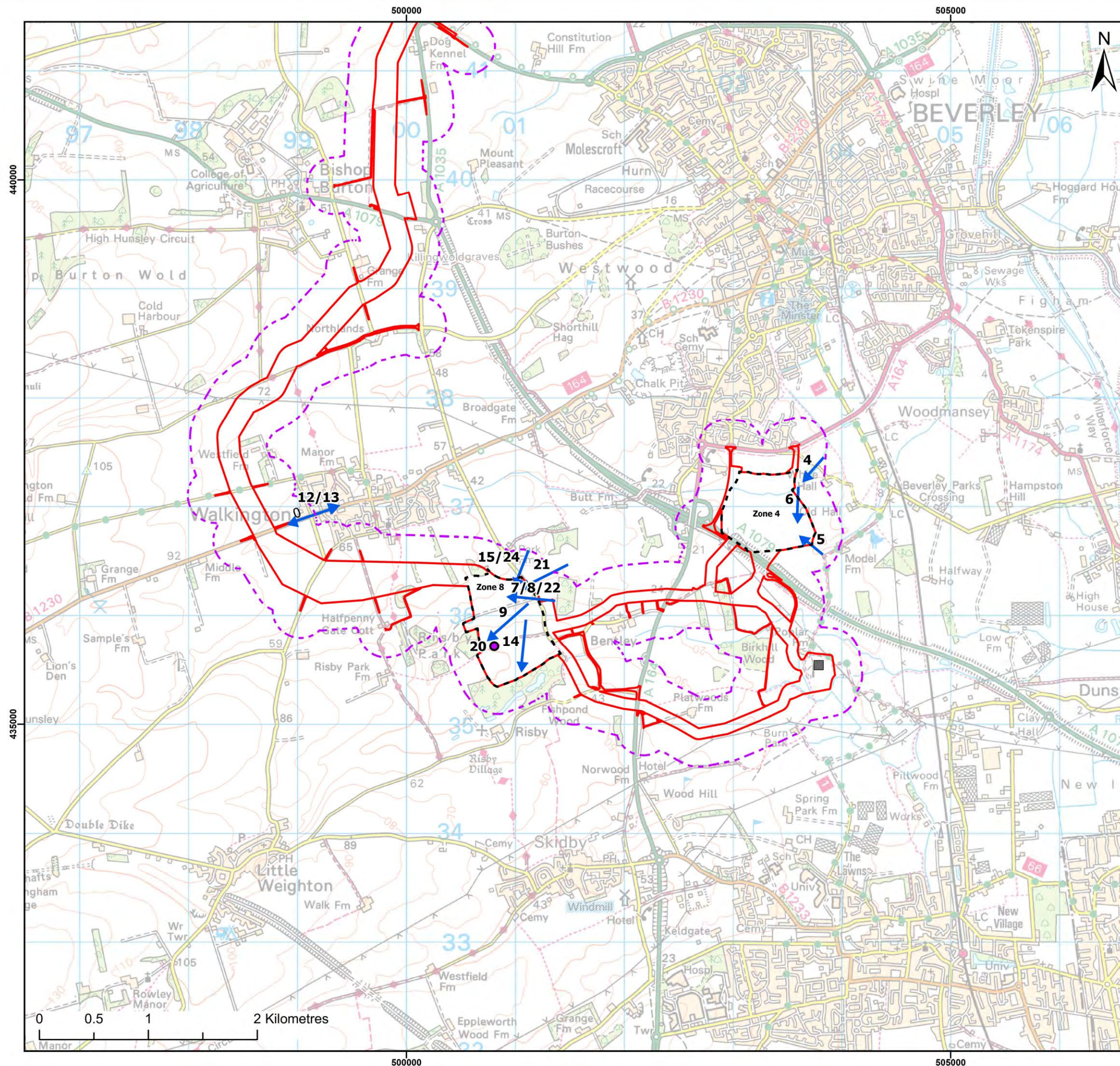
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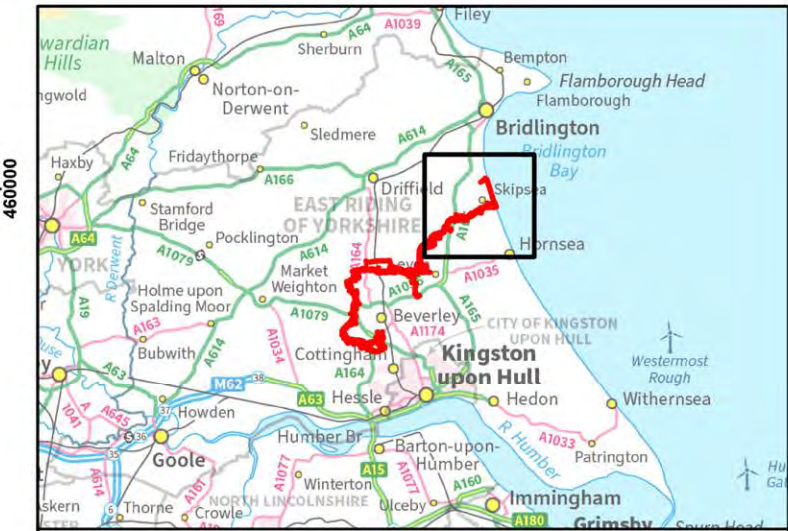
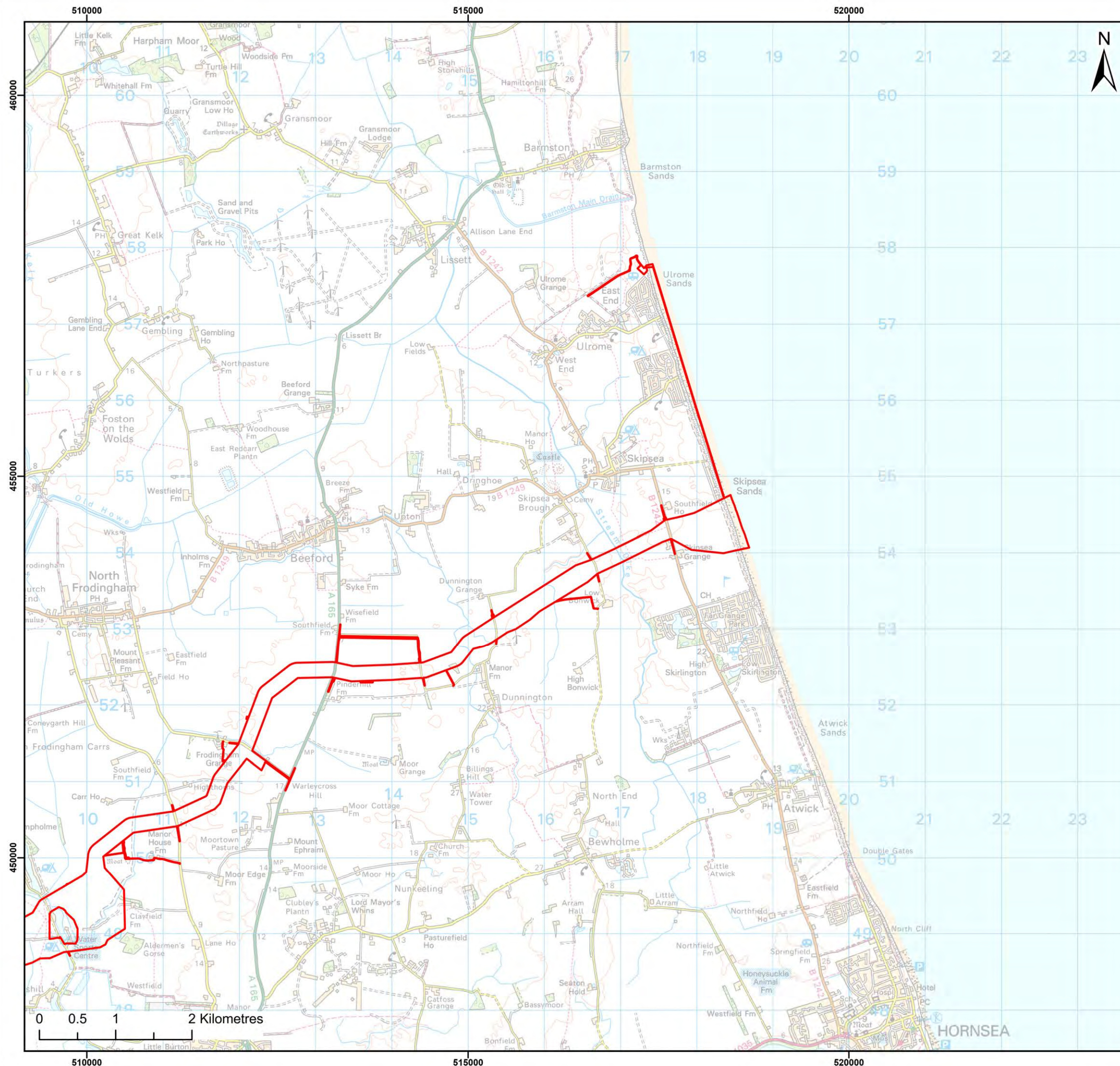
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Title:

Identified Waste Facilities
- Sheet 1 of 3

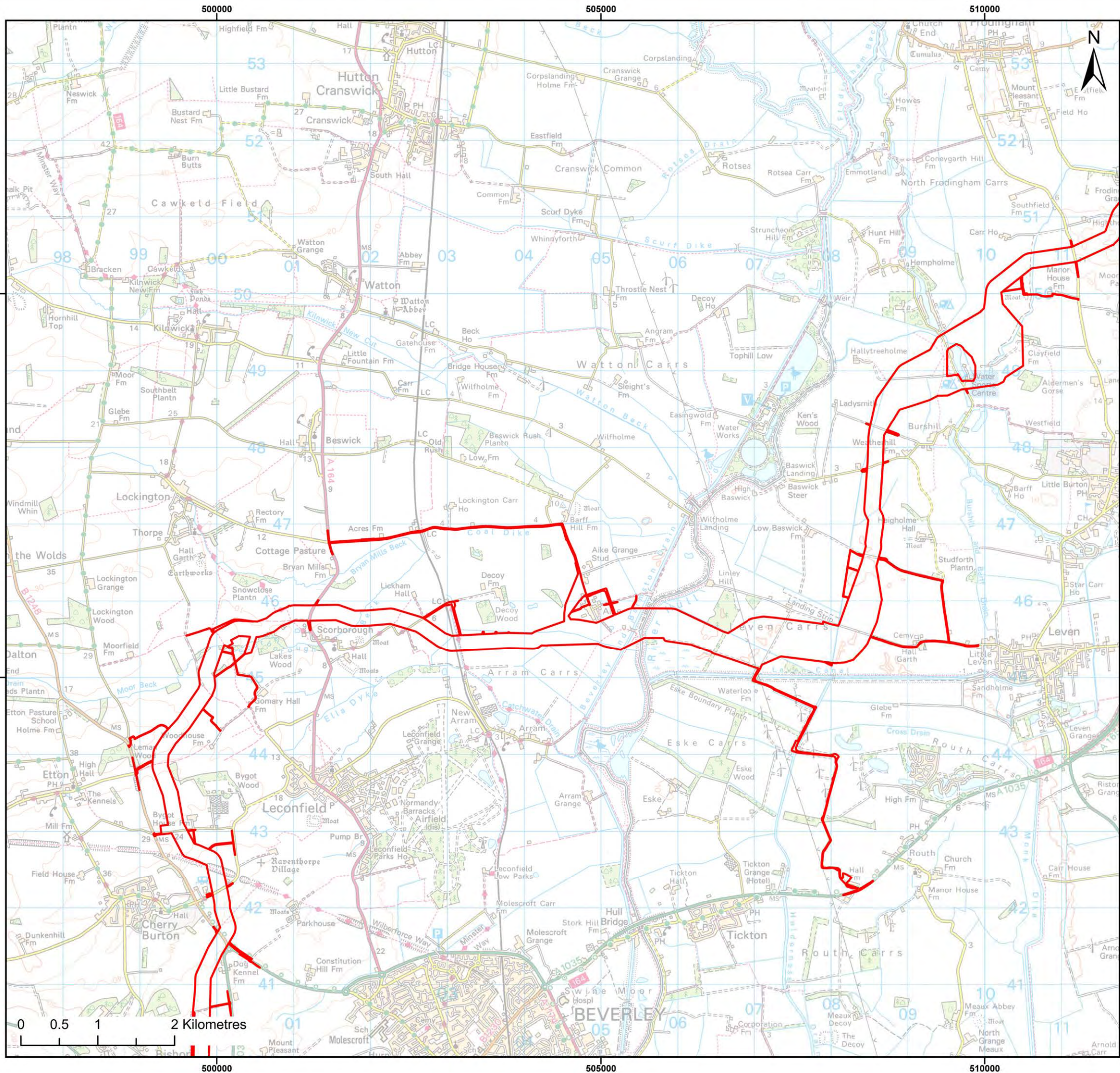
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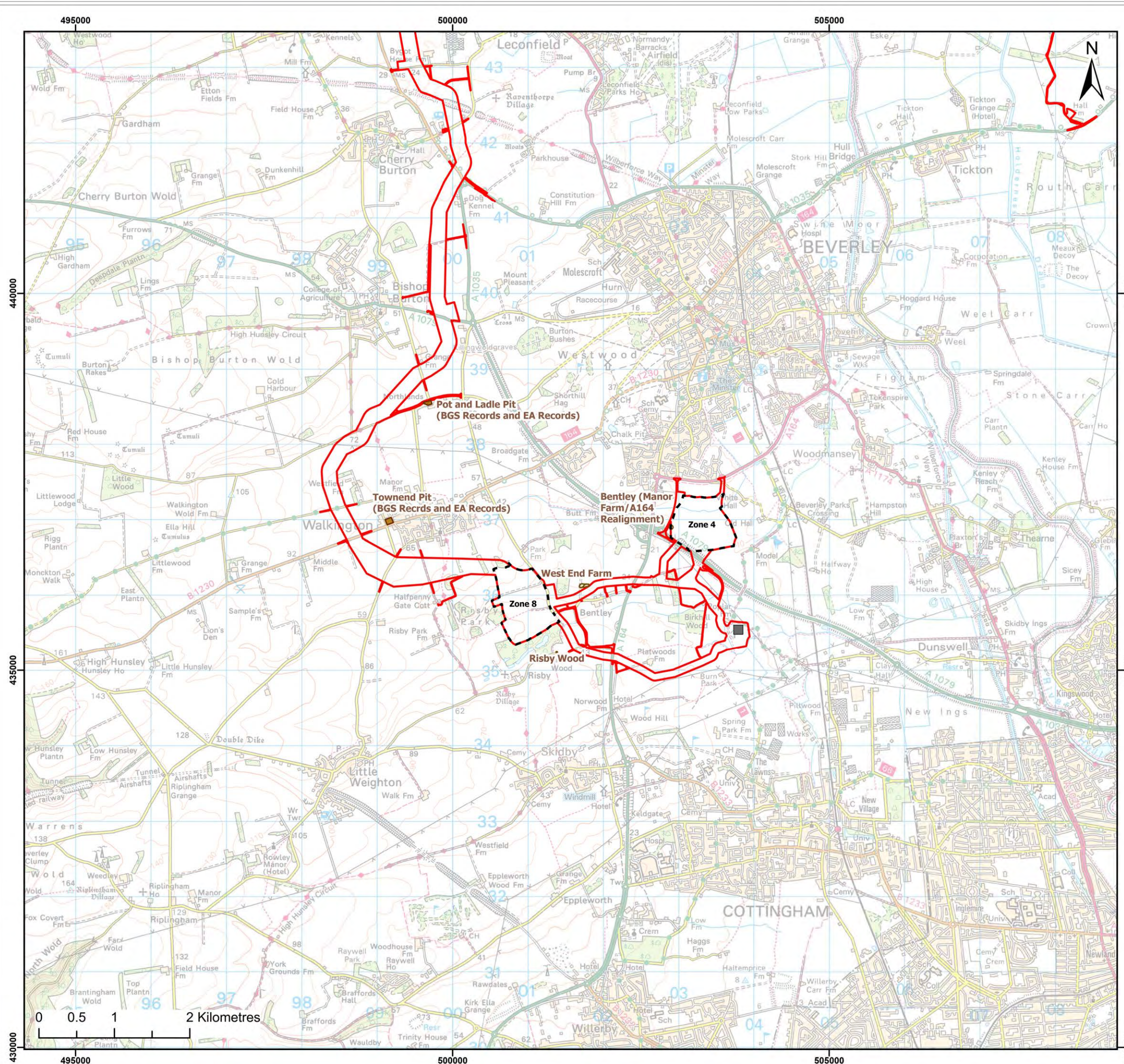
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Legend:

- Onshore Development Area
- Onshore Converter Station Zone Options
- Indicative Birkhill Wood Substation Location
- Historic Landfills (EA Records)
- BGS Recorded Landfill Sites

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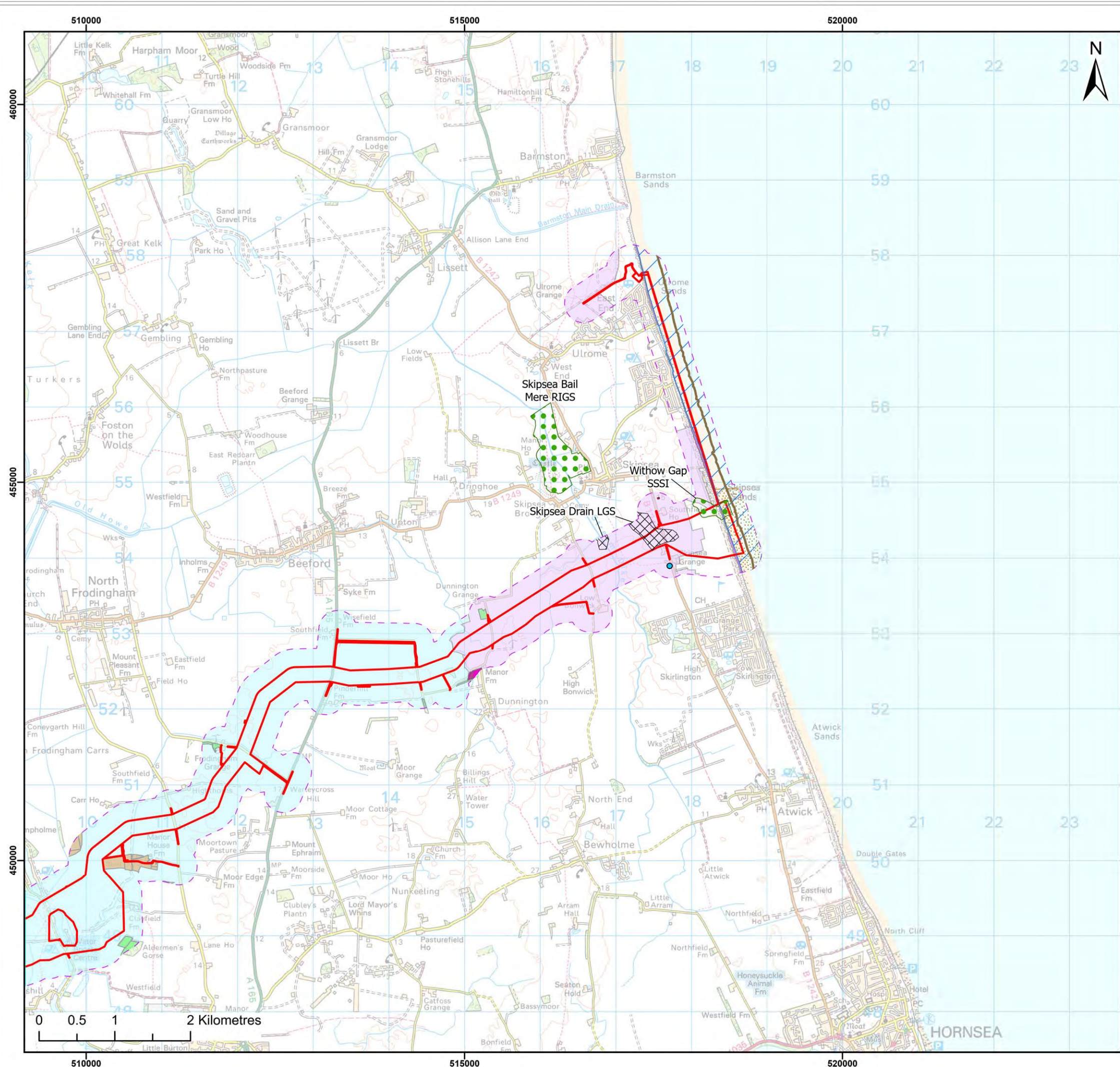
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Title:

Identified Waste Facilities
- Sheet 3 of 3

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Co-ordinate system: British National Grid



Legend:

Onshore Development Area

Onshore Development Area 250m Buffer

Marine Conservation Zone (MCZ)

Special Protection Area (SPA)

Sites of Special Scientific Interest (SSSI) / RIGS (regionally important geological site)

Coastal and floodplain grazing marsh

Deciduous woodland

Maritime cliff and slope

Traditional orchard

Scheduled Monuments

Conservation Areas

Local Geological Sites

Back-feature marking former coastline

Listed Buildings

Grade

II

Nitrate Vulnerable Zones

Barmston Sea Drain From Skipsea Drain To N Sea

River Hull From Arram Beck To Humber

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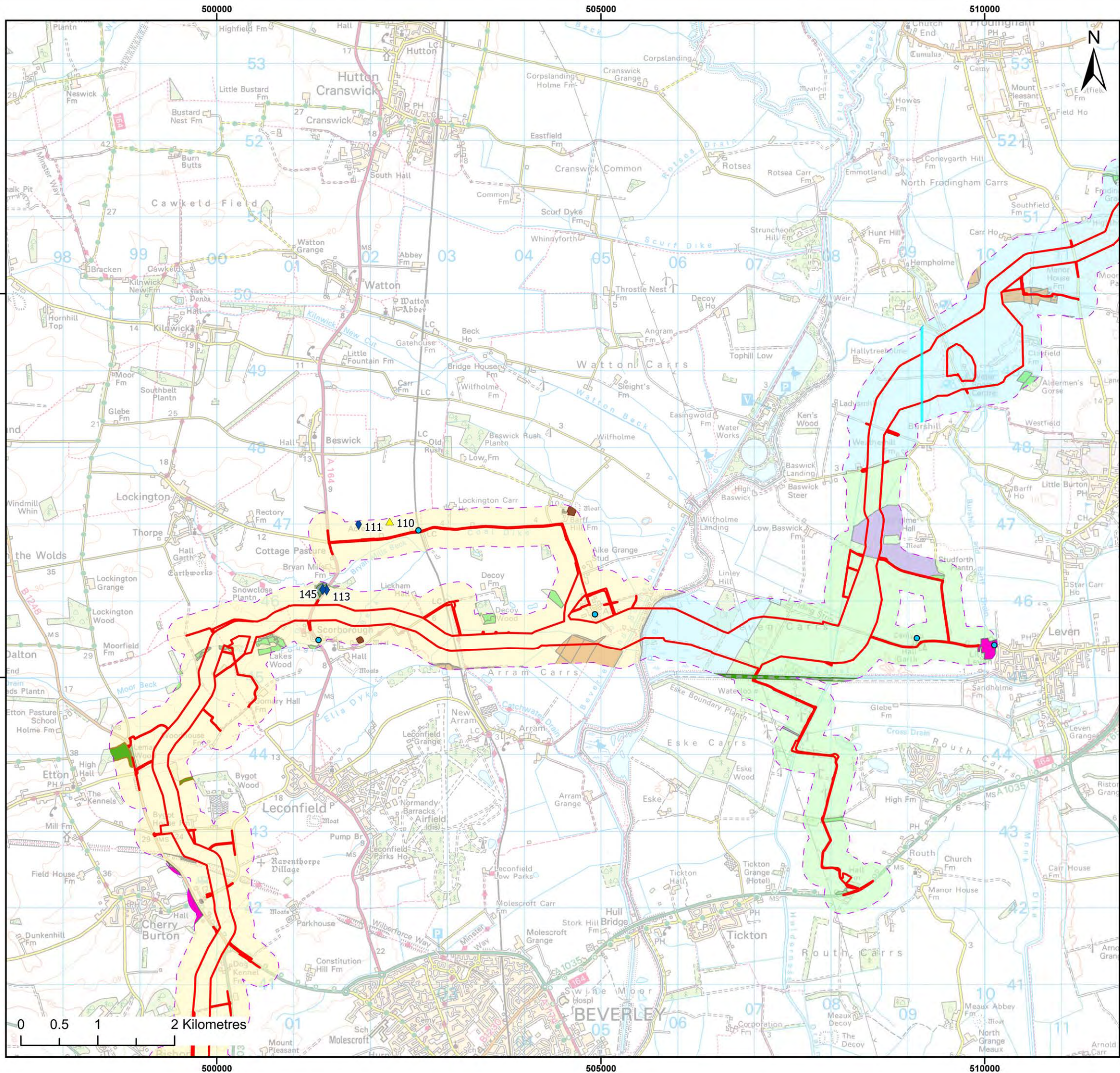
Environmentally Sensitive Land Uses
- Sheet 1 of 3

Figure: 19.2-4

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Co-ordinate system: British National Grid



Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer
- Sites of Special Scientific Interest (SSSI) / RIGS (regionally important geological site)
- Ancient Woodland
- Priority Habitat Inventory
 - Coastal and floodplain grazing marsh
 - Deciduous woodland
 - Good quality semi-improved grassland
 - Lowland fens
 - No main habitat but additional habitats present
 - Reedbeds
 - Traditional orchard
- Scheduled Monuments
- Conservation Areas
- Wells
- Springs
- Listed Buildings
 - Grade II
- Nitrate Vulnerable Zones
 - Holderness Drain From Fordyke Stream To Humber
 - River Hull From Arram Beck To Humber
 - Yorkshire Chalk

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Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK
WIND FARM

Title:

Environmentally Sensitive Land Uses
- Sheet 2 of 3

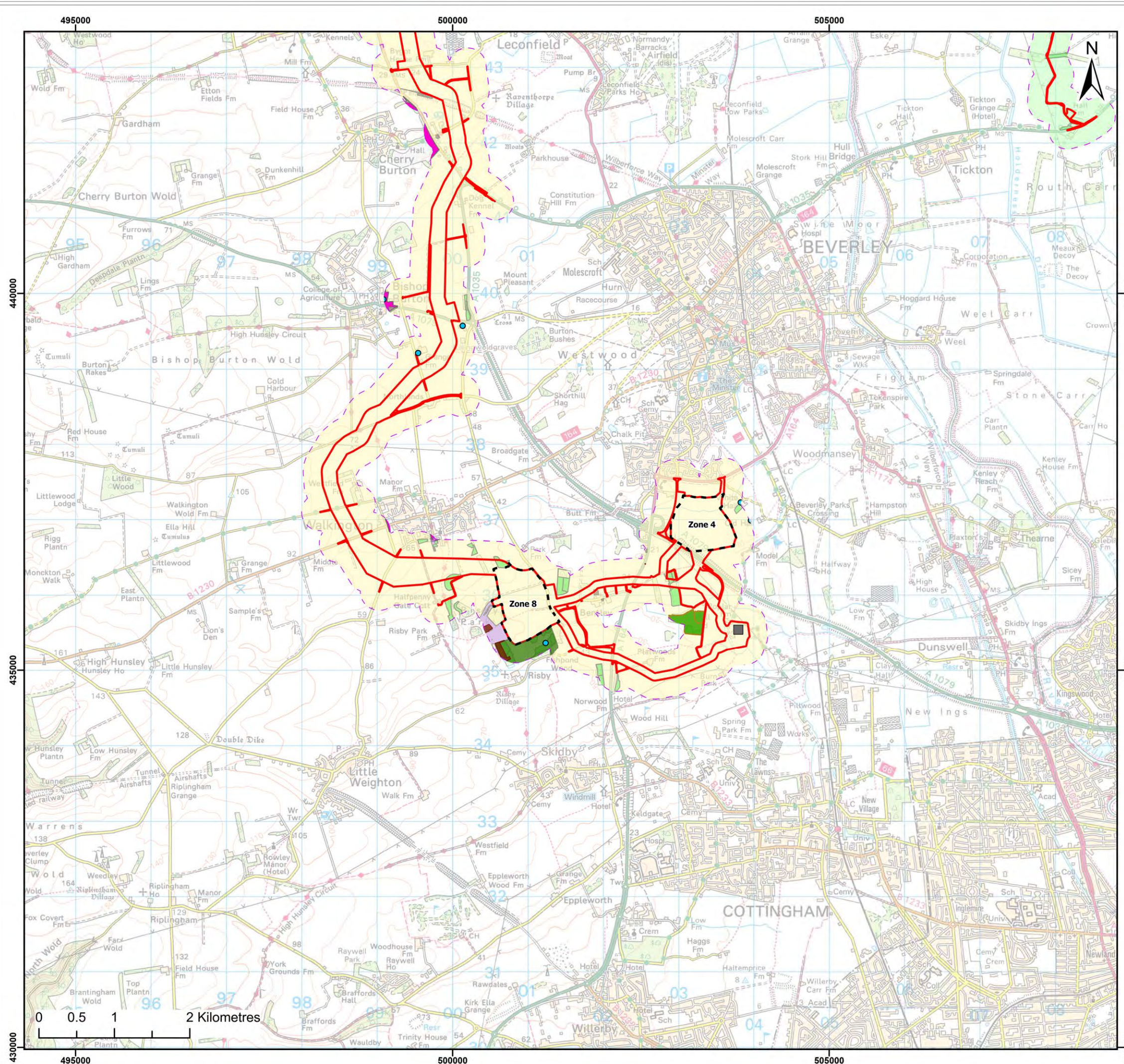
Figure: 19.2-4

Drawing No: PC6250-RHD-XX-ON-DR-GS-0199

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02	26/03/2025	JH	AB	A3	1:50,000
01	07/11/2024	AB	GC	A3	1:50,000

Co-ordinate system: British National Grid





Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer
- Onshore Converter Station Zone Options
- Indicative Birkhill Wood Substation Location
- Ancient Woodland
- Priority Habitat Inventory
 - Deciduous woodland
 - Good quality semi-improved grassland
 - No main habitat but additional habitats present
 - Traditional orchard
- Scheduled Monuments
- Registered Parks and Gardens
- Conservation Areas
- Listed Buildings
 - Grade II
- Nitrate Vulnerable Zones
 - Holderness Drain From Fordyke Stream To Humber
 - River Hull From Arram Beck To Humber
 - Yorkshire Chalk

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Project:

Dogger Bank D
Offshore Wind Farm



**DOGGER BANK
WIND FARM**

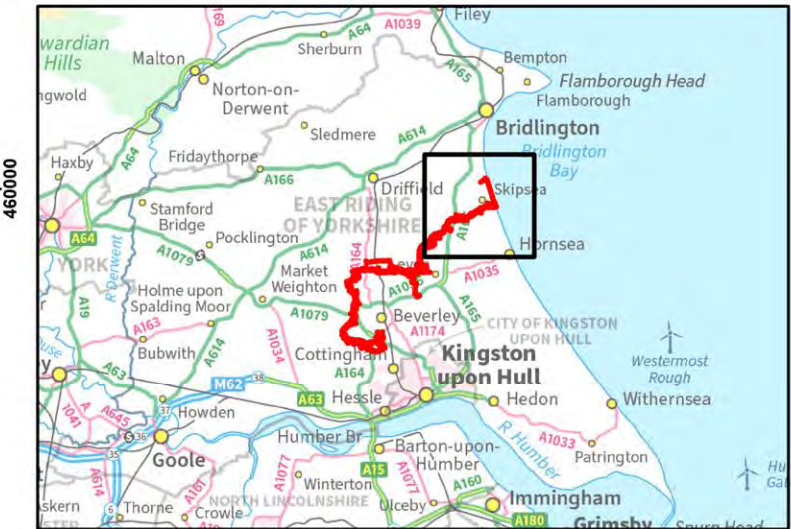
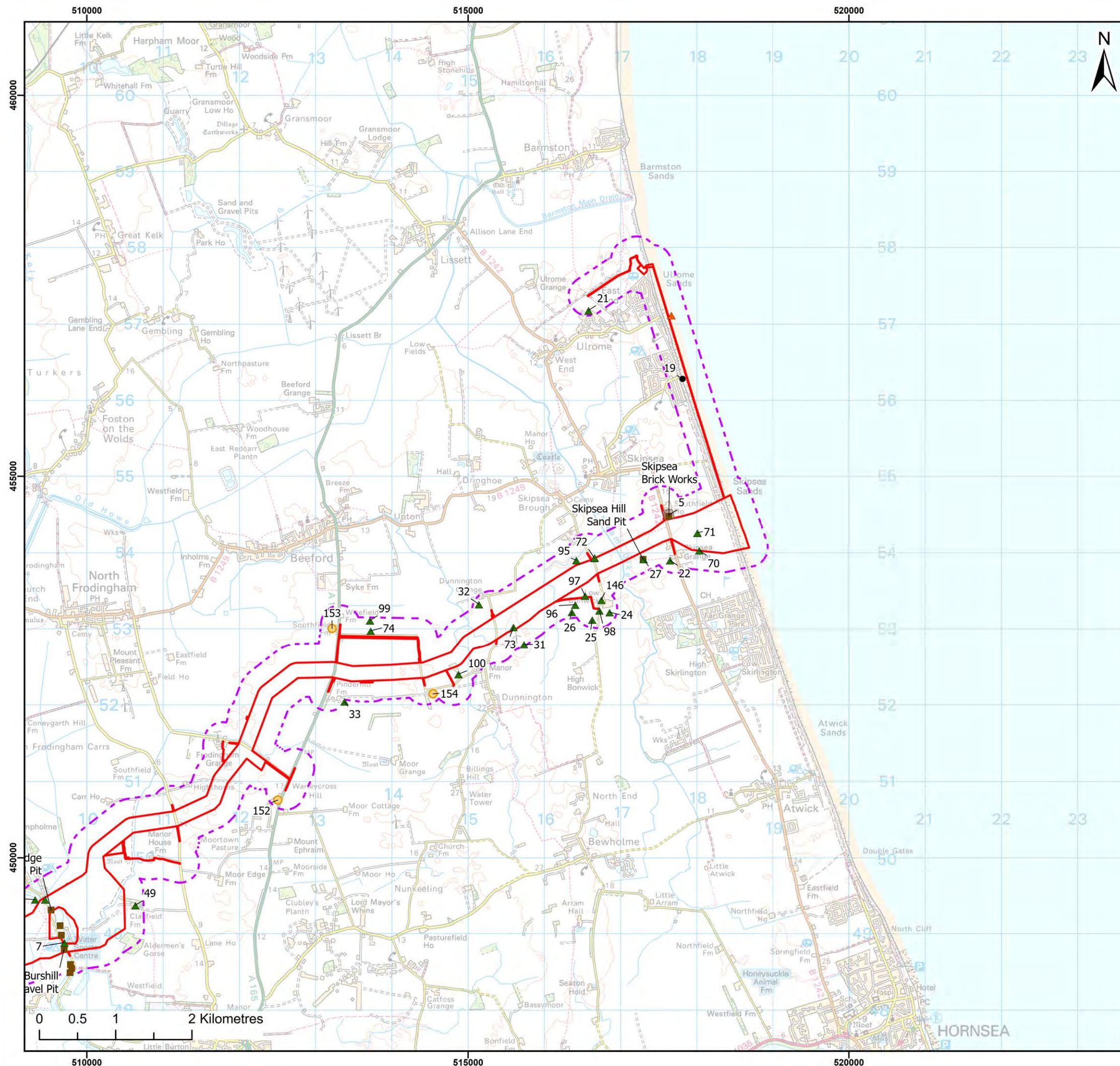
Title:

Environmentally Sensitive Land Uses
- Sheet 3 of 3

Figure:	19.2-4	Drawing No:	PC6250-RHD-XX-ON-DR-GS-0199			
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01	07/11/2024	AB	GC	A3	1:50,000	

Co-ordinate system: British National Grid





Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer

Energy Features

- Electrical Substation Facilities

Tanks

- Historical Tank Features

Industrial Land Uses

- Potential pits / ponds / chalk pits / sand pit/ old gravel pits/ infilled land
- BGS Recorded Mineral Site
- Coastguard station
- Clay bricks & tiles [manufacture]

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Project:

Dogger Bank D
Offshore Wind Farm

**DOGGER BANK
WIND FARM**

Title:

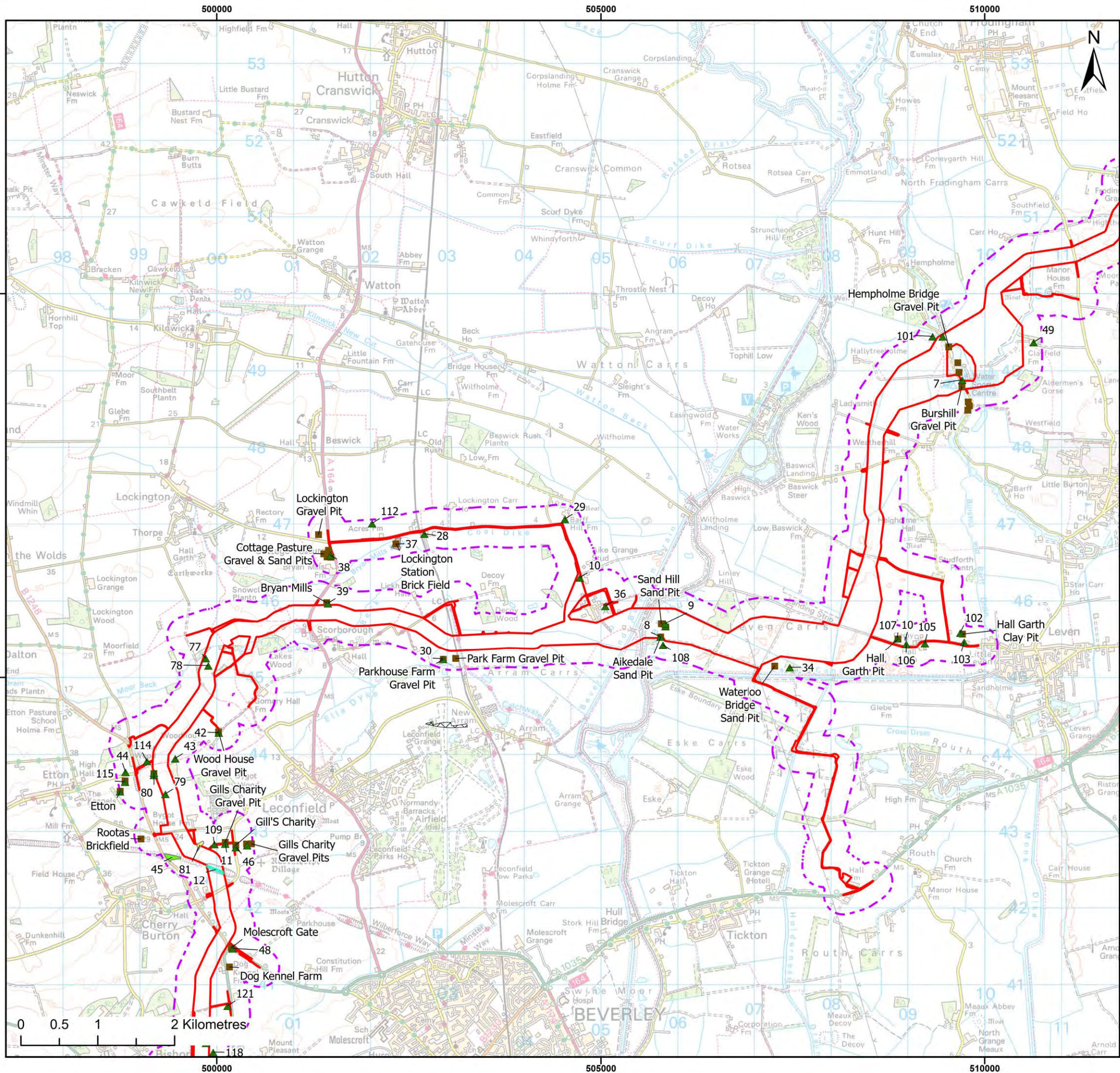
Potentially Contaminative Historical Land Uses
- Sheet 1 of 3

Figure:	19.2-5	Drawing No:	PC6250-RHD-XX-ON-DR-GS-0274			
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01	07/11/2024	AB	GC	A3	1:50,000	

Co-ordinate system: British National Grid

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Renewables**

equinor



Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer

Industrial Land Uses

- Potential pits / ponds / chalk pits / sand pit/ old gravel pits/ infilled land
- BGS Recorded Mineral Site
- Unknown Filled Ground (Pond, marsh, river, stream, dock etc)
- Clay bricks & tiles [manufacture]
- Quarrying of sand & clay, operation of sand & gravel pits
- Railways
- Cutting

Military

- Military Land

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Project:

Dogger Bank D Offshore Wind Farm

DOGGER BANK WIND FARM

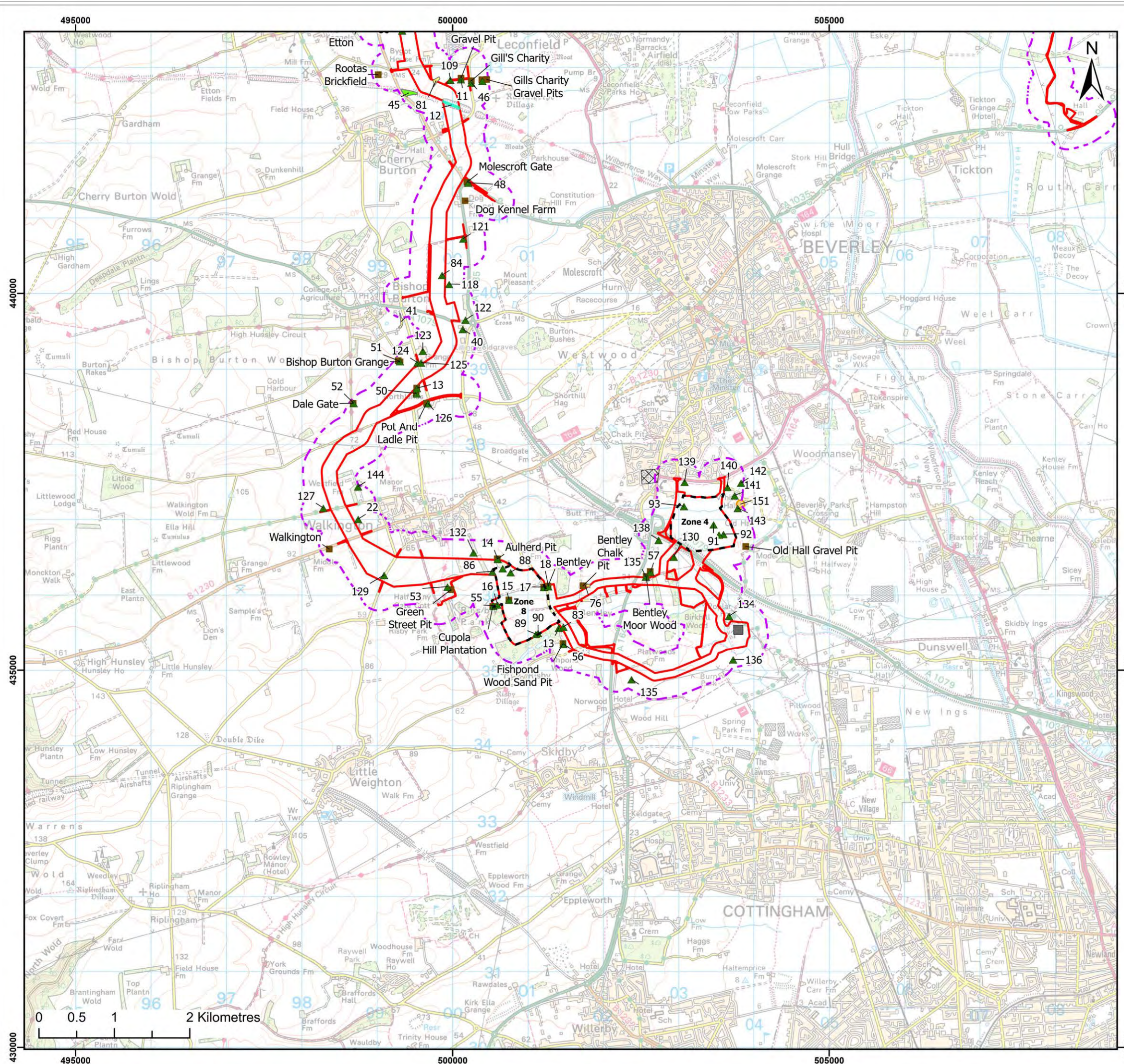
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Potentially Contaminative Historical Land Uses
- Sheet 2 of 3

Figure:	19.2-5	Drawing No:	PC6250-RHD-XX-ON-DR-GS-0274			
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01	07/11/2024	AB	GC	A3	1:50,000	

Co-ordinate system: British National Grid





Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer
- Onshore Converter Station Zone Options
- Indicative Birkhill Wood Substation Location

Tanks

- Historical Tank Features

Industrial Land Uses

- Potential pits / ponds / chalk pits / sand pit/ old gravel pits/ infilled land
- BGS Recorded Mineral Site
- Quarrying of sand & clay, operation of sand & gravel pits
- Railways
- Cutting

Military

- Military Land

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Project:

Dogger Bank D
Offshore Wind Farm

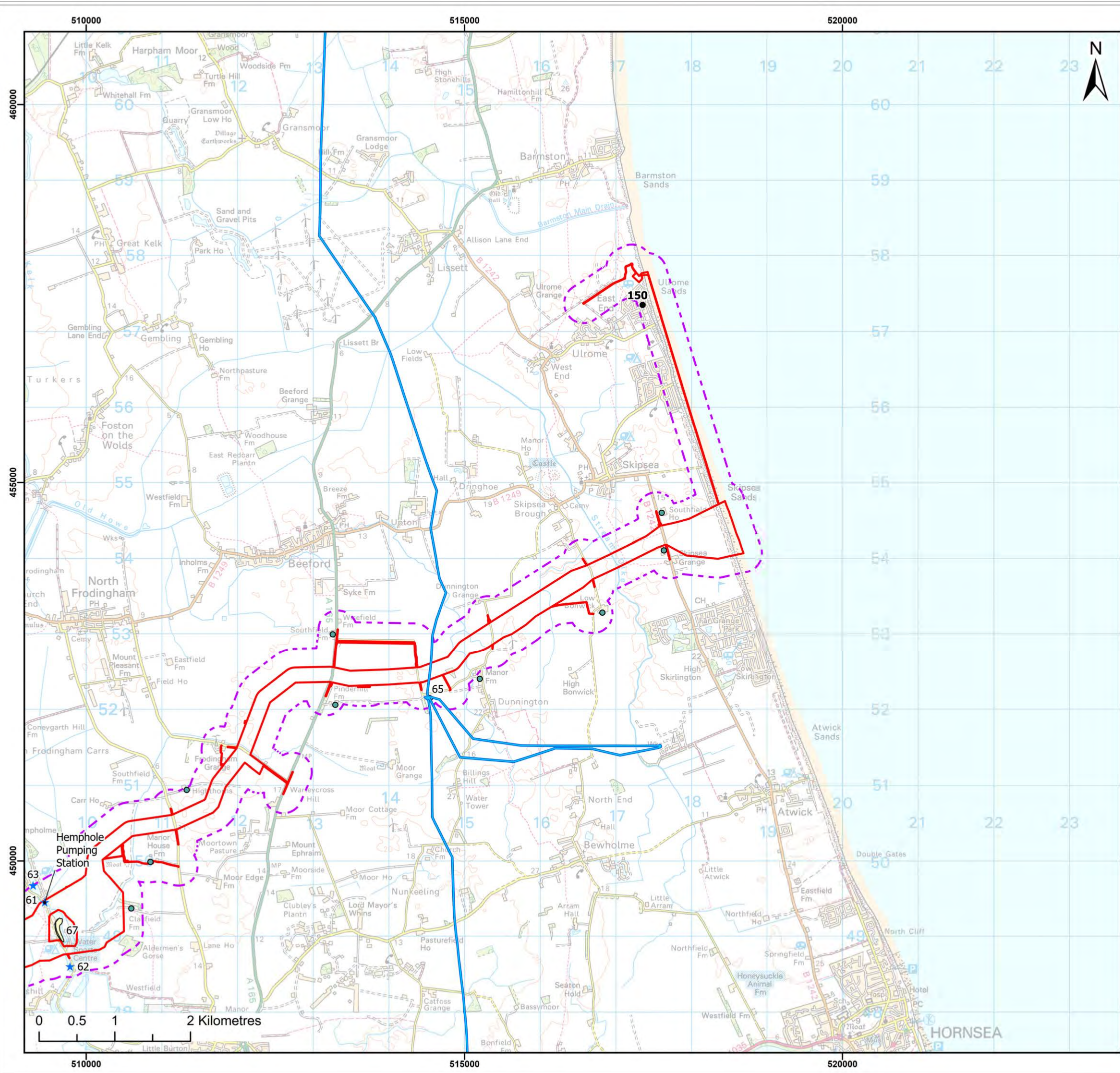
**DOGGER BANK
WIND FARM**

Title:

Potentially Contaminative Historical Land Uses
- Sheet 3 of 3

Figure:	19.2-5	Drawing No:	PC6250-RHD-XX-ON-DR-GS-0274			
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01	07/11/2024	AB	GC	A3	1:50,000	

Co-ordinate system: British National Grid



Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer

Energy Features

- Electrical Substation Facilities

Industrial Land Uses

- ★ Potential pits / ponds / chalk pits / sand pit/ old gravel pits/ infilled land
- Gas Valve Compound
- Farm Building
- Hempholme Pumping Station
- Quarrying of sand & clay, operation of sand & gravel pits

Gas Pipelines

- National Grid High Pressure Gas Pipeline

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Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK
WIND FARM

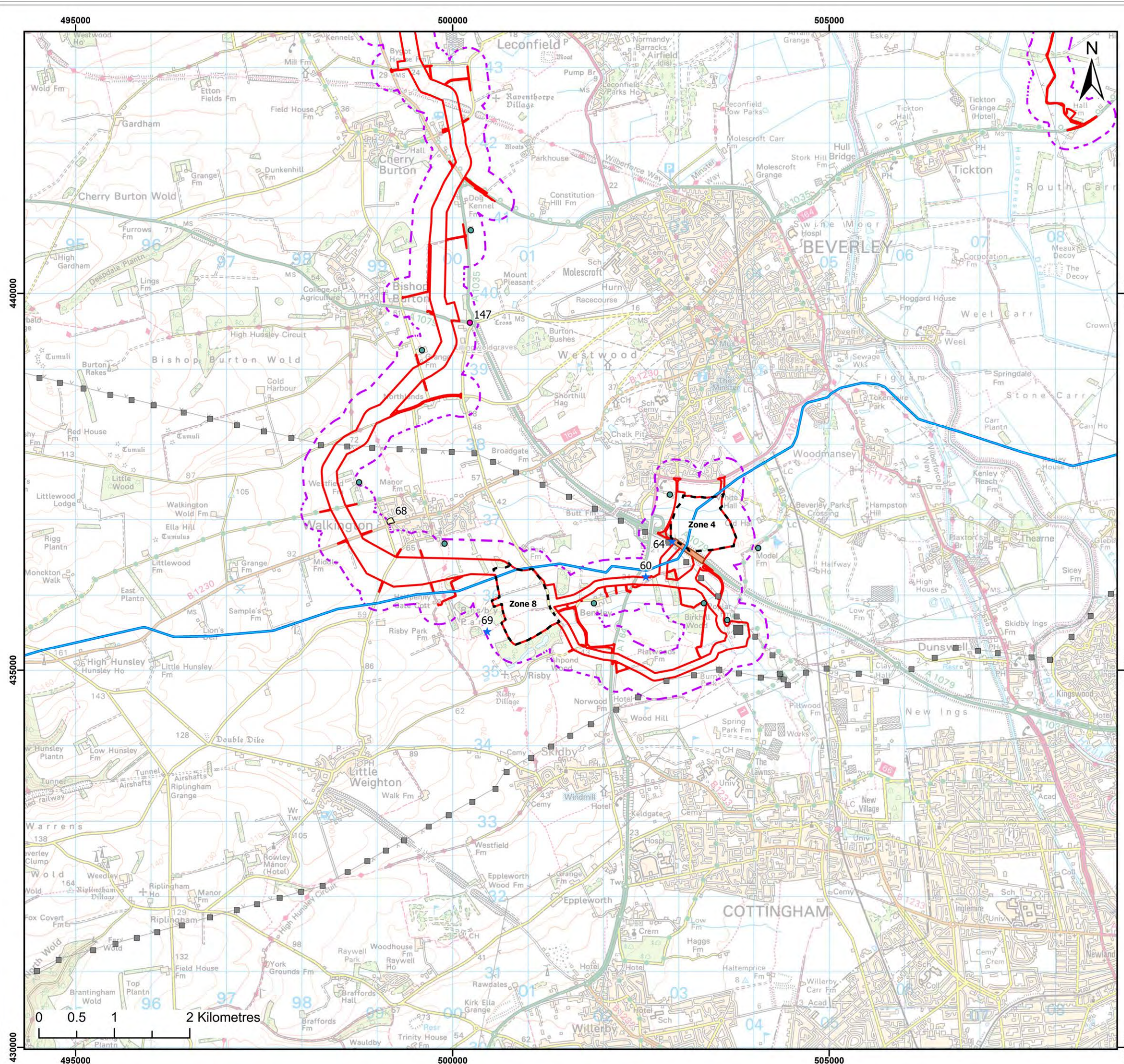
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Potentially Contaminative Current Land Uses
- Sheet 1 of 3

Figure: 19.2-6	Drawing No: PC6250-RHD-XX-ON-DR-GS-0275
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01	07/11/2024	AB	GC	A3	1:50,000

Co-ordinate system: British National Grid



Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer
- Onshore Converter Station Zone Options
- Indicative Birkhill Wood Substation Location

Industrial Land Uses

- Potential pits / ponds / chalk pits / sand pit/ old gravel pits/ infilled land
- National Grid Pylons
- Fuel Station Points
- Farm Building
- Quarrying of sand & clay, operation of sand & gravel pits
- Cutting

Gas Pipelines

- National Grid High Pressure Gas Pipeline

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Project:

Dogger Bank D
Offshore Wind Farm

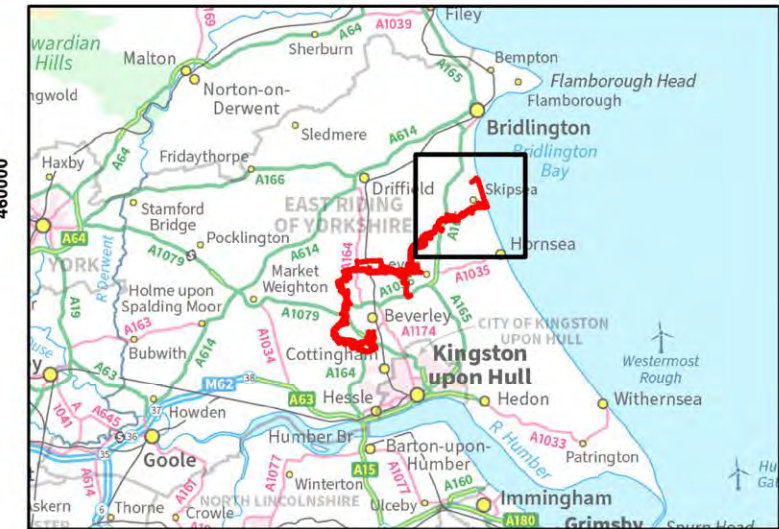
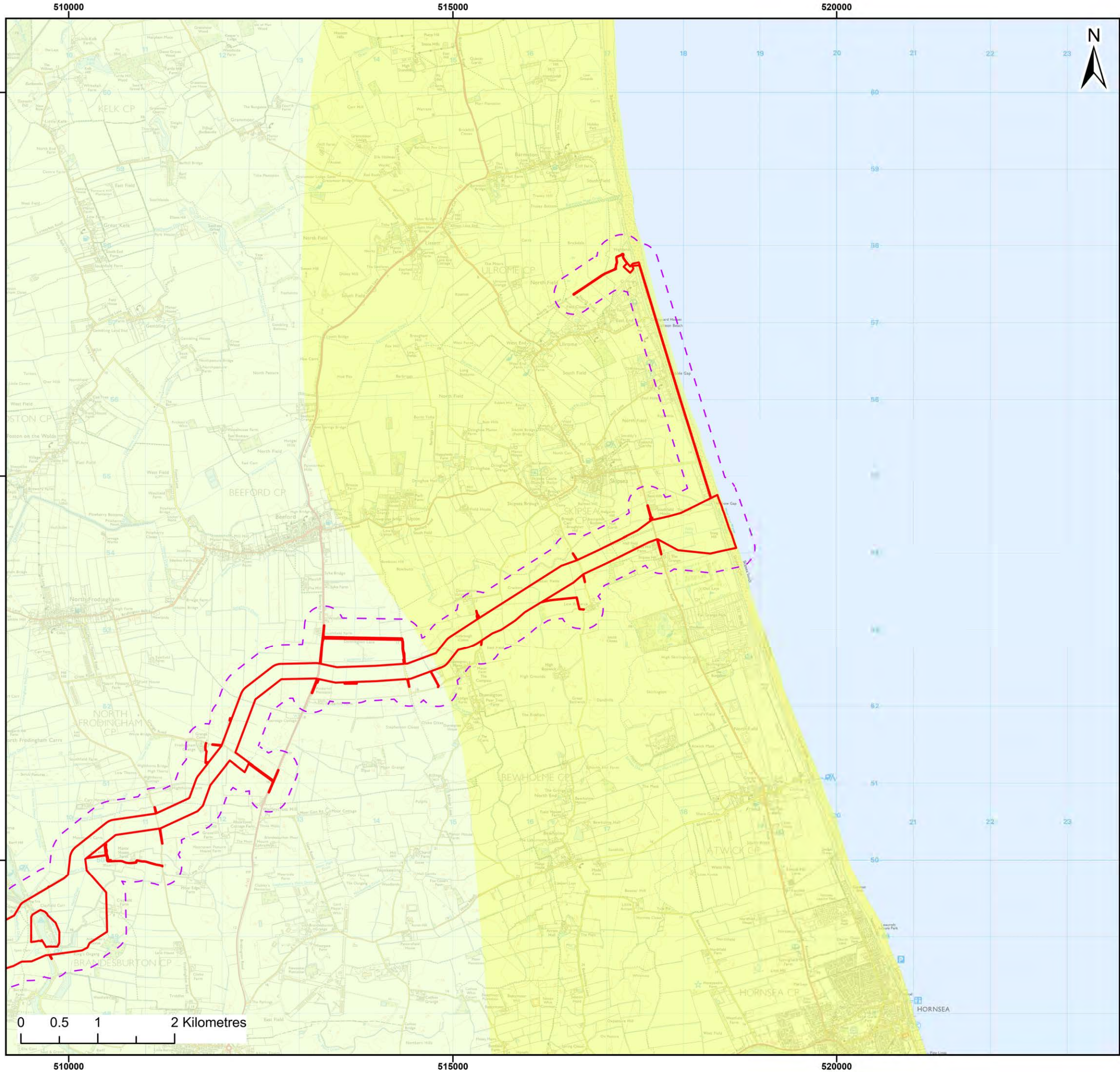
**DOGGER BANK
WIND FARM**

Title:

Potentially Contaminative Current Land Uses
- Sheet 3 of 3

Figure:	19.2-6	Drawing No:	PC6250-RHD-XX-ON-DR-GS-0275			
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Co-ordinate system: British National Grid



Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer

50k Bedrock Geology

- Rowe Chalk Formation
- Flamborough Chalk Formation
- Burnham Chalk Formation

Note: Only bedrock geology formations that intersect the Onshore Development Area are shown in the legend

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Project:

Dogger Bank D
Offshore Wind Farm

**DOGGER BANK
WIND FARM**



Title:

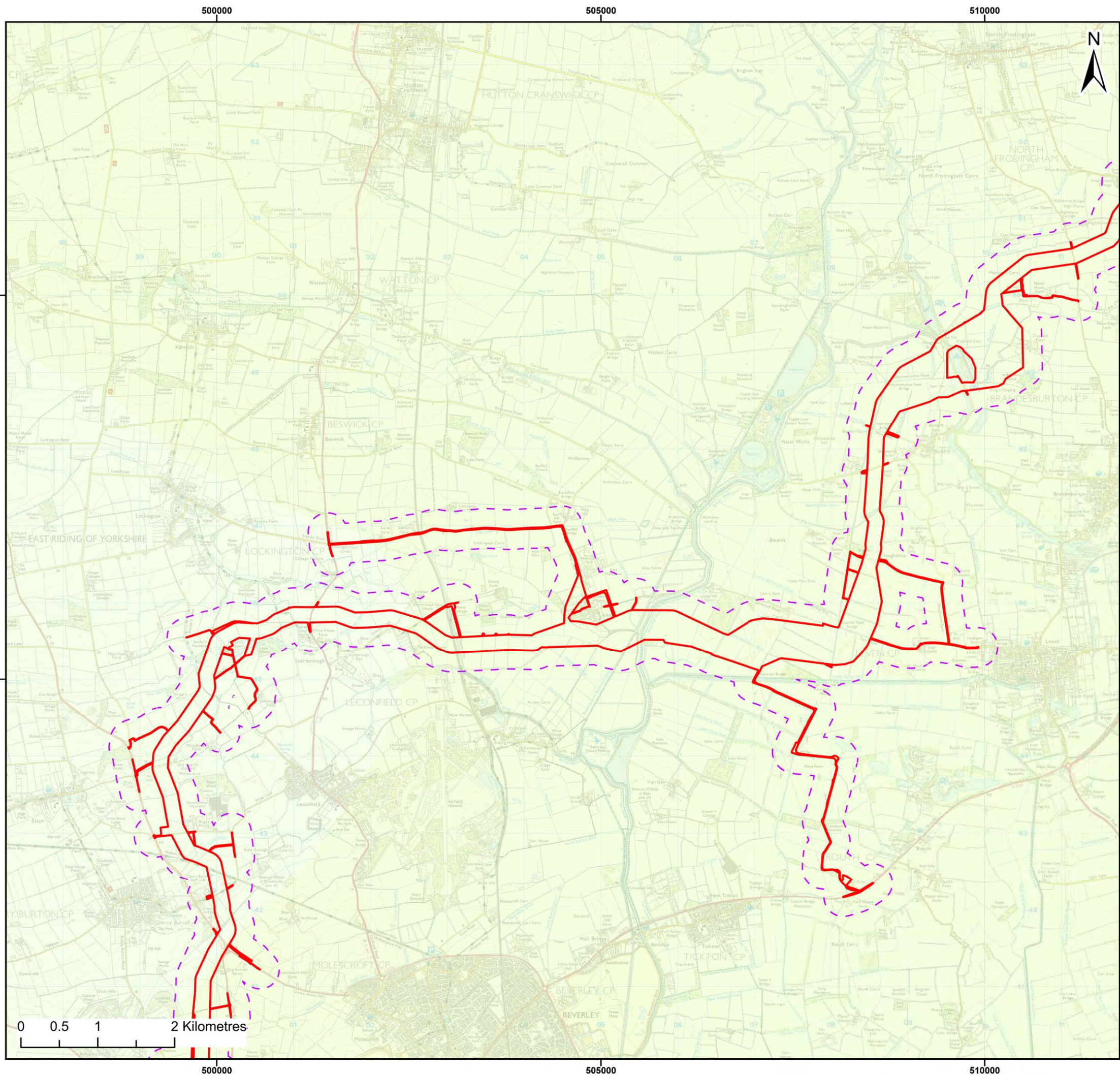
Bedrock Geology
- Sheet 1 of 3

Figure: 19.2-7	Drawing No: PC6250-RHD-XX-ON-DR-GS-0200
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02	26/03/2025	JH	AB	A3	1:50,000
01	07/11/2024	AB	GC	A3	1:50,000

Co-ordinate system: British National Grid





- Legend:
- Onshore Development Area
 - Onshore Development Area 250m Buffer

- 50k Bedrock Geology**
- Rowe Chalk Formation
 - Flamborough Chalk Formation
 - Burnham Chalk Formation

Note: Only bedrock geology formations that intersect the Onshore Development Area are shown in the legend

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Dogger Bank D
Offshore Wind Farm

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WIND FARM**

Title:

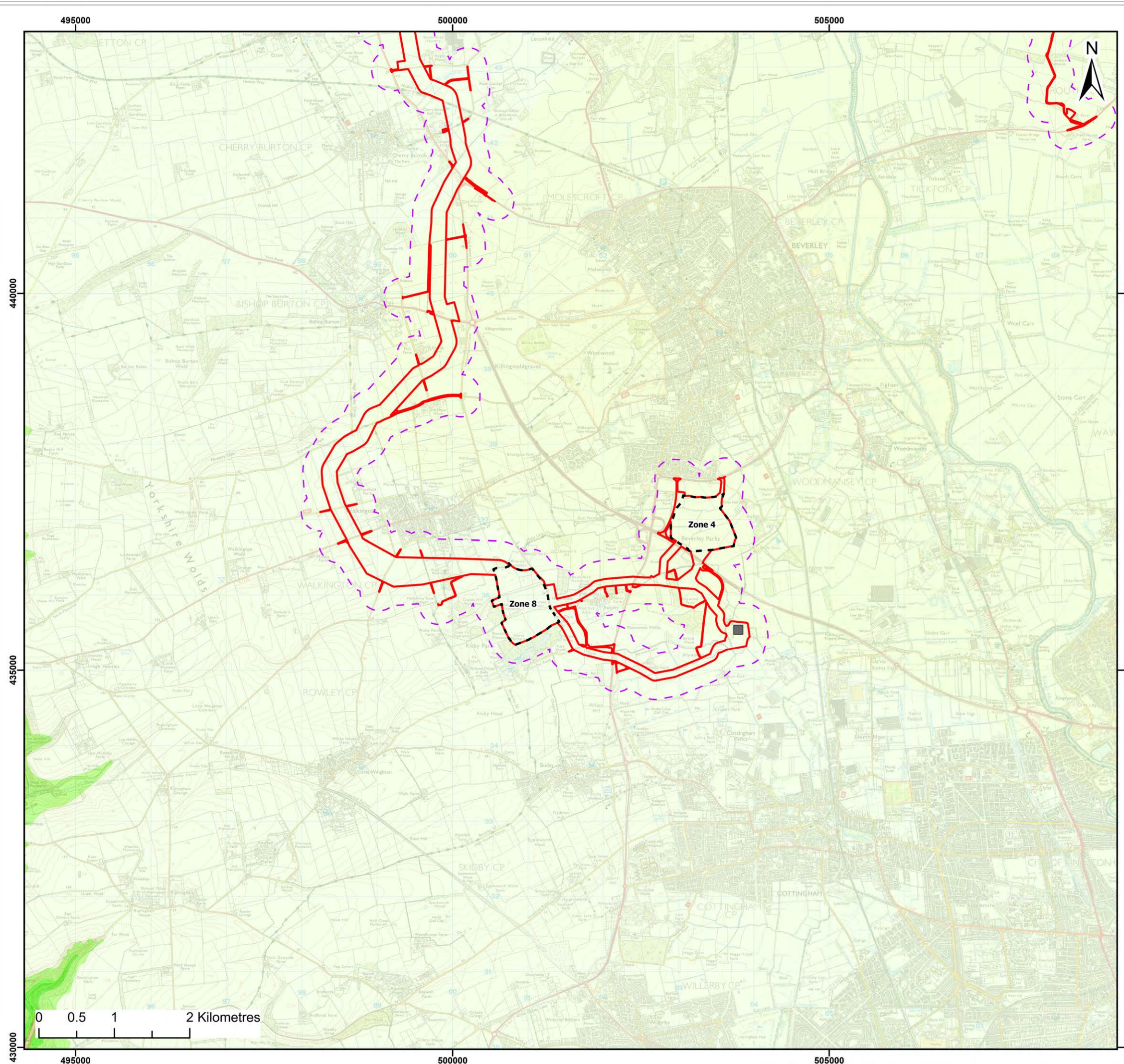
Bedrock Geology
- Sheet 2 of 3

Figure: 19.2-7 Drawing No: PC6250-RHD-XX-ON-DR-GS-0200

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01	07/11/2024	AB	GC	A3	1:50,000

Co-ordinate system: British National Grid





Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer
- Onshore Converter Station Zone Options
- Indicative Birkhill Wood Substation Location

50k Bedrock Geology

- Rowe Chalk Formation
- Flamborough Chalk Formation
- Burnham Chalk Formation

Note: Only bedrock geology formations that intersect the Onshore Development Area are shown in the legend

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Project:

Dogger Bank D
Offshore Wind Farm



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WIND FARM**

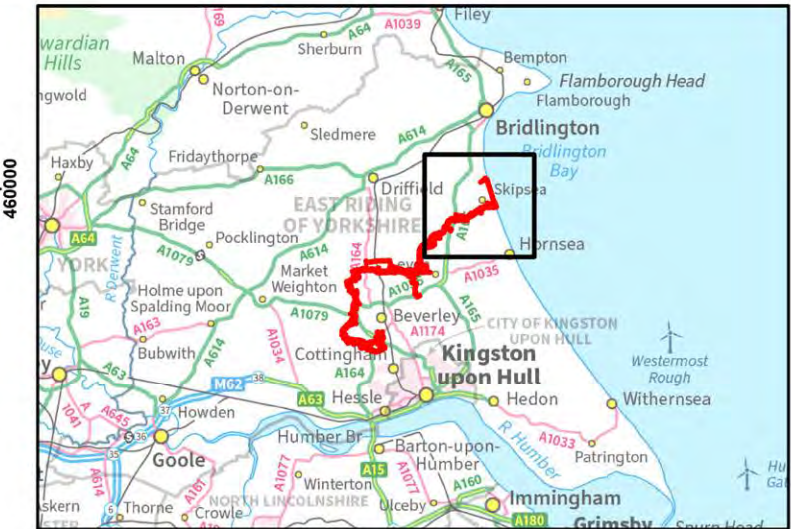
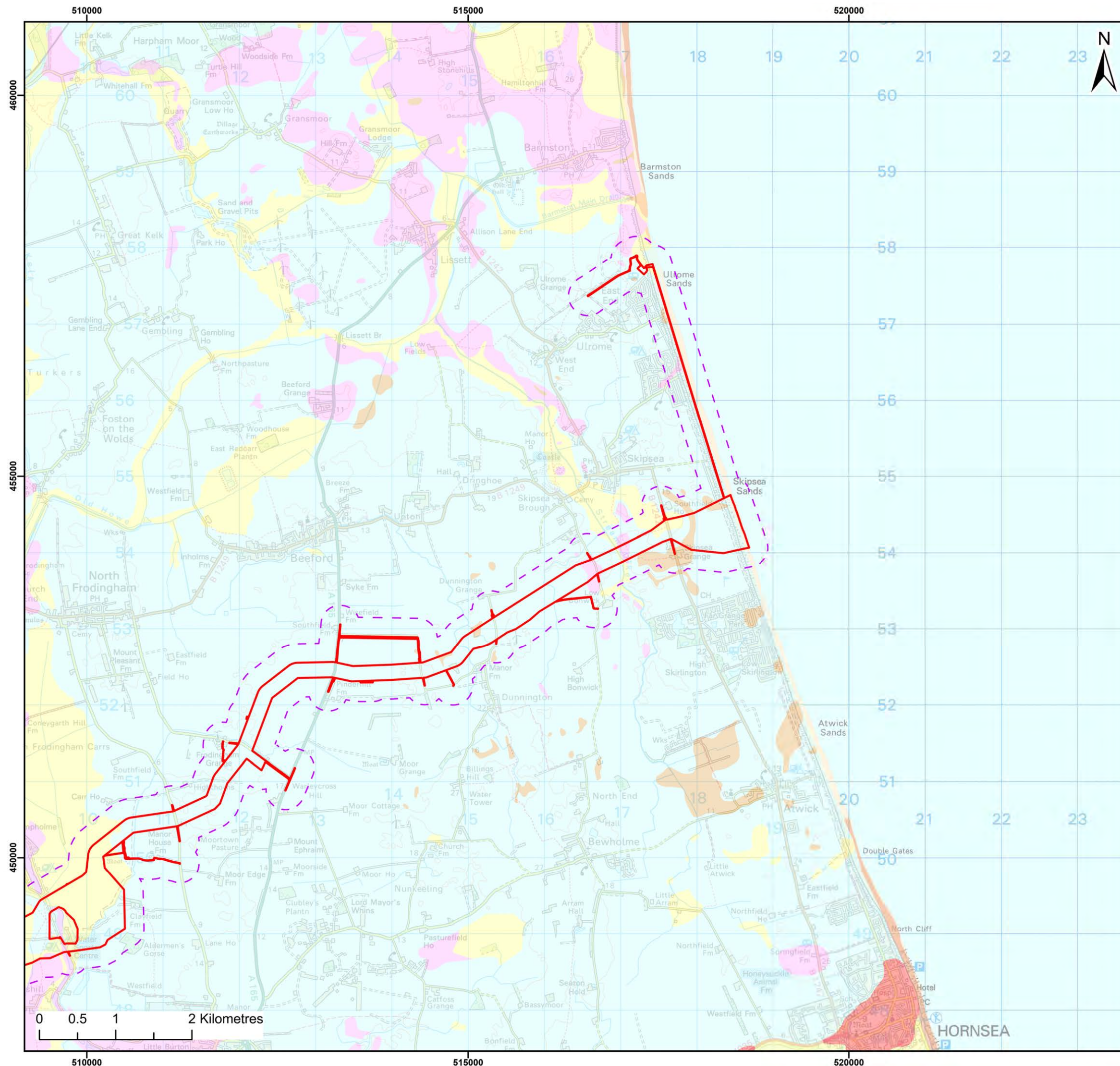
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Bedrock Geology
- Sheet 3 of 3

Figure: 19.2-7	Drawing No: PC6250-RHD-XX-ON-DR-GS-0200				
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01	07/11/2024	AB	GC	A3	1:50,000

Co-ordinate system: British National Grid





Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer

50k Superficial Geology

- Till
- Glaciofluvial Deposits
- Alluvium
- Storm Beach Deposits
- Lacustrine Deposits
- Head
- Sand and Gravel

Note: Only superficial geology formations that intersect the Onshore Development Area are shown in the legend

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Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK
WIND FARM

Title:

Superficial Geology
- Sheet 1 of 3

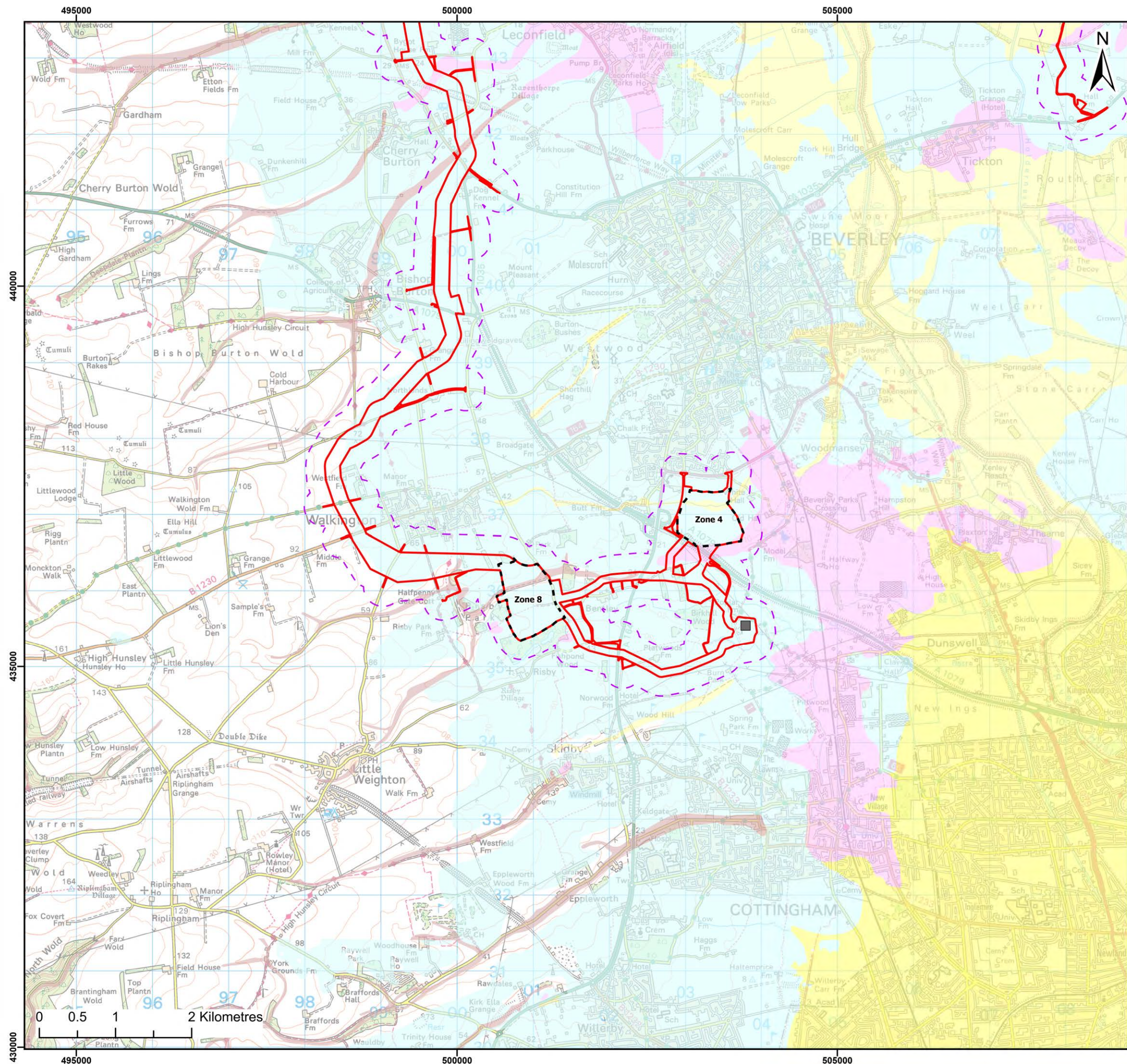
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Co-ordinate system: British National Grid





Legend:

- Onshore Development Area
- Onshore Development Area 250m Buffer
- Onshore Converter Station Zone Options
- Indicative Birkhill Wood Substation Location

50k Superficial Geology

- Till
- Glaciofluvial Deposits
- Alluvium
- Storm Beach Deposits
- Lacustrine Deposits
- Head
- Sand and Gravel

Note: Only superficial geology formations that intersect the Onshore Development Area are shown in the legend

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Project:

Dogger Bank D
Offshore Wind Farm

**DOGGER BANK
WIND FARM**

Title:

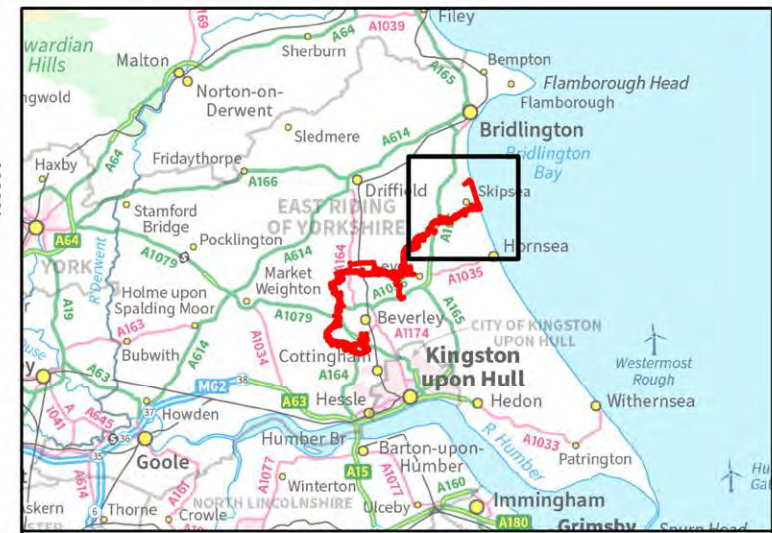
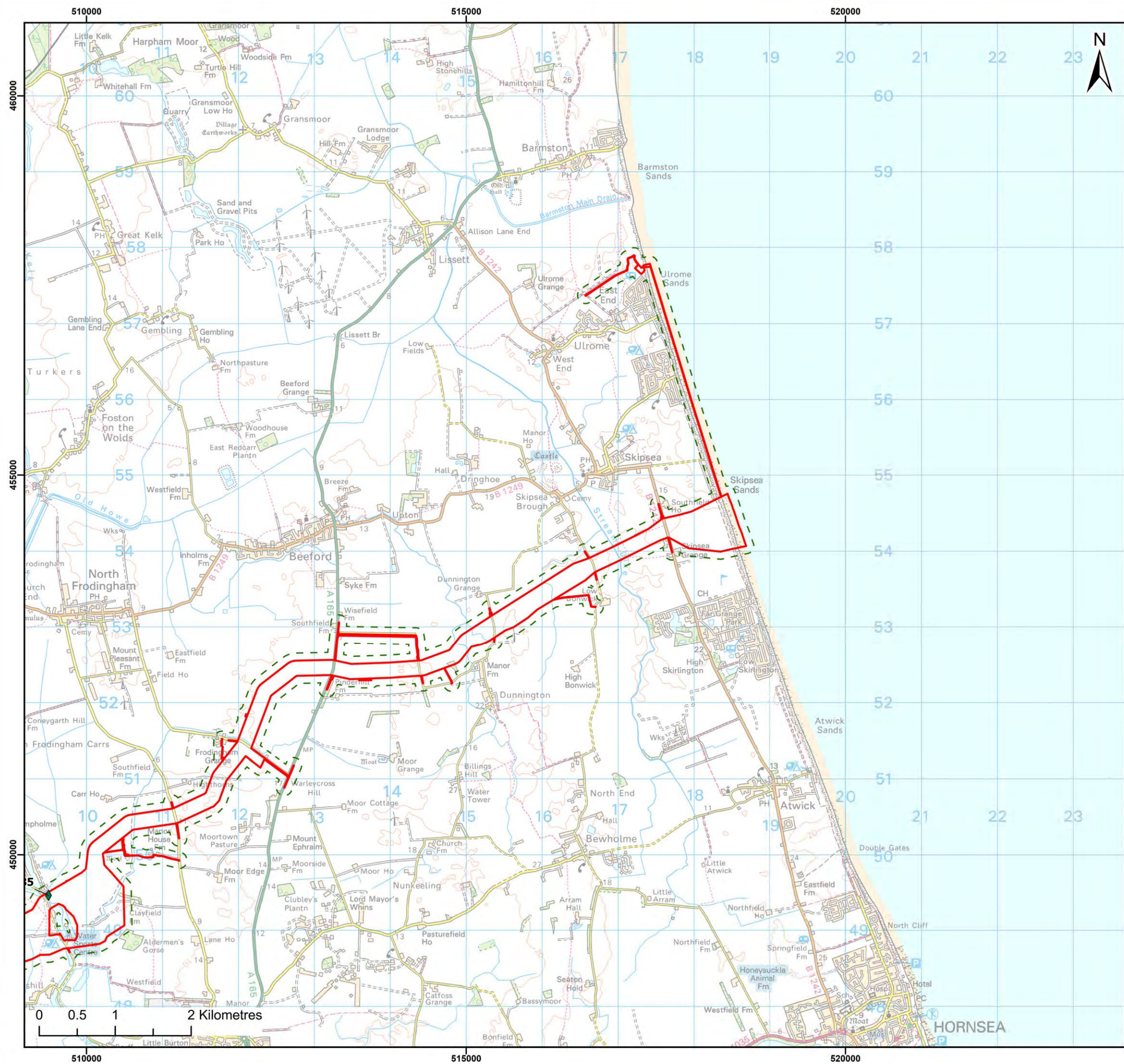
Superficial Geology
- Sheet 3 of 3

Figure: 19.2-8 Drawing No: PC6250-RHD-XX-ON-DR-GS-0276

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01	07/11/2024	AB	GC	A3	1:50,000

Co-ordinate system: British National Grid

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- Legend:
- Onshore Development Area
 - Onshore Development Area 100m Buffer
 - ◆ BGS Boreholes
 - ◆ Boreholes that are marked as confidential or do not provide pertinent information

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Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK
WIND FARM

Title:

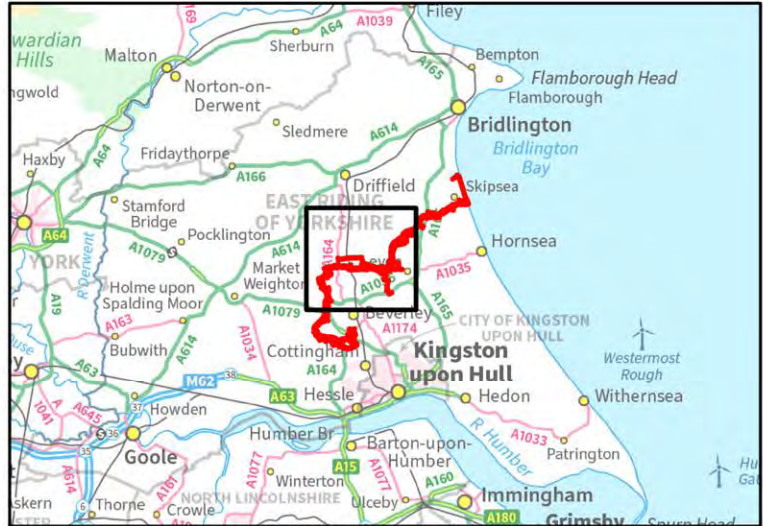
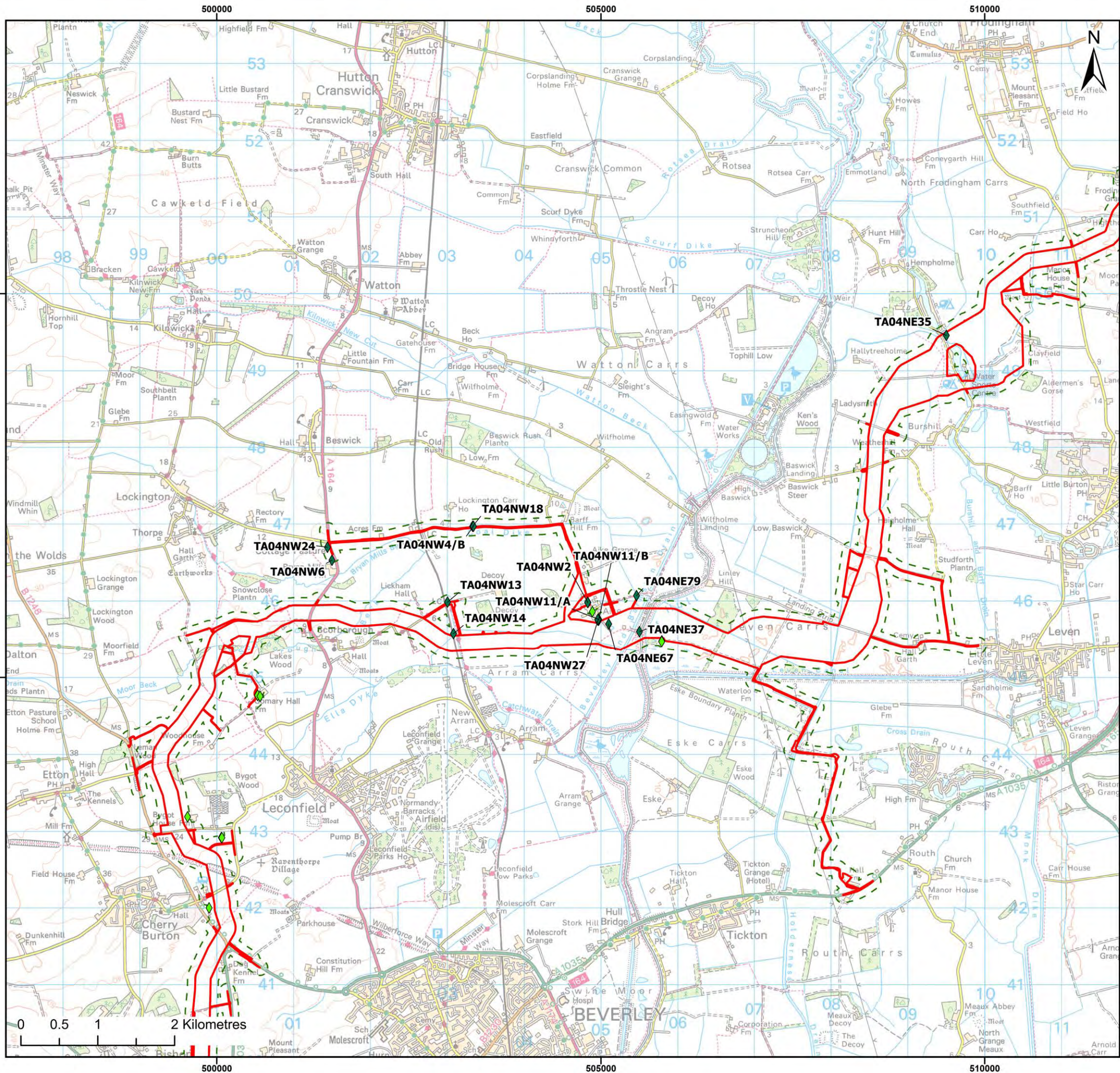
BGS Boreholes
- Sheet 1 of 3

Figure: 19.2-9 Drawing No: PC6250-RHD-XX-ON-DR-GS-0313

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01	07/11/2024	AB	GC	A3	1:50,000

Co-ordinate system: British National Grid





- Legend:
- Onshore Development Area
 - Onshore Development Area 100m Buffer
 - BGS Boreholes
 - Boreholes that are marked as confidential or do not provide pertinent information

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Project:
Dogger Bank D
Offshore Wind Farm

**DOGGER BANK
WIND FARM**

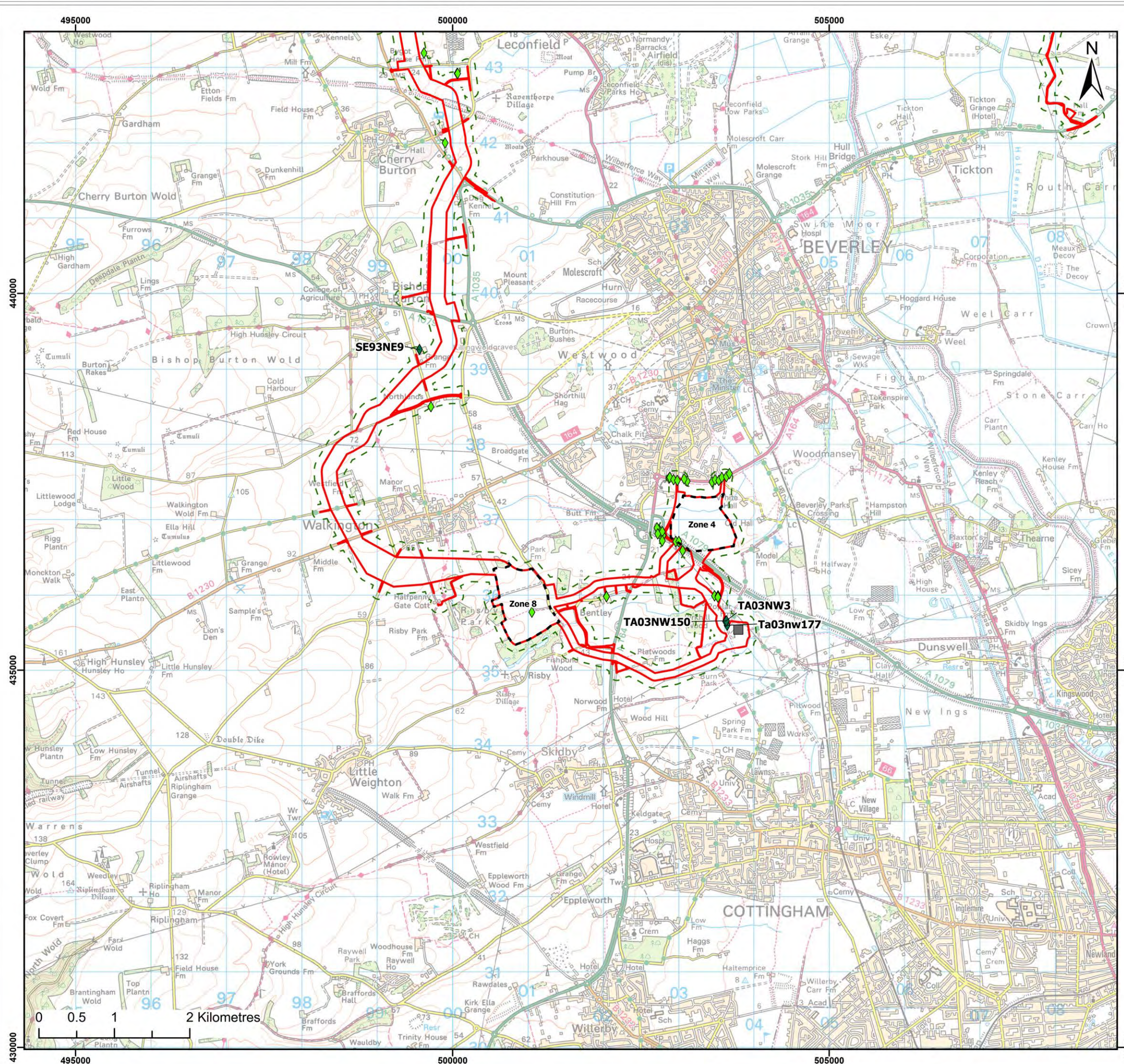
Title:
BGS Boreholes
- Sheet 2 of 3

Figure: 19.2-9 Drawing No: PC6250-RHD-XX-ON-DR-GS-0313

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Co-ordinate system: British National Grid





Legend:

- Onshore Development Area
- Onshore Development Area 100m Buffer
- Onshore Converter Station Zone Options
- Indicative Birkhill Wood Substation Location
- ◆ BGS Boreholes
- ◆ Boreholes that are marked as confidential or do not provide pertinent information

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Project:

Dogger Bank D
Offshore Wind Farm

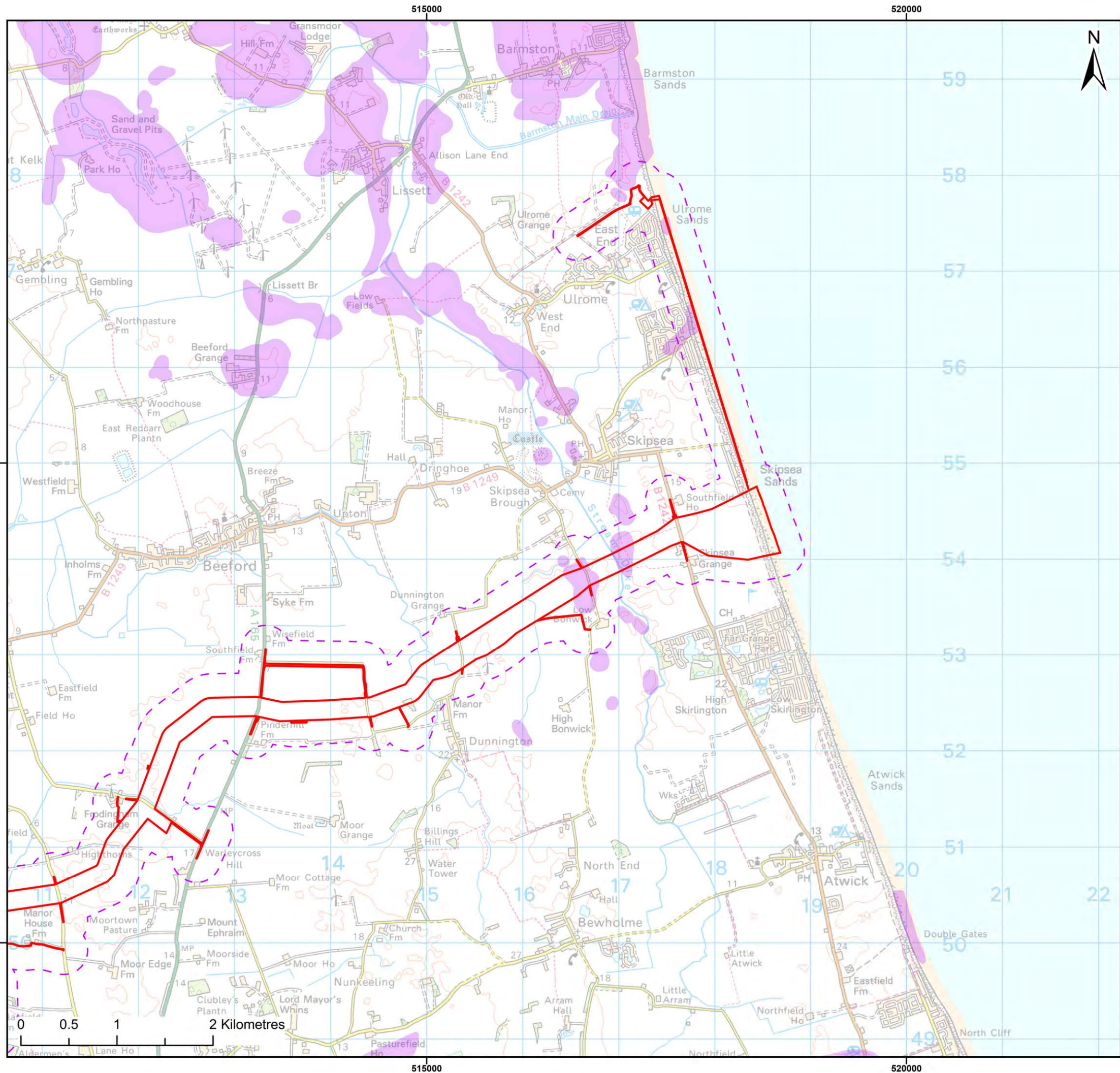
DOGGER BANK
WIND FARM

Title:

BGS Boreholes
- Sheet 3 of 3

Figure:	19.2-9	Drawing No:	PC6250-RHD-XX-ON-DR-GS-0313			
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Co-ordinate system: British National Grid



- Legend:
- Onshore Development Area
 - Onshore Development Area 250m Buffer
 - Minerals Safeguarding Areas

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Project:

Dogger Bank D
Offshore Wind Farm

DOGGER BANK
WIND FARM

Title:

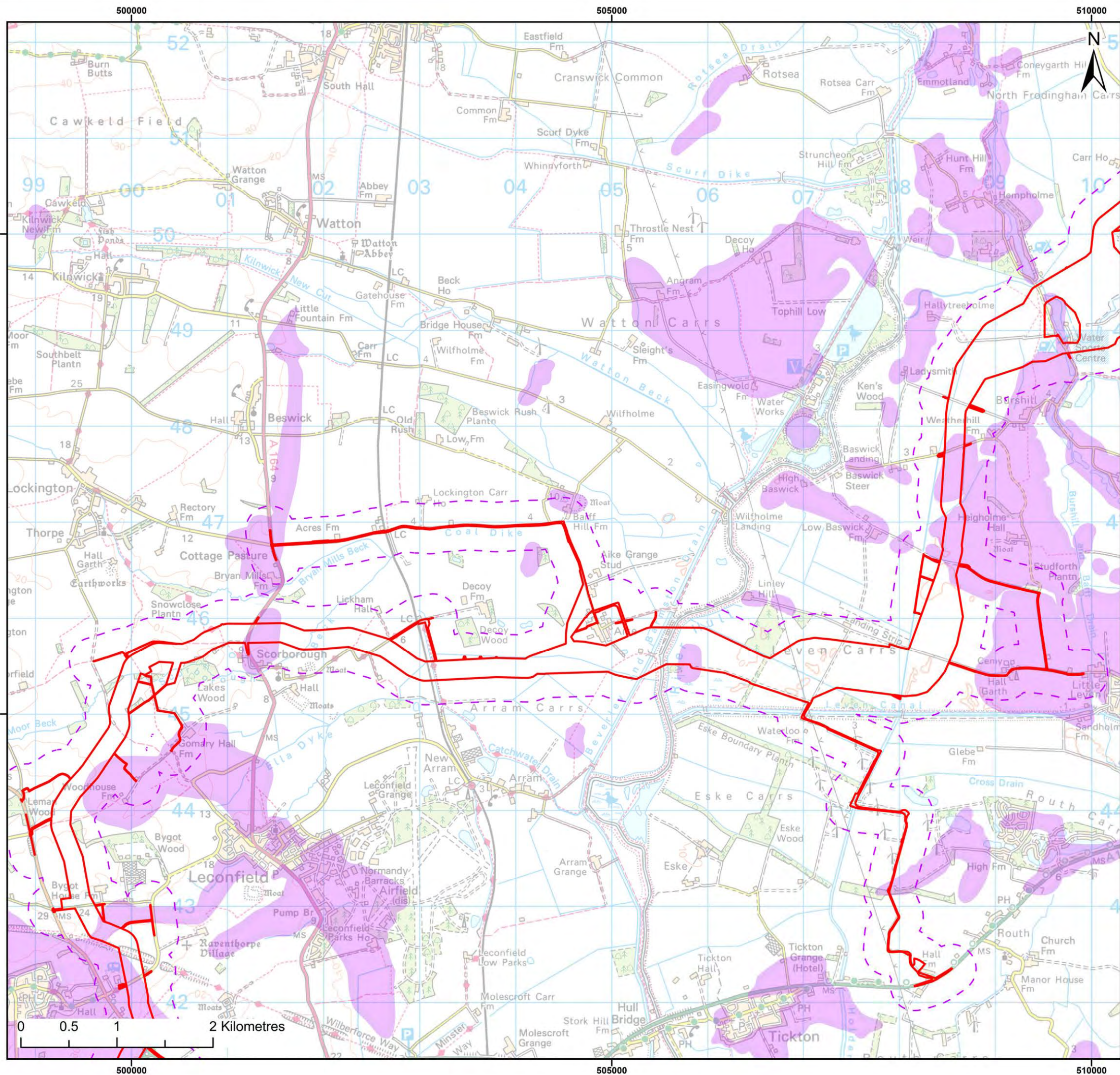
Mineral Safeguarding Areas
- Sheet 1 of 3

Figure: 19.2-10 Drawing No: PC6250-RHD-XX-ON-DR-GS-0201

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Co-ordinate system: British National Grid





- Legend:
- Onshore Development Area
 - Onshore Development Area 250m Buffer
 - Minerals Safeguarding Areas

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Title:

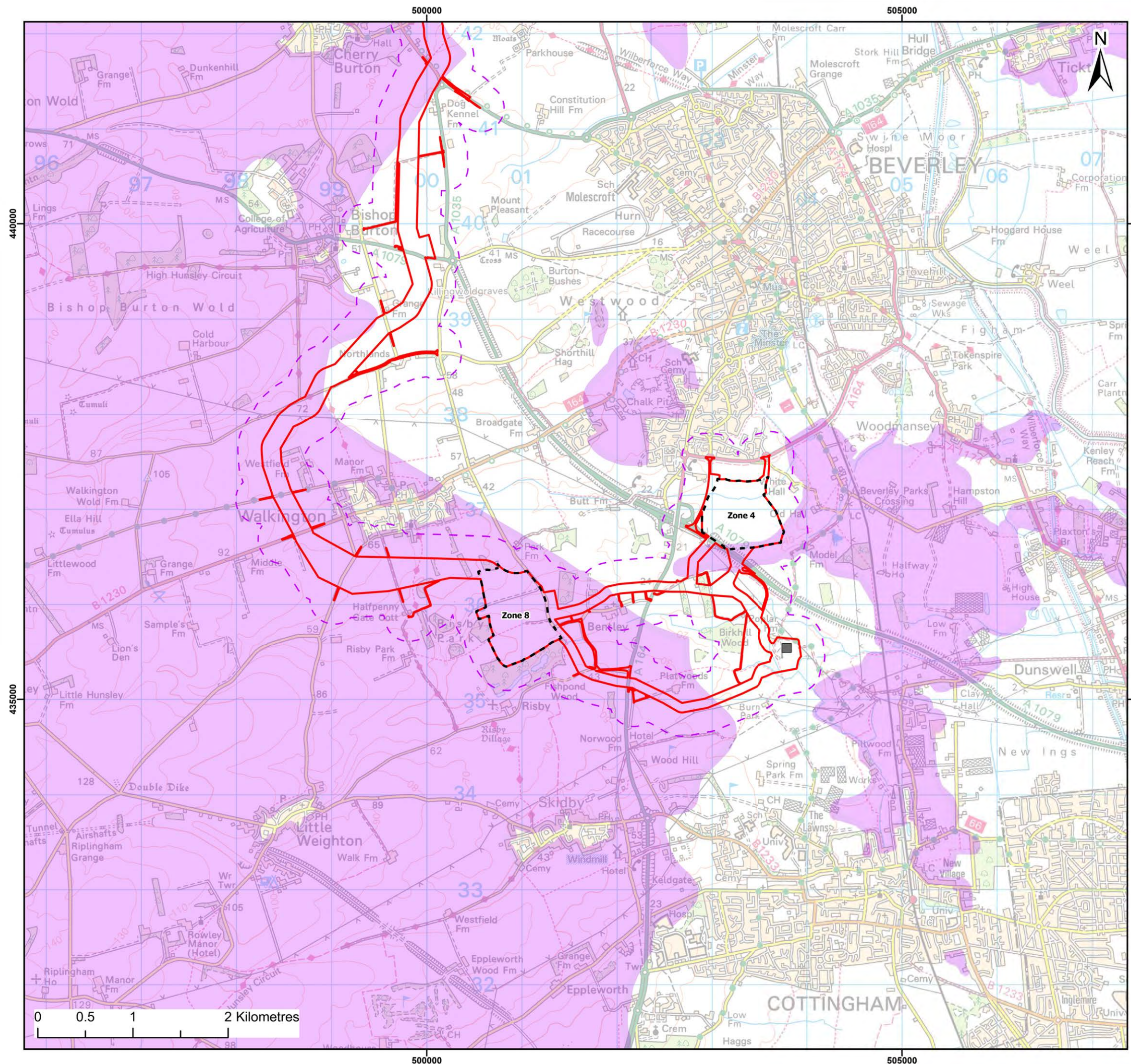
Mineral Safeguarding Areas
- Sheet 2 of 3

Figure: 19.2-10 Drawing No: PC6250-RHD-XX-ON-DR-GS-0201

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01	07/11/2024	AB	GC	A3	1:40,000

Co-ordinate system: British National Grid





- Legend:
- Onshore Development Area
 - Onshore Development Area 250m Buffer
 - Onshore Converter Station Zone Options
 - Indicative Birkhill Wood Substation Location
 - Minerals Safeguarding Areas

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Project:
Dogger Bank D
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**DOGGER BANK
WIND FARM**

Title:
Mineral Safeguarding Areas
- Sheet 3 of 3

Figure: 19.2-10 Drawing No: PC6250-RHD-XX-ON-DR-GS-0201

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Co-ordinate system: British National Grid

