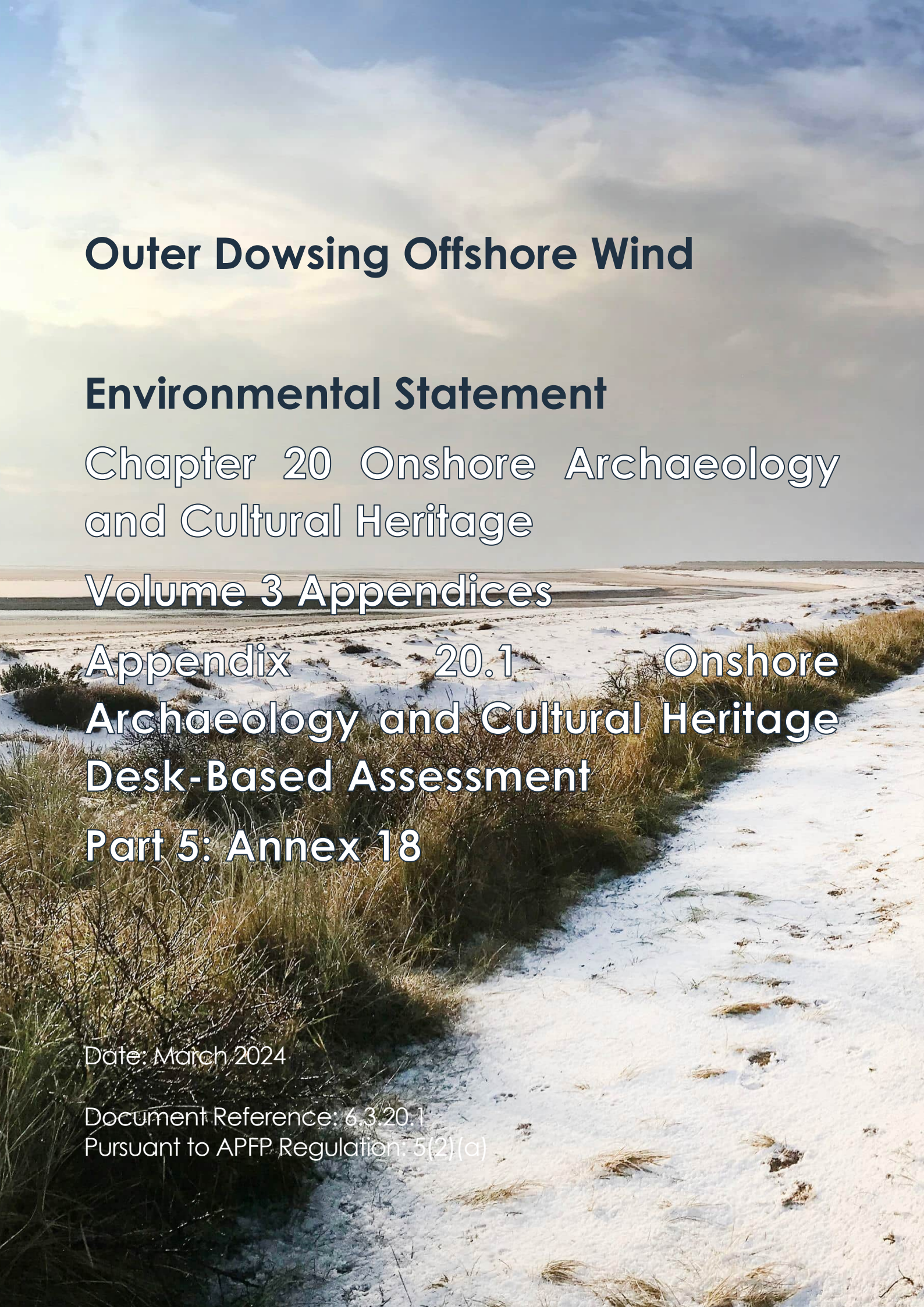

Outer Dowsing Offshore Wind

Environmental Statement

Chapter 20 Onshore Archaeology and Cultural Heritage

Volume 3 Appendices

Appendix 20.1 Onshore Archaeology and Cultural Heritage Desk-Based Assessment

Part 5: Annex 18

Date: March 2024

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1.0	March 2024	DCO Application	SLR	GoBe	Shepherd and Wedderburn	Outer Dowsing

Annex 18: Geotechnical Investigation Monitoring and Deposit Modelling Report

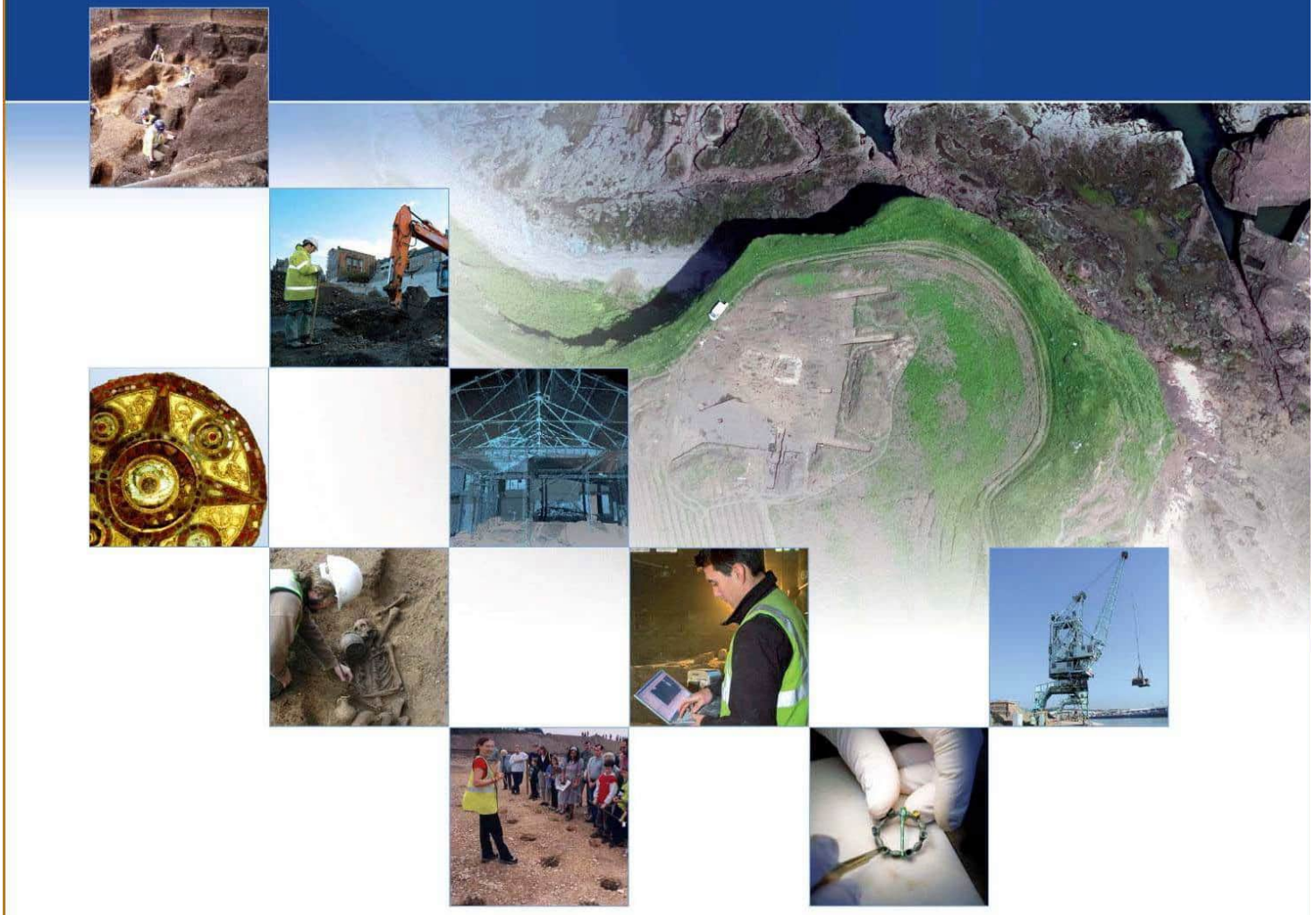
Outer Dowsing Offshore Wind: Geotechnical Investigation Monitoring and Deposit Model Report

AOC Project No: 53109

Site Code: AOC DOW23

National Grid Reference Number: 546300, 353900

Date: February 2024



AOC Archaeology Group

ARCHAEOLOGY | HERITAGE | CONSERVATION

Outer Dowsing Offshore Wind: Geotechnical Investigation Monitoring and Deposit Model Report

For:	**SLR Consulting** 38 Chancery Ln London WC24 1EN
National Grid Reference (NGR):	**546300, 353900**
AOC Project No:	**53109**
Prepared by:	**Jessica Taylor / Charlie Morris**
Illustration by:	**Jessica Taylor**
Date:	**February 2024**

This document has been prepared in accordance with AOC standard operating procedures.

Author: Jessica Taylor, Charlie Morris, Natalie Hamilton	**Date: 27th February 2024**
Approved by: Virgil Yendell	**Date: 27th February 2024**
Report Stage: Third Submission	**Date: 27th February 2024**

Enquiries to: AOC Archaeology Group
Unit 7
St Margaret's Business Centre
Moor Mead Road
Twickenham
TW1 1JS

Tel. 020 8843 7380
Fax. 020 8892 0549
E-mail. london@aocarchaeology.com

NON-TECHNICAL SUMMARY

Geoarchaeological and archaeological monitoring of geotechnical investigation was undertaken for the Outer Dowsing Offshore wind project (NGR 546800 352100). The work was undertaken by AOC Archaeology Group between 7th June and 1st August 2023 for SLR Consulting on behalf of their client GoBe Consultants Ltd.

This document summarises the archaeological remains and stratigraphic sequence of potential geoarchaeological remains and discusses the results in relation to their archaeological and palaeoenvironmental potential. The principal objective of this report is to present the results, refine the research objectives of the project in light of the findings, and make recommendations concerning any subsequent archaeological investigations in order to address these research objectives.

The archaeological monitoring of geotechnical investigation comprised the monitoring of 24 geotechnical boreholes to a maximum depth of c. 40.1 m BGL and 24 trial pits to a maximum depth of 3.90 m BGL, and a deposit model update. Geoarchaeological and geotechnical deposit data can be used to identify areas of archaeological potential by characterising the probable nature and depth of sub-surface deposits.

Based on distribution and character of the deposit sequence, areas of potential for archaeological and palaeoenvironmental remains have been mapped for the site. These include area of potential A1 – tidal mudflats with saltern deposits, area of potential A2 – tidal mudflats, area of potential B – organic deposits, area of potential C – Storm Beach deposits, area of potential D – glaciofluvial deposits, and area of potential E – glacial till.

It is recommended that the impact on deposits of interest may be mitigated by a mixed programme of monitoring of site/ground investigation, purposive geoarchaeological boreholes and test pits, geophysics and evaluation trenching.

The appropriate mitigation strategy for the site will be decided by and agreed with the Local Authority and their archaeological advisors.

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LIST OF ABBREVIATIONS

ADS	Archaeological Data Service
AoP	Area(s) of Potential
AoS	Area(s) of Study
BGS	British Geological Survey
BNG	British National Grid
DBA	Desk Based Assessment
DEM	Digital Elevation Model
ECC	Export Cable Corridor
GI	Geotechnical Investigation
HE	Historic England
HER	Historic Environment Record
IDW	Inverse Distance Weighted
m BGL	Meters Below Ground Level
m OD	Meters above Ordnance Datum
NGR	National Grid Reference
OnSS	Onshore Substation
OS	Ordnance Survey
PEIR	Preliminary Environmental Information Report
RSL	Relative Sea Level
SI	Site Investigation
WSI	Written Scheme of Investigation

1 INTRODUCTION

1.1 This document details the results of a geoarchaeological watching brief / monitoring exercise on geotechnical investigation works at the site of Outer Dowsing, east Lincolnshire (NGR: 546300, 353900, Figure 1). This report was commissioned from AOC by SLR Consulting.

1.2 The proposed development site (henceforth "the Order Limits") has been the subject of a previous Geoarchaeological Desk Based Deposit Model Report (AOC, 2022) and an addendum to that report for proposed second route option (AOC, 2023a). The Order Limits are located on the eastern coast of Lincolnshire, beginning with landfall to the north of Chapel St Leonards (NGR: 555720, 375430). An OnSS is proposed at Surfleet Marsh northeast of Spalding: (NGR: 528000, 331040).

1.3 This report consists of the results of a Stage 2 GI monitoring exercise in order to investigate the potential of the Site to contain significant archaeological remains and to produce a report inclusive of an updated deposit model.

Table 1 Generic stages of geoarchaeological investigation for guidance

Stage	Stage number
Consultancy: Desk based and impact assessment	1
Fieldwork: Geotechnical monitoring	2
Fieldwork: Trench evaluation / borehole evaluation	3
Fieldwork: Watching brief / excavation / mitigation boreholes	4
Post-excavation: Specialist geoarchaeological / palaeoenvironmental assessment	5
Post-excavation: Specialist geoarchaeological / palaeoenvironmental analysis	6
Publication	7

1.4 The GI monitoring exercise comprised the monitoring of 24 geotechnical boreholes to a maximum depth of *c*. 40.1 m BGL and 24 trial pits to a maximum depth of 3.90 m BGL. No core samples or trial pit samples were available to be retained for geoarchaeological purposes. Geoarchaeological and geotechnical deposit data can be used to identify areas of archaeological potential by characterising the probable nature and depth of sub-surface deposits.

1.5 As such, this report will provide recommendations on how investigations pertaining to these works should proceed and how such work will be integrated into the wider findings from the area. The works reported on here were carried out under the WSI (AOC, 2023b) for the site. Subsequent stages of investigation maybe required dependant on the results of this report.

2 PLANNING BACKGROUND AND PROPOSED DEVELOPMENT

2.1 The development impacts outlined below taken from the geoarchaeological desk-based deposit model report (AOC, 2022), and are informed by ES Submission document - Project Description (Volume 1 Chapter 3) which includes drawings of indicative infrastructure (Figures 4.7).

Landfall – Wolla Bank

2.2 Landfall is proposed at Wolla Bank north of Chapel St Leonards. From here, the cable route is to extend southwest towards Hogsthorpe.

2.3 An underground Transition Joint Bay (TJB) will be required to connect offshore and onshore cables. The detailed design, size, and location of the onshore Transition Joint Bay (TJB) construction and associated temporary compound will be defined post-consent.

Onshore Export Cable Corridor (ECC) –Hogsthorpe to Weston Marsh Substation

2.4 The cables which will be installed via open cut or trenchless methods shall follow the prescribed route onshore. Their detailed design and the implementation of trenchless techniques will be defined post consent.

2.5 Temporary construction compounds will be required along the onshore export cable corridor to facilitate parking, welfare and storage facilities. The size and location of these compounds are shown on the submission documents specified above.

2.6 Haul roads are also set out within the submission documents.

Onshore Substation

2.7 Construction of the required onshore electrical infrastructure facilities will include:

- One onshore substation (indicative site/works area 240,000 m^2)

2.8 Grading, earthworks and drainage will be undertaken initially within the onshore electrical infrastructure facilities footprint. Foundations will then be installed which will either be ground-bearing or piled, based on the prevailing ground conditions and subject to a detailed design to be prepared post consent.

3 SITE DESCRIPTION

3.1 As previously outlined in the geoarchaeological desk-based deposit model report (AOC, 2022), the Site boundary (the Order Limits) is located onshore and adjacent to the east coast of England, running between the Humber Estuary/Lincolnshire Marsh, in the north, and the town of Spalding, in the south (Figure 2). It extends along approximately 65km of the coastline, including the Lincolnshire coast of the Wash and Gibraltar Point. It extends inland up to approximately 13km from the coast.

3.2 For the purposes of the deposit modelling, the AoS has been divided into 3 areas based on route divisions (Figure 2).

3.3 Area 1 encompasses the following segments of the proposed route (Figure 7):

- ECC1 - Landfall to A52 – Hogsthorpe
- ECC2 - A52 – Hogsthorpe to Marsh Lane
- ECC3 - Marsh Lane to A158 – Skegness Road
- ECC4 - A158 – Skegness Road to Low Road

3.4 Area 2 includes the following route segments, including the alternate route section (Figure 8):

- ECC5 - Low Road to Steeping River
- ECC6 - Steeping River to Fodder Dike Bank
- ECC7 - Fodder Dike Bank to Broadgate

- ECC8 - Broadgate to Ings Drove
- ECC9 - Ings Drove to Church End Lane

3.5 Area 3 encompasses the following route segments (Figure 9):

- ECC10 - Church End Lane to The Haven
- ECC11 - The Haven to Marsh Road
- ECC12 - Marsh Road to Fosdyke Bridge
- ECC13 – Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove
- ECC14 – Surfleet Marsh OnSS / Marsh Drove to the Connection Area

3.6 A 2km buffer was applied to the Order Limits in order to draw on a sufficient quantity of existing BGS data, the models from which will be refined with the addition of geoarchaeologically monitored GI interventions throughout the route.

4 GEOLOGY AND TOPOGRAPHY

4.1 The following is taken from the geoarchaeological desk-based deposit model report (AOC, 2022).

4.2 The AoS is located within the Lincolnshire Marsh and Lincolnshire / Cambridgeshire Fenlands on low lying terrain generally at elevations of less than 12 m Above Ordnance Datum (AOD). The natural drainage direction across the AoS is east and south toward the North Sea and The Wash.

4.3 The AoS is underlain by solid geological deposits of predominantly chalk and mudstone. The BGS (2022) geology maps show the bedrock within the AoS to comprise the following formations (from north to south):

- Burnham Chalk Formation (Area 1)
- Welton Chalk Formation (Area 1)
- Ferriby Chalk Formation (Area 1)
- Carstone Formation sandstone (Area 1)
- The Claxby Ironstone, Tealby, Roach Formation mudstone and limestone (Areas 1 and 2)
- Spilsby Sandstone Formation (Area 2)
- Kimmeridge Clay Formation mudstone (Area 2)
- Ampthill Clay Formation mudstone (Areas 2 and 3)
- West Walton Formation mudstone and siltstone (Area 3)
- Oxford Clay Formation mudstone (Area 3)

4.4 The BGS (2022) geology maps show that various superficial deposits underlie the AoS. These deposits include (from oldest to youngest deposit age):

- Till, diamicton (Area 1)
- Glaciofluvial Sand and Gravel Deposits (Area 1)

- Storm Beach and Beach Deposits, silt, sand and gravel (Areas 1 and 2)
- Tidal Flat Deposits, clay and silt (Areas 1, 2 and 3)

Area 1, Landfall to Low Road

4.1 Moving from north to south in Area 1 of the 500m AoS – including the landfall and the onshore ECC – is underlain in the north by a bedrock of Burnham Chalk Formation (93.9 to 83.6 million years ago (mya)), then Welton Chalk Formation (100.5 to 89.8 mya), and finally Ferriby Chalk Formation (100.5 to 93.9 mya). All formed in the Cretaceous Period, under a shallow warm sea environment and form the eastern extension of the Wolds escarpment (Ellis et al 2001).

4.2 At ECC3 the Carstone Formation sandstone (113 to 100.5 mya) is present as bedrock. Followed by the Claxby Ironstone, Tealby, Roach Formation interbedded mudstone and limestone (130.8 to 126.3 mya) that all formed in a high energy, shallow, marine environment.

4.3 The glacial superficial geology in Area 1 consists of patches of till and glaciofluvial deposits. The oldest glacial deposit underlying the AoS is the Devensian (c. 115,000 – c. 12,000) diamicton till. Till is deposited by glacial ice, either at the glacier base or derived from material within and on the ice. It comprises gravelly sandy silty clay with boulders and contains numerous lenses of sand and gravel. The till is also likely to contain interdigitating units of glaciolacustrine clay, plus sand and gravel formed during ice advance and retreat (Burke et al., 2015).

4.4 Localised pockets of glaciofluvial sand and gravel occur along the margin of the mudflat deposits of the Lincolnshire Marsh and Fenland (Swinnerton and Kent 1981) and are present in Area 1. These are unconsolidated, gravels and sands associated with braided fluvial systems of the Late Glacial valleys, potentially associated with ancient valleys of the Great Eau and The Haven. These overly the till and underly the mudflat deposits. The small patches of glaciofluvial sand and gravel deposits across Area 1 mark local topographic high points often reflected by settlement locations, such as the nearby Huttoft, Mumby and Willoughby.

4.5 Holocene tidal mudflats dominate the superficial deposits and are characterised by minerogenic sediment with horizons of localised to widespread peat. These deposits are associated with Lincolnshire Marsh and the Fenland. The deposits are predominantly of intertidal to marine origin, but where they are associated with ancient river valleys freshwater and estuarine components may come into play. Marine/estuarine minerogenic units formed due to inundation and changes in post-Glacial relative sea level (RSL). Organic deposits indicate periods of stabilisation where waterlogging was not so great and vegetation could take hold. Organic formation may be due to increasing or reducing waterlogging from local freshwater or regional marine/estuarine sources.

Area 2, Low Road to Church End Lane

4.6 Continuing southwards the Claxby Ironstone Formation, Tealby Formation, and Roach Formation underlie the Site at the northeast of Area 2 (ECC5). These deposits comprise undifferentiated, interbedded Mudstone and Limestone formed between approximately 137.7 and 121.4 million years ago, during the early Cretaceous. Spilsby Sandstone Formation (152.1 to 133.9 mya) underlies the site at the Steeping River division (ECC5 and ECC6). Kimmeridge Clay Formation, a mudstone unit formed approximately 154.8 to 149.2 million years ago during the late Jurassic, is mapped in a southwestern direction from the Steeping River (ECC6) to within the Ings Drove to Church End Lane route segment (ECC9), just north of the settlement of Haltoft End. The southern extent of the route segment (ECC9) overlies Ampthill Clay Formation, a mudstone of approximately

161.5 to 154.8 million years in age deposited in the Late Jurassic.

4.7 The superficial geology in Area 2 is predominantly Holocene tidal mudflats, although Storm Beach deposits are also recorded from Low Road (ECC5) to just past Broadgate(ECC8), the former already being outlined for Area 1 above.

4.8 In the 13th Century, islands, which had previously sheltered the coastline of Lincolnshire, were eroded away by a series of storms and floods of unprecedented power. Flood water reached inland several kilometres and the erosional debris from the islands was deposited as coastal and inland storm beaches (Green 2015). The storm beaches deposits recorded in Area 2 are part of this group.

Area 3, Church End Lane to Weston Marsh

4.9 Ampthill Clay Formation (163.5 to 157.3 mya) as outlined above underlies the site until Marsh Road. Whereby West Walton Formation mudstone and siltstone (163.5 to 157.3 mya) is recorded as the bedrock, until Fosdyke Bridge where it is replaced by Oxford Clay Formation mudstone (166.1 to 157.3 mya), both being deposited as marine seabeds.

4.10 The superficial geology of Area 3 consists of Holocene tidal mudflats over the whole area and outlined above for Area 1.

5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1 A desk-based assessment has been prepared by SLR consulting (submission document Volume 3 20.1).

6 GEOARCHAEOLOGICAL AND PALAEOENVIRONMENTAL BACKGROUND

6.1 The following is taken from the geoarchaeological desk-based deposit model report (AOC, 2022).

Lincolnshire Marsh

6.2 Area 1 and the northern-most section of Area 2 are located within the Lincolnshire Marsh (Figure 5).

6.3 The Lincolnshire Marsh is underlain by the slope of the Cretaceous chalk the Wolds escarpment to the west. During the latter stages of the last (Devensian) Ice Age (*c.* 18,000 ya) the ice lobe stretched across the North Sea (North Sea Lobe) advanced until the Wolds to the west and The Wash to the south (Ellis et al 2001 and Clarke et al 2004). During the colder Pleistocene periods, global sea levels were substantially lower than today and the AoS occupied part of an important location on the western margins of 'Doggerland' now submerged beneath the southern North Sea but which formerly linked the Humber to Denmark (Gaffney et al., 2007).

6.4 Subsequent rising temperatures at the end of the Devensian and start of the Holocene, and associated meltwaters, left glacial till (southern extent of the Skipsea Till) and then glacial river gravels capping the chalk bedrock, up to 24m deep (Ellis et al 2001). Large numbers of lakes formed in depressions left in the till (kettle holes and pingos). These water filled depressions are locally known as meres and many were sufficiently deep to ensure the survival of open water into the Holocene, as in the Holderness area (Head et al 1995, Schofield 2001), although few were identified in the Lincolnshire Marsh area by the wetland survey (Ellis et al 2001).

6.5 Prior to *c.* 5500 BC the Lincolnshire Marsh was predominantly defined by the undulating surface of

the glacial till, comparable to modern Holderness. A general trend of rising RSL drove deposition of fine-grained material transported by the sea and River Humber, with the deposition in the southern part of the Lincolnshire Marsh area being characterised by the undulating topography of the Middle Marsh and then the predominantly marine alluvium of the Outmarsh (Ellis et al 2001). Deep sequences preserve tree trunks and other large-scale evidence of buried Early Holocene forests, whereas later peat horizons indicate potential slow-downs in the minerogenic sedimentation associated with rising RSL, and resulting in the expansion of stabilised wetland vegetation.

6.6 The lower peat (*c.* 5500 BC) indicates freshwater run-off backing up due to RSL rise. A short period of marine inundation seals the lower peat with a salt marsh clay deposition, but this is followed by a slowing of RSL rise and/or regression, associated with a return to freshwater deposition. The upper peat that subsequently forms (*c.* 1700 BC) indicates emerging Fen carr. Whilst the sequence as a whole is sealed by a seemingly undifferentiated estuarine minerogenic unit, this has been suggested to be a separate Iron Age and post-Roman estuarine clay separated by intercalated peats (Ellis et al 2001).

6.7 Late Glacial to Early Holocene pollen sequences have been recorded at Aby Grange and Butterbump, and sites in the Great Eau valley indicate that the expansion of *Tilia* as being important aspect of lowland vegetation until the mid-Holocene when lime becomes a significant woodland element (Ellis et al 2001). Later Holocene palynology at sites near Butterbump and the Great Eau, aided by the sequences at Ingoldmells, where infills of features associated with salt production (discussed below) preserved pollen indicating a more open landscape of grassland and fringing woodlands, alongside cereal cultivation (Ellis et al 2001).

6.8 The Outmarsh would have been saltmarsh for much of the Holocene and unsuitable for any permanent settlement. Although, salt processing is evident from preserved prehistoric sites like Tetney and Hogsthorpe, through to sporadic Roman evidence, rare Anglo-Saxon evidence for salterns from Marshchapel, and then significant Medieval accounts of salt production (Canti 2009).

Fenland and The Wash

6.9 All but Area 1 and the northern-most section of Area 2 are located within the Fenland.

6.10 After the end of the last Ice Age (Devensian) the basin that now forms the Fenland, was dryland crossed by networks of river valleys and floodplains of limited extent, covered in developing lime-dominated deciduous forest, and dotted with small areas of raised ground that would have formed islands in the later Fenland (French 2003). Subsequently, the backing up of freshwater drainage and estuarine inundation over the course of the last *c.* 12,000 years (Holocene) infilled the basin of the Fenland with up to *c.* 30m of freshwater and estuarine sediment (Waller 1994, Wheeler and Waller 1995). The estuarine sedimentation has been predominantly fed from The Wash, a rectangular bay on the western coastline forming a confluence of estuaries. This sequence of deposition has been extensively studied with large-scale investigations undertaken as part of the Fenland Research Committee and later by the Fenland Project, with its associated wetland surveys (e.g. Hayes and Lane 1992, and Lane 1992). As a result of this and earlier work a number of classifications of the Fenland sequence have been proposed (see Table 2), with French's (2003) being one of the more recent.

Skertchly (1877)	Godwin and Clifford (1938)	Gallois (1979)	Wyatt (1984); Horton (1989); Horton and Aldiss (1992)	French (2003)
Fen Silt	Upper Silt	Terrington Beds	Terrington Beds	Upper silt marine incursion
	Upper Peat	Nordelph Peat	Upper leaf of the Nordelph Peat	Upper peat
	Fen Clay	Barroway Drove Beds	Upper member of the Barroway Drove Beds	'Fen Clay' marine incursion
			Lower leaf of the Nordelph Peat	
Peat			Lower member of the Barroway Drove Beds	
			Middle Peat	Basal peat
			Lower member of the Barroway Drove Beds	Limited marine incursion
	Lower Peat	Lower Peat		Channel peat

Table 2 Generalised Holocene stratigraphy for the Fenland basin (after Wheeler and Waller 1995 and French 2003)

6.11 The sequences generally consist of alternating strata of peats, representing stabilised wetland vegetation, and minerogenic deposits, representing marine inundation. Initial proposals of a two and four-part sequences by Skertchly (1877) and Godwin (1938) were later developed into more complex chronostratigraphies, with additions from palynology and radiocarbon dating (e.g. Wheeler and Waller 1995). Although, some attempt has been made in Table 2 to align the six-part sequence proposed by French (2003) to previous incarnations, any attempt to align the different strata is on the whole too simplistic an approach. It is not expected that each regional event, represented by a stratigraphic group, to be present in every sequence uniformly across the fenland basin. Local topography and hydrology may produce atypical sequences where the effects of regional events are reduced, or local events introduce more horizons (Oxford Archaeology East 2011). However, generally a number of the major deposit groups should be present and identifiable (French 2003).

6.12 There are few recent studies of the Holocene sequence in the immediate vicinity of the AoS and those older ones that exist describe much the same sequence as outlined above with probable Mesolithic basal peats, overlying minerogenic sedimentation, and then a return to peat formation (e.g. Hayes and Lane 1992). Although on the whole outside of the AoS, it is important to note roddons, tidal creek networks, as significant features of the Mid to Late Holocene (6000 to 2000 yr BP) Fenlands that could fringe the AoS. The roddons were cut into contemporaneous clay deposits, with subsequent inundation and infilling with fine marine/brackish sands or silt driven by changes in the RSL of The Wash. The ancient roddons lack the laterally stacked point bar deposits that occur during active meandering in modern examples, indicating rapid infilling of the ancient roddons (Smith et al 2010). Despite evidence at sites near Must Farm of subsequent storm surges recutting the roddons (Smith et al 2012), the now blocked drainage of surface runoff systems may have caused mudflat/saltmarsh environments to develop into freshwater reed swamps. As Roman and later drainage efforts drove subsidence and erosion of the peats the silt and sand filled channels remained upstanding as a network of roddon ridges (Smith et al 2010).

6.13 Lane's (1992) work at Wrangle presents a rare look at deposit sequences adjacent to and within the route (ECC8, Figure 8). In the northwest of Wrangle and beyond the site the Pleistocene

deposits are overlain by less than a metre of Holocene sediment The modelling of the thickness of the sequence overlying the Pleistocene surface in combination with the previous work's findings of insignificant Holocene deposit thickness suggests perhaps more significant overburden is present in the area (Figure 51). This undulating early Holocene surface provided a mosaic of dryland and wetland into the Bronze Age. Bronze Age marine/estuarine inundation then deposited silt and clays over the south of Wrangle's East Fen, but north-west of Wrangle was not inundated until the mid/late Bronze Age. In the Iron Age estuarine sedimentation, possibly originating from the Steeping estuary in Wainfleet, occurred across at least the northern part of Wrangle. Over subsequent periods freshwater wetlands developed in the north of the Wrangle, likely driven by the infilling of roddon networks in this area. The advance of and short-lived Iron Age marine incursion in Wrangle's East Fen was dated to 540- 395 cal BC (2825 2385 ± 60 BP, Lane 1992).

6.14 Sometime in the Iron Age, prior to Roman settlement, salt processing is evident, and although Lane's (1992) survey in Wrangle did not provide a full account for the Iron Age/Roman period, Roman settlement is assumed to lie above 1.5-2m OD but Roman sites were found in comparable sites at about 1m OD (Lane 1992). Salt production was also prevalent in the wider Fenland and continued into the medieval period with a range of salt making sites contributing to our understanding of the process and the environment of the area (Canti 2009).

6.15 The apparent abandonment of Wrangle in the Early and Middle Saxon periods was followed by a Late Saxon re-vitalisation, here and at Wolmersty. The Pre-Norman labour intensive salt extraction process created a prominent ridge of re-deposited sands and silts *c.* 3.5m high (*c.* 4.5m OD) and *c.* 1.5km wide, known locally as the Wrangle Tofts. The medieval saltern deposits mapped by Lane lie within c. 400m of the Order Limits and at times may extend into it (Figure 78 in Lane 1992) . The ridge is not uniform and near the coast is formed of conjoined mounds and undulating mounds, which have more recently been levelled to some degree. These artificially formed redeposited alluvial Tofts continue along the coastline and border much of The Wash, creating a form of sea defence and enabling further development of arable cultivation (Lane 1992).

6.16 The seaward extent of Roman of earlier settlement in the area is buried under the Tofts and later reclamation deposits. The longevity of frequent settlement in the area would have relied on sheltered marine conditions provided by natural or anthropogenic sea defences. Deposits and remains of settlement has likely been subsequently eroded as at Skegness and Ingoldmells, *c.* 15km northwards at the other end of the AoS (Lane 1992).

Coastline Reconstructions

6.17 A number of reconstructions of the Lincolnshire coastline have been produced and Figure 3 to Figure 6 presents schematic comparisons of the most notable of these, including:

- 5900 BC coastline (Shennan et al 2000, Green 2011)
- 5900 BC intertidal extent (Shennan et al 2000, Green 2011)
- 4900 BC coastline (Shennan et al 2000, Green 2011)
- 4900 BC intertidal extent (Shennan et al 2000, Green 2011)
- 3900 BC coastline (Shennan et al 2000, Green 2011)
- 3900 BC intertidal extent (Shennan et al 2000, Green 2011)

- Roman coastline (Smith 2010)
- Post-Roman intertidal extent (Smith 2010)
- 13th Century coastline (Green 2015)
- 13th Century intertidal extent (Green 2015)

6.18 Shennan et al (2000) analysed sea level data from the east coast of England to identify local-scale and regional scale factors for spatial and temporal variations in the elevation of Holocene sea-level index points. This information was referenced in the presentation of reconstructions of the dryland coastline and the limits of the intertidal zone for various periods by Green (2011, after Shennan et al 2000), although the method by which the reconstructions are created is not entirely clear. Similarly, Smith (2010) presents Roman coastline and post-Roman intertidal extent in their work based on Malim (2005) and Redding in Pryor (2005), again the method of reconstructions is not currently known. Based on the location of the boundary lines and references to BGS data in the publications, most of the reconstructions appear to be qualitative reworkings of the BGS mapping.

6.19 Green's recent work (2014a, 2014b, and 2015) using BGS mapping and other sources to provide similar qualitative reconstructions of the possible lacustrine and glacial limits for the Devensian, and coastline and intertidal limits for the Anglo-Saxon period and 13th Century. The Devensian reconstruction drew on work by Clark et al (2004) and mapped the encroachment of the North Sea Ice Lobe (see 6.2) and the extent of the Glacial lakes that covered much of the area to the west of Wolds and into the Fenland (Green 2014a). The Anglo-Saxon reconstruction reproduced D. N. Robinson's map of Lincolnshire's 'Saxon Shoreline'. This maps wide wetlands on the east coast of Lincolnshire and south of the Wolds indicative of late/post-Roman marine transgression that buries Romano-British sites on the Lincolnshire Marshes (e.g. Scupholme and Ingoldmells), comparable to accounts in Wrangle mentioned in the preceding section (see section 6.13 and Lane 1992). Within the reconstruction island features in the intertidal mudflats and wetlands are highlighted, denoted by the higher ground of BGS mapped Glaciofluvial sediments as similarly discussed in section 4.4. The final reconstruction (Green 2015), presents coastline and intertidal limits for the 13th Century AD, based on earlier work by Pawley. It presents the position of coastal islands from Spurn Point to north west Norfolk that shelter Lincolnshire prior to this date from the storms of the North Sea at which point an unprecedented storm eroded the coastal islands away (see section 4.8). As a result the Lincolnshire coast was exposed to coastal erosion and marine inundation is suggested to have encroached *c.* 1.5km inland between Mablethorpe and Skegness by 17th Century, destroying low-lying coastal settlements.

6.20 Canti (2009) outlines how investigation of the banks and dykes associated with salt production sites have made significant contributions to Iron Age and Roman coastline reconstructions for The Wash, over 10km from the AoS, at Aslackby Fen in the western Fenland. Reclamation of the Wash has been taking place since the Saxon period, but especially during the 14th to 18th centuries AD and significant sea wall structures have mostly been archaeologically neglected.

7 RESEARCH AIMS AND OBJECTIVES

7.1 Geoarchaeology is the application of earth science principles and techniques to the understanding of the archaeological record (Historic England, 2015a). It involves the examination of sub-surface deposit sequences, through coring or exposed sections, in order to identify site formation processes or landscape features of archaeological interest. Deposit models are often employed in

geoarchaeology, these are conjectural maps and cross-sections used to investigate the archaeological significance, potential impact, or accessibility of buried deposits (Historic England, 2020). Geoarchaeological approaches often form part of a wider programme of archaeological investigation.

7.2 The standards set out by the Chartered Institute for Archaeologists for archaeological watching brief (CIfA, 2020) apply to geoarchaeological borehole monitoring, and the purpose of such is:

- allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works
- provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard

7.3 Archaeological investigations should enhance previous work and provide sufficient information upon which to base effective decisions concerning mitigation. Therefore, an investigation can highlight the need for further WSIs and archaeological work to fulfil planning conditions.

7.4 The summarised definition of an archaeological watching brief is a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons, where there is a possibility that archaeological deposits may be disturbed or destroyed (CIfA, 2020).

7.5 The overall objective for the borehole monitoring exercise, deposit modelling, and any subsequent on-site works is to investigate the archaeological and palaeoenvironmental potential and likely significance of the deposits present, so that the impact of the development can be understood, and informed decisions made regarding appropriate mitigation. As part of this overarching objective and in order to fulfil the general aims, the specific objective of these works at the Site are defined as:

- To monitor the geotechnical investigations, in order to observe and record the deposit sequence and its distribution across the site.

7.6 The general aims of the investigation at the Site are defined as:

- To identify is the distribution, depth, character, date, condition, and significance of the deposit sequence.
- To assess the palaeoenvironmental potential of the deposits encountered.
- To identify the extent of archaeological remains and their potential survival across the site.
- To identify the depth of modern overburden.

7.7 The specific research questions of the investigation at the Site are defined as:

- RQ1: What is the character and potential of the deposits and samples to preserve paleoenvironmental remains? How can these contribute to the understanding of Holocene landscape changes, including deforestation, plant domestication, and subsistence (RA 2.6.1 and 2.6.2, EMHERF 2023)?
- RQ2: How does the sequence of the deposits on site relate to the known peat sequences

of the coastline, where two major phases of wetland formation are generally evident in an upper and lower peat deposit?

- RQ3: How does the date of the deposits on site relate to the known intertidal sequences in the area? What do they indicate about the impacts of changing sea level on the environment and human populations?
- RQ4: How do the palaeoenvironmental remains from the site, and indicated landscape development for the site, relate to the known prehistoric organic sequences in the area?
- RQ5: Is there any indirect or direct evidence of human activity and how does this relate to the known prehistoric evidence in the area (e.g. alluviation, colluviation, aeolian, from woodland clearance)?
- RQ6: Can palaeoenvironmental remains contribute to the understanding of prehistoric agricultural developments (RA 3.3.2 and 3.3.3, EMHREF 2023)?
- RQ7: Is suitable material recoverable for effective scientific dating to refine the imprecise chronological framework of the Neolithic to Bronze Age period (RA 3.1.1, EMHREF 2023)?
- RQ8: Is there evidence of palaeochannel infilling deposits which could be used to evidence Pleistocene to Holocene climatic change?

7.8 The overall objective for the monitoring of geotechnical interventions, deposit modelling, and any subsequent trenching and palaeoenvironmental assessment is to evaluate the archaeological and palaeoenvironmental potential and likely significance of the deposits present, so that the impact of the development can be understood, and informed decisions made regarding appropriate mitigation. As part of this overarching objective and in order to fulfil the general aims, the specific objective of the stage 2 works at the Site are defined as:

- To monitor the geotechnical investigations in order to observe and record the deposit and sequence any archaeological remains and their distribution across the site and assess the archaeological and palaeoenvironmental potential.

8 METHODOLOGY

Origin and Purpose of Deposit Modelling in Archaeology

8.1 AOC's geoarchaeological methodology followed the previously produced WSI (AOC, 2023b) covering this work and will conform to best professional practice as summarised in the appropriate Chartered Institute for Archaeologists guidelines for archaeological watching brief (CIfA, 2020) and Historic England's guidelines for geoarchaeology (Historic England, 2020, 2015a).

8.2 The purpose of a geoarchaeological deposit model as outlined by Historic England (2020) is to:

- identify areas of low or high archaeological potential;
- avoid blanket evaluation coverage and inform appropriate mitigation strategies;
- aid communication with construction professionals; and
- facilitate palaeoenvironmental reconstruction.

8.3 The character and distribution of past human activity can be better understood through the consideration of the past landscape or environmental context. Such an approach is often required by archaeological advisors and the local planning authority on floodplains where the deposit

sequence can vary from thin alluvium or peat, with shallowly exposed ancient land surfaces, to complex and thick sequences of interchanging alluvium and peat, covering deeply buried ancient land surfaces.

8.4 The topography and nature of the ancient land surface during the early Holocene, the current geological epoch and equivalent to the early Mesolithic (*c*. 11,500 BP or 10,000 BC), is dictated by and inferred from the surface of the Pleistocene superficial deposits (e.g. brickearth, gravel, and till from the previous epoch) and older solid geology (e.g. mudstone or chalk). Overlying the Pleistocene – or older – deposits, Holocene alluvium may preserve palaeoenvironmental evidence (e.g. pollen, diatoms, ostracods) of landscape development, from local channel migration and vegetation change to regional effects of climate and relative sea level (RSL) change. In combination, likely preservation of palaeoenvironmental remains and deposit data (e.g. depth and character) provides a comparative framework to assess archaeological potential. Peat represents vegetated and waterlogged landscapes (e.g. marshland) which developed, within local or regional fluctuations of hydrology. The anaerobic and acidic conditions of the deposit are particularly conducive to organic preservation. Palaeoenvironmental remains from floodplain deposits, especially peat, provide information on the nature and timing of environmental change and the interplay with past human activity (Historic England, 2015a, 2015b).

8.5 Modelling software (Rockworks & ArcGIS) is often used to create two and three-dimensional deposit models of the buried topography and overlying strata on the site. The data used may be readily available BGS (2023) geological information, recent geotechnical data from the client, or data past archaeological investigations. The depth and distribution of the various deposits is mapped in schematic cross-sections (transects) or plan, showing the elevation (Digital Elevation Model, DEM) or thickness (Isopach), of deposits or stratigraphic units. The model often culminates in schematics maps showing areas of archaeological potential.

Onsite Borehole Monitoring

8.1 Geoarchaeological monitoring was undertaken on 24 borehole locations approximately 100mm in diameter, drilled across the site (Figure 7, Figure 8, Figure 9). No cores samples were available for retention. Boreholes were drilled by a rotary rig under the monitoring of a geoarchaeologist. Where appropriate, service pits (approximately 300mm x 300mm) were hand-dug to c 1.2m at each location, and the holes CAT-scanned for live services at regular intervals by the sub-contractor or by AOC during this process.

8.2 Sediment cores and upcast were recorded through the superficial deposits down to a maximum of *c.* 40.1 m BGL, extending at least to the surface of underlying Pleistocene or bedrock geology. The borehole locations were surveyed in by the principal contractor, with each position located to a six-figure national grid reference, and the elevation measured to metres above ordnance datum.

8.3 On site, the geoarchaeologist photographed and logged the Holocene sediments revealed in the boreholes according to standard geological criteria (Jones et al., 1999; Tucker, 2003). Preliminary interpretation of the deposit sequence sampled in the cores was made in order to produce an overview of the lithology that characterises the stratigraphy and identifies formation processes.

Onsite Trial Pit Monitoring

8.4 A total of 24 trial pits were excavated across the site, measuring c. 3 by 1.8 m and to a maximum depth of 3.90 m BGL. The excavation was monitored by an archaeologist, and the deposit records

integrated with the borehole records for enhanced detail in deposit modelling (Figure 7, Figure 8, Figure 9). The results of the archaeological monitoring are reported on in this report alongside the geoarchaeological deposit model. Due to the depth the conditions and geology the sides of the trial pits were prone to undermining and partially collapsing necessitating rapid recording.

Deposit Model

8.5 In order to create the deposit model, the geotechnical data was entered into a digital database (Rockworks 20). Any recent geotechnical logs supplied by the client or previous archaeological work onsite were given the prefix 'CP' for cable percussion, 'RT' for rotary, 'WS' for window samples, 'AH' for auger holes, 'TP' for test pits, or 'TR' for trenches. BGS logs (BGS, 2023) added to the database were given a prefix relating to the two-letter grid square of its national grid reference e.g. TQ. A total of 385 sedimentary logs were included in the deposit model. The distribution of this data set is presented in Figure 2 and the data references for the sedimentary logs are presented in Appendix A. The numbers of each type are:

- BGS historic deposit data (BGS, 2023): 336
- Client supplied GI/SI data: 1
- AOC monitored GI deposit data: 48

8.6 Each lithology type (gravel, sand, silt, clay etc.) was given a unique colour (primary component) and pattern (secondary component) enabling visual correlation of the sediment components of deposits across the site. By examining the relationship of the lithology types (both horizontally and vertical) in preliminary and iterative transects, correlations can inform the site-wide deposit groups. The grouping of these deposits is based on the lithological descriptions, which represent distinct depositional environments, coupled with a wider understanding of the local geological sequences. Thus, a sequence of stratigraphic units ('facies'), representing certain depositional environments, and/or landforms can be reconstructed both laterally and through time.

8.7 IDW (weighting =2, number of points =12), DEM, and Isopach plots were produced for key deposits (i.e. units defining major changes in the environment and modes of deposition) and surface horizons. These highlight major features of the topography through time. In this respect, the most common surface plot depicts the surface of the Pleistocene (or older) deposits (Figure 21, Figure 30, and Figure 41) giving an approximation of the topography of the site as it existed at the beginning of the early Mesolithic period c 10,000 years ago. The development of the Holocene floodplain is likely to have been influenced by the topography inherited from the Pleistocene/Late glacial period. This surface would have dictated the course of later channels, with gravel high points forming areas of dry land within the wetlands, and lower lying areas forming the main threads of later channels. Many of the additional surface or thickness plots are more representative of deposit survival than time-specific landscapes.

8.8 The overlying deposit sequence across the site depicted by the stratigraphic units, as representative of specific depositional environments and/or landforms laterally and through time for the site and immediate vicinity, is illustrated in profile or transect form (Figure 10 to Figure 17). Such transects present a straight-line correlation between the data points, extrapolating the stratigraphic units identified within each borehole. Transects have 1.5m BGL depth marked on them in order to represent the maximum depth of unstepped evaluation trenches (c. 1.2m BGL) and the likely depth of the open cut trench approach used for onshore ECC installation.

8.9 By examining the surface and thickness plots in combination with the vertical deposition shown in the transects areas of archaeological potential can be mapped (Figure 47, Figure 48, and Figure 49). These characterise the differing geoarchaeological and archaeological potential and significance of single stratigraphic units, deposit sequences containing multiple stratigraphic units, or specific landforms and depositional environments.

8.10 In addition, figures representing the depth BGL of the surface of the Pleistocene or earlier geology are provided (), as well as those showing the depth BGL of the base of Tidal Mudflats 2 (or the surface of earlier geology,), in order to facilitate discussions about impacts on potential deposits or archaeology

9 RESULTS

9.1 The deposit sequences of monitored interventions within the Order Limits are tabulated below. Those outside the boundary are located within Appendix B.

Borehole logs

9.2 The log tables for the geoarchaeological boreholes monitored within the Onshore Site boundary (Figure 7, Figure 8, Figure 9).

Table 3 Deposit log for AOC53109_A17-BH01

Bore		Easting	Northing	Elevation		
AOC53109_A17_BH01		531595	332458	2.85		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.85	2.55	0.00	0.30	0.30	Very soft brown slightly gravelly CLAY with frequent rootlets. Angular to subangular fine and medium gravel of flint and brick.	Topsoil / Made Ground (Victorian to Modern)
2.55	1.95	0.30	0.90	0.60	Very soft greyish-brown, mottled orangish-brown, slightly sandy becoming sandy slightly gravelly silty CLAY. Subangular fine to medium gravel of brick.	
1.95	0.15	0.90	2.70	1.80	Brown, mottled orangish-brown, very sandy CLAY / silty clayey SAND. Occasionally mottled dark grey from 1.2-2.0 m. Proportion of CLAY increasing with depth.	Holocene - Tidal Mudflats 2
0.15	-0.95	2.70	3.80	1.10	Very soft, mid greyish brown, frequently mottled mid to dark blueish grey silty CLAY.	
-0.95	-2.35	3.80	5.20	1.40	Very soft, mid greyish brown, frequently mottled mid to dark blueish grey silty CLAY with occasional to frequent pockets of amorphous and pseudo-fibrous peat. Frequent rootlets.	Holocene - organic deposits
-2.35	-4.95	5.20	7.80	2.60	Very soft, mid brown, mottled dark grey, silty CLAY with slight organic speckling and rare pockets of amorphous and pseudo-fibrous peat.	Holocene - Tidal Mudflats 1
-4.95	-5.15	7.80	8.00	0.20	Soft, mid brown silty CLAY with frequent shell fragments.	
-5.15	-6.15	8.00	9.00	1.00	Very soft mid greyish-brown fine sandy silty CLAY	
-6.15	-6.65	9.00	9.50	0.50	Loose, light brown clayey fine SAND.	
-6.65	-7.45	9.50	10.30	0.80	Very soft mid grey silty CLAY with occasional fine gravel and shell fragments.	

-7.45	-7.75	10.30	10.60	0.30	Soft to firm, mid grey slightly silty clayey fine SAND and very fine sandy CLAY with frequent small shell fragments.	
-7.75	-8.05	10.60	10.90	0.30	Medium dense dark grey slightly silty clayey fine SAND with occasional to frequent fine subangular to subrounded gravel and shell fragments.	
-8.05	-8.15	10.90	11.00	0.10	Medium dense yellowish-brown mottled mid blueish-grey silty fine SAND with occasional fine to medium subangular to subrounded gravel. Occasional organic pockets.	
-8.15	-9.4	11.00	12.25		Loose mid yellowish-brown mottled mid blueish-grey fine to medium SAND with frequent CLAY pockets containing decomposed organic material. Occasional gravel.	Pleistocene - Glaciofluvial
-9.4	-10.85	12.25	13.70		Very loose mid yellowish-brown fine to coarse SAND with frequent fine to coarse subangular to subrounded GRAVEL. Gravel becoming coarser with depth.	
-10.85	-11.15	13.70	14.00		Very loose mid yellowish-brown fine to coarse SAND with frequent fine to coarse subangular to subrounded GRAVEL with frequent patches of silty CLAY.	
-11.15	-12.48	14.00	15.33		Loose medium to coarse GRAVEL, fining towards SAND with depth.	
-12.48	-17.15	15.33	20.00		Stiff, mid brownish-grey silty CLAY with frequent fine to medium GRAVEL of chalk.	Pleistocene - Till

Table 4 Deposit log for AOC53109_CP/PC-BH01

Bore		**Easting**	**Northing**	**Elevation**		
AOC53109_CP/PC_BH01		552749	366009	2.1		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.10	1.80	0.00	0.30	0.30	Vegetation over soft brown slightly sandy slightly gravelly CLAY with abundant rootlets up to 30x10x10 mm. Gravel is angular and subangular fine to medium flint.	Topsoil / Made Ground (Victorian to Modern)

1.80	0.90	0.30	1.20	0.90	Soft, locally very soft, brown mottled orangish-brown slightly sandy silty CLAY.	Holocene - Tidal Mudflats 1
0.90	0.30	1.20	1.80	0.60	Soft mid brown mottled orangish-brown slightly silty CLAY.	
0.30	-0.10	1.80	2.20	0.40	Very soft dark blueish-grey, mottled orangish-brown, very silty CLAY. Rare plant remains/rootlets.	
-0.10	-0.42	2.20	2.52	0.32	Very soft mid orangish-brown silty CLAY with rare to occasional fine to medium subrounded gravel.	
-0.42	-0.60	2.52	2.70	0.18	Very soft dark blueish-grey, mottled orangish-brown, clayey SILT with occasional organic (<2 cm) lenses.	
-0.60	-1.10	2.70	3.20	0.50	Very soft dark blueish-grey, mottled orangish-brown, silty CLAY with frequent organic (<1 mm) speckling.	
-1.10	-2.10	3.20	4.20	1.00	Very soft mid greyish-brown, mottled dark blueish-grey, silty CLAY with occasional organic speckling.	
-2.10	-6.10	4.20	8.20	4.00	Very stiff mid orangish-brown, mottled mid blueish-grey, silty CLAY with frequent rooting and fine to coarse subrounded to angular GRAVEL of chalk, sandstone and siltstone. Siltstone cobble present between 4.7-4.8 m.	Pleistocene - Till
-6.10	-7.73	8.20	9.83	1.63	Light to mid brownish-yellow fine to coarse micaceous SAND with frequent fine surrounded gravel. Well sorted.	
-7.73	-12.60	9.83	14.70	4.87	Fine to coarse subrounded to subangular GRAVEL of flint, chalk and chert within a medium sandy matrix. Moderately to well sorted.	
-12.60	-12.90	14.70	15.00	0.30	Black weathered SANDSTONE.	Tertiary bedrock - Spilsby Sandstone

Table 5 Deposit log for AOC53109_HHD2-BH01

Bore		Easting	Northing	Elevation		
AOC53109_HHD2_BH01		536576	341082	2.7		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.70	2.40	0.00	0.30	0.30	Vegetation over very soft brown slightly sandy slightly gravelly CLAY with frequent rootlets. Fine to medium angular and subangular GRAVEL of flint and brick.	Topsoil / Made Ground (Victorian to Modern)
2.40	2.00	0.30	0.70	0.40	Very soft greyish-brown, mottled orangish-brown, slightly sandy becoming sandy slightly gravelly silty CLAY. Fine to medium angular to subangular GRAVEL of brick.	
2.00	1.50	0.70	1.20	0.50	Brownish grey, mottled orange-brown clayey fine and medium SAND.	Holocene - Tidal Mudflats 1
1.50	1.38	1.20	1.32	0.12	Soft mid blueish-grey mottled orangish-brown silty CLAY with rare fine to coarse rounded to subrounded gravel. Rare rootlets.	
1.38	0.42	1.32	2.28	0.96	Soft becoming firm mid blueish-grey, mottled orange-brown, slight fine subrounded gravelly silty CLAY.	
0.42	0.25	2.28	2.45	0.17	Loose mid yellowish-brown mottled light blueish-grey slightly clayey fine to coarse SAND.	
0.25	0.20	2.45	2.50	0.05	Firm, becoming stiff, mid brown, mottled blueish-grey, slightly silty CLAY with occasional fine subrounded gravel and occasional organic (<1 mm) speckling.	Pleistocene - Till
0.20	-2.30	2.50	5.00	2.50	Stiff mid orangish-brown, mottled blueish-grey, slightly sandy CLAY with frequent fine to medium subangular GRAVEL of chalk, flint and pseudo-flint.	

-2.30	-5.40	5.00	8.10	3.10	Stiff mid orangish-brown, mottled blueish-grey, very sandy CLAY with frequent fine to medium subangular GRAVEL of chalk, flint and pseudo-flint.	
-5.40	-12.50	8.10	15.20	7.10	Alternating bands of mid brownish-yellow coarse SAND and coarse rounded to subrounded GRAVEL of flint.	
-12.50	-17.30	15.20	20.00	4.80	Stiff mid grey silty CLAY with frequent medium to coarse rounded to subangular GRAVEL of chalk	

Table 6 Deposit log for AOC53109_IR-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_IR_BH01		537985.4	348700.4	1.6		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
1.60	-0.40	1.20	2.00	0.80	Very soft mid brown, mottled yellowish-brown and light blueish-grey silty CLAY. Containing rare oxidised orange silty (1 mm) pockets	Holocene - Tidal Mudflats 2
-0.40	-1.40	2.00	3.00	1.00	Very soft mid brown mottled dark grey silty CLAY with frequent fine potentially organic patches.	
-1.40	-1.90	3.00	3.50	0.50	Very soft mid orange-brown silty CLAY with frequent fine orange oxidised silty pockets (< 5 mm).	
-1.90	-2.90	3.50	4.50	1.00	Very soft mid grey silty CLAY with frequent black speckling.	
-2.90	-3.06	4.50	4.66	0.16	Firm dark grey organic smelling silty CLAY. Potentially peaty CLAY with frequent small white shells.	Holocene - organic deposits
-3.06	-3.40	4.66	5.00	0.34	Soft, becoming firm silty CLAY.	Holocene - Tidal Mudflats 1

-3.40	-11.90	5.00	13.50	8.50	Stiff, mid brown becoming light brown with depth, slightly sandy silty CLAY with frequent fine to medium subrounded to subangular GRAVEL of chalk and flint. Occasional SAND lenses.	
-11.90	-18.40	13.50	20.00	6.50	Stiff dark grey CLAY with occasional to frequent medium to coarse subrounded to subangular GRAVEL.	Tertiary Bedrock - Kimmeridge Clay

Table 7 Deposit log for AOC53109_ LF1-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_LF1_BH01		555200	375373	2.55		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.55	2.15	0.00	0.40	0.40	Vegetation over soft brown slightly sandy becoming sandy slightly gravelly CLAY with frequent rootlets (up to 40x2x2 mm). Gravel is subangular fine and medium flint and rare brick.	Topsoil / Made Ground (Victorian to Modern)
2.15	1.85	0.40	0.70	0.30	Very soft brown and orangish brown sandy becoming very sandy CLAY.	Holocene - Tidal Mudflats 2
1.85	1.35	0.70	1.20	0.50	Loose, brown and orangish brown clayey fine to coarse SAND.	
1.35	1.23	1.20	1.32	0.12	Very soft mid yellowish-brown silty fine to coarse SAND.	
1.23	-4.60	1.32	7.15	5.83	Soft mid yellowish-grey silty fine to coarse SAND with frequent fine dark blueish-grey silty laminations.	
-4.60	-4.75	7.15	7.30	0.15	Loose very dark blueish-grey, mottled mid brown, very sandy CLAY.	
-4.75	-5.28	7.30	7.83	0.53	Loose mid to dark brown, locally mid blueish-grey, silty fine to coarse sized subrounded to subangular sandy GRAVEL of flint, chalk and chert.	Holocene – Storm Beach

-5.28	-5.45	7.83	8.00	0.17	Very soft amorphous peaty CLAY.	Holocene - organic deposits
-5.45	-6.55	8.00	9.10	1.10	Loose mid to dark brown, locally mid blueish-grey, silty fine to coarse sized subrounded to subangular sandy GRAVEL of flint, chalk and chert.	Pleistocene - Glaciofluvial
-6.55	-12.25	9.10	14.80	5.70	Stiff, mid brown sandy CLAY with frequent medium to coarse-sized subrounded GRAVEL of chalk, chert, sandstone and rare coal/lignite.	Pleistocene - Till
-12.25	-13.45	14.80	16.00	1.20	Mid brown coarse sandy CLAY.	
-13.45	-17.45	16.00	20.00	4.00	Stiff, mid brown sandy CLAY with frequent medium to coarse-sized subrounded GRAVEL of chalk, chert, sandstone and rare coal/lignite.	
-17.45	-18.35	20.00	20.90	0.90	Mid brown coarse sandy CLAY.	
	-27.45	20.00	30	0.1	Hard white weathered CHALK.	Tertiary bedrock - Burnham Chalk Fm

Table 8 Deposit log for AOC53109_LF2-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_LF2_BH01		555325.9	375440.9	2.15		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.15	-0.35	1.20	2.50	1.30	Very soft dark grey silty fine sandy CLAY with occasional small pockets of fine sand. Rare black speckling.	Holocene - Tidal Mudflats 1
-0.35	-1.59	2.50	3.74	1.24	Very soft dark grey, locally mottled mid yellowish-brown, slightly clayey fine sandy SILT and silty fine sandy CLAY. Frequent pockets of silty clay and fine sand. Moist.	
-1.59	-1.85	3.74	4.00	0.26	Soft dark grey, locally mottled mid yellowish-brown, slightly sandy silty CLAY with occasional pockets of fine sand becoming frequent with depth. Rare medium subangular gravel. Thick (~30 mm) widely spaced laminations of silty fine sand. Occasional pockets of clay.	

-1.85	-2.59	4.00	4.74	0.74	Soft dark grey silty CLAY thickly (>50 mm) bedded with mid yellowish grey fine SAND.	
-2.59	-3.35	4.74	5.50	0.76	Soft becoming firm dark grey silty CLAY with fine thinly spaced laminations of fine silty SAND. Varved appearance.	
-3.35	-3.85	5.50	6.00	0.50	Dark grey, mottled mid brown, silty CLAY with frequent pickets of fine sand.	
-3.85	-4.85	6.00	7.00	1.00	Firm mid brown, locally mottled mid blueish-grey slightly sandy silty CLAY with frequent fine to medium rounded to subrounded, occasionally subangular, GRAVEL of chalk, flint and siltstone. Frequent (~5 cm) pockets of fine to coarse SAND and fine gravel.	Pleistocene - Till

Table 9 Deposit log for AOC53109_SKR-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_SKR_BH01		544794.4	354835.3	1.15		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
1.15	-0.62	1.20	1.77	0.57	Soft mid brown, mottled light blueish-grey and mid orangish-brown, slightly clayey silty fine SAND. Micaceous. Occasional fine black silty speckles.	Holocene - Tidal Mudflats 1
-0.62	-0.85	1.77	2.00	0.23	Soft mid brown, mottled orange-brown, slightly clayey silty SAND with frequent closely spaced thin (~1-2 mm) and thick (~10 mm) laminations of dark grey/ black silt and fine SAND.	
-0.85	-1.25	2.00	2.40	0.40	Very soft mid grey slightly clayey silty SAND with a higher clay content with depth. Occasional small pockets of amorphous peat and rare to occasional plant remains.	
-1.25	-3.41	2.40	4.56	2.16	Soft mid to dark grey slightly clayey silty SAND with frequent closely spaced thin (~1-2mm) and thick (~10 mm) laminations of silty clay and rare to occasional thin laminations of dark	

					grey/black silt and fine sand.	
-3.41	-6.15	4.56	7.30	2.74	Stiff mid brown, mottled light to mid blueish-grey, slightly sandy silty CLAY with frequent fine and medium GRAVEL of chalk and siltstone. Occasional rootlets and root pathways.	Pleistocene - Till
-6.15	-8.35	7.30	9.50	2.20	Firm dark grey CLAY with rare randomly orientated firm to stiff lithorelicts up to 5 mm. Rare shell.	Tertiary Bedrock - Kimmeridge Clay
-8.35	-10.85	9.50	12.00	2.50	Weak/moderately weak dark grey thinly bedded laminated calcareous MUDSTONE.	
-10.85	-18.85	12.00	20.00	8.00	V stiff dark grey calcareous CLAY with rare shell fragments up to 10 mm.	

Table 10 Deposit log for AOC53109_SR-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_SR_BH01		538419	343893	2.65		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.65	-0.75	1.20	3.40	2.20	Medium dense, mid yellowish-brown slightly clayey silty SAND. Faint closely to moderately spaced thin laminations of dark grey SILT. Occasional to frequent silty SAND oxidised pockets between 2.12-2.55 m.	Holocene - Tidal Mudflats 1
-0.75	-2.35	3.40	5.00	1.60	Light brown silty fine SAND with frequent dark gray/black laminations of silt. Rare small shell fragments.	
-2.35	-6.85	5.00	9.50	4.50	Light brown silty fine to medium SAND with occasional widely spaced dark grey SILT laminations and occasional thick (~2 cm) silty CLAY laminations.	
-6.85	-7.50	9.50	10.15	0.65	Dense, light brown homogenous silty fine SAND with occasional shell pieces.	

-7.50	-9.75	10.15	12.40	2.25	Medium dense silty fine to medium SAND with widely-medium spaced SILT laminations and occasional shell.	
-9.75	-10.80	12.40	13.45	1.05	Stiff mid brown silty CLAY with frequent fine to medium subrounded GRAVEL of calcareous chalk, flint and siltstone.	Pleistocene - Till
-10.80	-11.35	13.45	14.00	0.55	Stiff dark blueish-grey mottled brown slightly sandy silty CLAY with occasional to frequent fine to medium subrounded to subangular GRAVEL of calcareous chalk, flint and siltstone.	
-11.35	-12.00	14.00	14.65	0.65	Dense mid yellowish-brown fine to coarse SAND, becoming medium to coarse SAND at 14.38 m.	
-12.00	-17.35	14.65	20.00	5.35	Medium dense mid yellow-brown fine to coarse SAND and fine to medium rounded to angular GRAVEL of flint.	

Table 11 Deposit log for AOC53109_TH1-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_TH1_BH01		535966	340324	2.8		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.80	2.30	0.00	0.50	0.50	Firm greyish brown slightly gravelly slightly sandy silty CLAY. Gravel is angular to subangular fine to coarse flint and brick.	Topsoil / Made Ground (Victorian to Modern)
2.30	2.00	0.50	0.80	0.30	Soft greyish-brown, mottled orangish-brown, slightly gravelly slightly silty clayey SAND. Gravel is subangular to subrounded fine to medium flint and sandstone.	Holocene – Storm Beach
2.00	1.60	0.80	1.20	0.40	Very soft greyish-brown silty clayey fine SAND.	
1.60	0.70	1.20	2.10	0.90	Soft mid brown, mottled orange-brown, silty clayey SAND with rare light blueish-grey rooting present from 1.90 m.	
0.70	-0.20	2.10	3.00	0.90	Very soft mid brown, mottled orange-brown and blueish-grey, slightly silty fine sandy CLAY.	

-0.20	-2.00	3.00	4.80	1.80	Very soft, moist, mid blueish-grey mottled orangish-brown clayey SILT with occasional to frequent dark grey, locally black, organic peaty SILT. Occasional fine laminations.	Holocene - organic deposits
-2.00	#REF!	4.80	5.42	0.62	Very soft mid brown, mottled with occasional mid to dark blueish grey organic speckling, fine sandy CLAY.	
#REF!	-2.62	5.42	6.00	0.58	Very soft light to mid brown very silty CLAY with frequent dark grey silt speckling throughout. Occasional fine laminations.	
-2.62	-3.20	6.00	6.73	0.00	Very soft mid brownish-grey, becoming grey with depth, silty CLAY with frequent organic peaty (~5-10 mm) pockets. Occasional preservation of plant material (e.g. leaf/reedy).	
-3.20	-3.93	6.73	7.02	0.00	Compact, friable dark grey medium to coarse SAND with occasional fine to medium subrounded gravel of flint and mudstone.	Holocene - Tidal Mudflats 1
-3.93	-4.22	7.02	7.20	0.00	Soft yellowish-brown, mottled light blueish-grey silty sandy CLAY with frequent dark grey patches. Occasional plant remains. Frequent medium to coarse surrounded and rounded gravel.	
-4.22	-4.40	7.20	7.80	0.00	Soft to firm mid yellowish-brown mottled light blueish-grey CLAY with frequent fine gravel.	
-4.40	-5.00	7.80	8.4		Compact, friable yellowish-brown medium to coarse SAND with fine to coarse subrounded GRAVEL.	Pleistocene - glaciofluvial
	-5.6	8.4	9.6		Stiff, mid orangish-brown mottled blueish-grey slightly silty CLAY with frequent fine to coarse GRAVEL of chalk, flint and siltstone.	Pleistocene - Till
		9.6	20.1		Stiff, mid grey slightly silty CLAY with frequent fine to coarse GRAVEL of chalk, flint and siltstone. Sandy lenses within the till.	

Table 12 Deposit log for AOC53109_TH2-BH01

Location	Easting	Northing	Elevation	

AOC53109_TH2_BH01		535751	340218	3.05		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.05	2.65	0.00	0.40	0.40	Very soft greyish-brown slightly sandy silty CLAY.	Topsoil / Made Ground (Victorian to Modern)
2.65	2.15	0.40	0.90	0.50	Very soft greyish-brown, mottled orangish-brown, slightly sandy becoming very sandy, silty CLAY	Holocene - Tidal Mudflats 2
2.15	1.85	0.90	1.20	0.30	Very soft greyish-brown mottled orangish-brown silty clayey fine SAND.	
1.85	1.55	1.20	1.50	0.30	Very soft mid orangish-brown slightly sandy silty CLAY with frequent roots and rootlets.	
1.55	1.05	1.50	2.00	0.50	Very soft mid orangish-brown mottled mid blueish-grey slightly clayey silty SAND with occasional to frequent rooting and rare tiny shells.	
1.05	0.05	2.00	3.00	1.00	Very soft mid orangish-brown frequently mottled dark blueish-grey very silty CLAY. Occasional fine, potentially organic, laminations.	
0.05	-1.95	3.00	5.00	2.00	Very soft dark blueish-grey locally mottled orangish-brown, very silty CLAY with frequent organic (< 1 mm) speckling and (~5 mm) pockets. From 4.0-5.0 m, becoming greyish-brown with frequent <5 mm organic pockets.	Holocene - organic deposits
-1.95	-4.27	5.00	7.32	2.32	Very soft mid grey clayey SILT with frequent decomposed organic (0.5-2 cm) pockets.	
-4.27	-4.35	7.32	7.40	0.08	Amorphous slightly sandy silty PEAT with occasional small plant remains.	
-4.35	-4.83	7.40	7.88	0.48	Very compact, friable, light brownish grey slightly silty fine to coarse SAND. Micaceous. Becoming mid orangish-brwn from 7.60 m.	Holocene - Tidal Mudflats 1
-4.83	-4.95	7.88	8.00	0.12	Stiff mid yellowish-brown CLAY with frequent fine to coarse, predominantly coarse, subrounded to subangular GRAVEL of chalk, flint and sandstone.	Pleistocene - Till

-4.95	-5.85	8.00	8.90	0.90	Very loose, light greyish brown SAND with occasional fine to coarse, predominantly medium to coarse rounded to subangular GRAVEL.	
-5.85	-16.95	8.90	20.00	11.10	Stiff mid grey CLAY with frequent fine to coarse, predominantly coarse, subrounded to subangular GRAVEL of chalk.	

Table 13 Deposit log for AOC53109_TW1-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_TW1_BH01		532386	332581	3.25		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.25	2.85	0.00	0.40	0.40	Very soft slightly gravelly very sandy CLAY. Gravel is subangular fine to coarse of flint and brick.	Topsoil / Made Ground (Victorian to Modern)
2.85	0.55	0.40	2.70	2.30	Loose, brown, locally orangish-brown silty fine to medium SAND. Becoming yellowish-grey from 2.20 m.	Holocene - Tidal Mudflats 1
0.55	-0.35	2.70	3.60	0.90	Loose, dark grey slightly clayey fine SAND.	
-0.35	-1.15	3.60	4.40	0.80	Soft mid yellowish-brown, mottled brown and dark grey slightly silty clayey fine SAND.	
-1.15	-2.85	4.40	6.10	1.70	Very soft mid brown silty CLAY with frequent fine (<1 mm) organic speckling.	
-2.85	-3.55	6.10	6.80	0.70	Very soft, wet, mid brown slightly clayey silty fine SAND.	
-3.55	#REF!	6.80	10.45	3.65	Loose light brown silty fine SAND with frequent fine laminations of silt and clayey silt.	
#REF!	-7.20	10.45	11.00	0.55	Loose yellowish-brown silty fine SAND.	
-7.20	-7.75	11.00	11.80	0.00	Firm mid yellowish-brown, mottledlight and dark blueish-grey clayey SAND and sandy CLAY with frequent medium subrounded GRAVEL of flint.	Pleistocene - Glaciofluvial
-7.75	-8.55	11.80	13.15	0.00	Loose mid orangish-brown fine to coarse silty SAND and fine to medium subrounded to subangular GRAVEL of flint.	

-8.55	-9.90	13.15	13.50	0.00	Loose light brown fine to medium SAND.	
-9.90	-10.25	13.50	20.30	0.00	Very stiff dark grey, becoming light grey and firm from 15.0 m, silty CLAY with frequent fine to medium chalk GRAVEL. Becoming medium to coarse subrounded to angular from 16.0 m. Occasional sandy patches.	Pleistocene - Till

Table 14 Deposit log for AOC53109_WDC-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_WDC_BH01		553025	371741	2.3		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.30	2.00	0.00	0.30	0.30	Loose, friable mid to dark brown slightly clayey SANDY TOPSOIL with frequent grass, roots, rootlets and small subrounded stones. Gravel of flint and brick.	Topsoil / Made Ground (Victorian to Modern)
2.00	1.50	0.30	0.80	0.50	Very soft, dry, mid brown mottled orange-brown silty CLAY with frequent sandy patches. Occasional to frequent fine subrounded gravel of brick. Rare to occasional grass and rootlets.	
1.50	1.10	0.80	1.20	0.40	Firm, mid grey-brown fine sandy CLAY. Occasional rootlets.	Holocene - Tidal Mudflats 2
1.10	0.85	1.20	1.45	0.25	Firm, dry, mid greyish-brown, mottled orangish-brown slightly fine sandy CLAY with frequent rootlets and plant material.	
0.85	0.40	1.45	1.90	0.45	Firm, dry, mid orangish-brown mottled dark blueish-grey slightly sandy silty CLAY with frequent rooting. Rare to occasional fine subrounded gravel. Becoming lighter with depth.	
0.40	0.33	1.90	1.97	0.07	Clayey amorphous PEAT.	Holocene - organic deposits
0.33	-0.10	1.97	2.40	0.43	Very soft mid blueish-grey, mottled orangish-brown, silty CLAY with occasional black organic (<1 mm) speckling.	
-0.10	-0.65	2.40	2.95	0.55	Very soft mid blueish-grey clayey SILT with occasional black organic (<1 mm) speckling.	

-0.65	-0.90	2.95	3.20	0.00	Black fibrous PEAT with frequent plant remains. Occasional amorphous patches.	
-0.90	-1.00	3.20	3.30	0.00	Soft to firm, mid brown fine sandy CLAY with rare fine gravel.	
-1.00	-1.40	3.30	3.70	0.00	Very soft mid blueish-grey, mottled orangish-brown, slightly (fine) sandy clayey SILT with occasional wet amorphous peaty (<5 cm) pockets.	
-1.40	-1.90	3.70	4.20	0.00	Amorphous peaty CLAY.	
-1.90	-2.90	4.20	5.2		Very dark brown amorphous PEAT. Occasional rootlets.	
-2.90	-2.99	5.2	5.29		Very soft mixed greenish-brown, orangish-brown, light blueish-grey silty CLAY	
-2.99	-3.10	5.29	5.4		Dark brown locally black amorphous PEAT.	
-3.10	-3.69	5.4	5.99		Very soft, moist mid blueish-grey, silty CLAY with rare shell fragments, occasional ~20 mm organic pockets and rare leaf fragments.	Holocene - Tidal Mudflats 1
-3.69	-3.90	5.99	6.2		Soft to firm mid blueish-grey slightly silty sandy CLAY.	
-3.90	-11.90	6.2	14.2		Firm mid greyish-brown mottled dark blueish-grey sandy silty CLAY with frequent fine to coarse subrounded to subangular GRAVEL of chalk. Gravel becoming occasional to frequent from 7.70 m.	Pleistocene - Till
-11.90	-13.60	14.2	15.9		Mid yellowish-brown fine to coarse subangular GRAVEL and coarse SAND.	
-13.60	-17.70	15.9	20		Very stiff dark grey plastic CLAY with fissures.	Tertiary Bedrock - Kimmeridge Clay

Table 15 Deposit log for AOC53109_WMN-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_WMN_BH01		528002	331073	3.55		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.55	3.15	0.00	0.40	0.40	Very soft brown slightly sandy silty CLAY.	Topsoil / Made Ground (Victorian to Modern)
3.15	2.35	0.40	1.20	0.80	Yellowish-brown, locally orangish-brown, silty fine to medium SAND.	Holocene - Tidal Mudflats 1

2.35	1.55	1.20	2.00	0.80	Medium dense yellowish-brown, locally mottled orangish-brown, fine to medium SAND with frequent fine mid to dark grey silt speckling.	
1.55	0.55	2.00	3.00	1.00	Medium dense light browish-grey fine to medium SAND with frequent fine mid to dark grey silty sand speckling.	
0.55	-2.95	3.00	6.50	3.50	Medium dense light browish-grey fine to medium SAND (homogenous).	
-2.95	-4.35	6.50	7.90	1.40	Medium dense light browish-grey fine to medium SAND with frequent shells.	
-4.35	-4.45	1.97	8.00	6.03	Loose mid brownish-grey silty fine SAND with frequent dark grey silt mottling and a slight organic odour.	
-4.45	-8.95	2.40	12.50	10.10	Loose, light to mid brownish grey fine SAND with occasional shells.	
-8.95	-16.45	2.95	20.00	9.55	Stiff mid brownish-grey slightly silty CLAY with frequent fine to medium, subrounded to subangular GRAVEL of chalk, flint and siltstone.	Pleistocene - Till

Table 16 Deposit log for AOC53109_WMS-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_WMS_BH01		529091	328535	3.7		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.70	1.44	1.20	2.26	1.06	Loose, mid yellowish-brown / yellowish-grey silty fine SAND.	Holocene - Tidal Mudflats 2
1.44	0.42	2.26	3.28	1.02	Loose to medium dense mid yellowish-grey silty fine SAND. Occasional mid orange staining and ~1 cm peaty/organic pockets from 2.7-3.0 m.	
0.42	-0.30	3.28	4.00	0.72	Medium dense mid greyish-brown silty fine SAND with frequent fine lenses/widely spaced laminations of dark grey silts from 3.5 m.	
-0.30	-0.60	4.00	4.30	0.30	Wet silty fine SAND.	
-0.60	-1.80	4.30	5.50	1.20	Loose mid greyish-brown silty fine SAND with frequent fine lenses/widely spaced laminations of dark grey silts from 3.5 m.	

-1.80	-2.05	5.50	5.75	0.25	Loose silty SAND with rare shell and frequent fine horizontal laminations of dark grey silty SAND. Frequent organic pockets.	
-2.05	-2.40	5.75	6.10	0.35	Loose silty SAND with rare shell and frequent fine horizontal laminations of dark grey silty SAND.	
-2.40	-5.80	6.10	9.50	3.40	Loose light brown silty fine SAND (homogenous).	
-5.80	-9.80	9.50	13.50		Loose silty SAND containing occasional shells and silt laminations.	
-9.80	-10.00	13.50	13.70		Loose light brown medium to coarse SAND and fine to coarse subrounded GRAVEL of flint.	
-10.00	-10.16	13.70	13.86		Firm black, locally dark grey silty PEAT with frequent wood and plant remains.	Holocene - organic deposits
-10.16	-10.56	13.86	14.26		Firm mid blueish-grey, mottled light yellowish-brown, slightly sandy CLAY.	Holocene - Tidal Mudflats 1
-10.56	-10.80	14.26	14.5		Soft mid blueish-grey, mottled mid brown, slightly silty clayey fine SAND.	Pleistocene - Glaciofluvial
-10.80	-11.45	14.5	15.15		Dense light brown/light brownish-grey fine to coarse SAND and frequent fine to medium surrounded to subangular GRAVEL of flint.	
-11.45	-16.50	15.15	20.2		Stiff mid brownish-grey slightly sandy silty CLAY with frequent fine subangular to subrounded GRAVEL of chalk with occasional orange oxidised sandy (~2 mm) pockets. Becoming mid grey from 16.0 m.	Pleistocene - Till
-16.50	-16.80	20.2	20.5		Stiff dark grey CLAY.	Tertiary Bedrock - Oxford Clay

Trial pit logs

9.1 The log tables for the trial pits monitored within the Onshore site boundary (Figure 7, Figure 8, Figure 9). The only archaeological features recorded was a linear gully [SR003] cut and deposit (SR005) in SR-TP01 (Table 23). The visible part of the feature measured 1.7m long, 0.88m wide and 0.08m deep and had a V-shaped profile, the base of the feature was not seen. The gully contained one fill which was a dark grey, brown loose to friable silty fine sand with chalk flecks, from which animal bone fragments were recovered. As only a short length of the gully was visible

within the trial pit, the function and date of the gully was uncertain, but the finds of animal bone suggested the feature was archaeological.

Table 17 Deposit log for AOC53109_A17-TP01

Bore		Easting	Northing	Elevation		
AOC53109_A17_TP01		531605.8	332453.9	3		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.00	2.60	0.00	0.40	0.40	Topsoil. Firm, friable mid greyish-brown silty SAND with frequent small rounded stones and rooting.	Topsoil / Made Ground (Victorian to Modern)
2.60	2.40	0.30	0.60	0.30	Subsoil. Compact, friable dark brown clayey SAND with occasional small rounded stones.	
2.40	0.30	0.90	2.70	1.80	Firm, malleable dull/mid grey silty CLAY with iron staining. Very occasional rooting.	Holocene - Tidal Mudflats 2
0.30	-0.30	2.70	3.30	0.60	Firm, very compact, malleable, damp mid greyish blue, slick silty CLAY	
-0.30	-0.70	3.30	3.70	0.40	Firm, malleable, wet, mid blue clay with pockets of degraded organics/peat. Wet.	Holocene - organic deposits

Table 18 Deposit log for AOC53109_CP/PC-TP01

Bore		Easting	Northing	Elevation		
AOC53109_CP/PC_TP01		552740.9	366006.3	2.2		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.20	1.80	0.00	0.40	0.40	Topsoil. Firm, friable mid greyish-brown silty CLAY with occasional small rounded stones and modern debris. Heavy rooting.	Topsoil / Made Ground (Victorian to Modern)
1.80	1.40	0.40	0.80	0.40	Subsoil. Firm, friable mid brownish-grey fine sandy CLAY with occasional small rounded stones and some rooting.	Holocene - Tidal Mudflats 2

1.40	0.90	0.80	1.30	0.50	Firm, malleable mid blueish-grey (silvery) laminated fine sandy CLAY with frequent iron panning and occasional rooting.	
0.90	0.30	1.30	1.90	0.60	Soft, malleable mid blueish-grey laminated fine reddish sandy CLAY. Some degraded organics in the form of black mottling. Salty smell.	
0.30	0.10	1.90	2.10	0.20	Dark black, crumbly, damp, desiccated PEAT with small bits of vegetation.	Holocene - organic deposits
0.10	-0.40	2.10	2.60	0.50	Soft, malleable, slick, dull blueish-grey CLAY.	
-0.40	-0.60	2.60	2.80	0.20	Dark brownish-black, crumbly, damp PEAT with frequent shells and vegetation.	
-0.60	-1.70	2.80	3.90	1.10	Dense, malleable mid grey boulder CLAY with some chalk flecks and small sand inclusions.	Pleistocene - Till

Table 19 Deposit log for AOC53109_HHD2-TP01

Bore		**Easting**	**Northing**	**Elevation**		
AOC53109_HHD2_TP01		536580.7	341084	2.7		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.70	2.30	0.00	0.40	0.40	Topsoil. Firm, friable dark greyish-brown silty SAND with a low clay content. Occasional small rounded stones.	Topsoil / Made Ground (Victorian to Modern)
2.30	1.80	0.40	0.90	0.50	Firm, friable dull to mid grey CLAY and fine SAND with some rooting and iron staining.	Holocene - Tidal Mudflats 2
1.80	1.20	0.90	1.50	0.60	Soft, malleable mid grey with some darker mottling fine sandy CLAY.	
1.20	0.80	1.50	1.90	0.40	Firm, malleable mid greyish-blue slick CLAY with occasional subangular gravel.	

0.80	0.60	1.90	2.10	0.20	Dark black, firm, malleable band of CLAY with degraded organics.	Holocene - organic deposits
0.60	-0.80	2.10	3.50	1.40	Firm, malleable, mottled grey and blue boulder CLAY with frequent chalk flecks and fine GRAVEL.	Pleistocene - Till

Table 20 Deposit log for AOC53109_IR-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_IR_TP01		537985.2	348692.8	1.7		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
1.70	1.20	0.00	0.50	0.50	Topsoil. Firm, crumbly dark greyish-brown silty CLAY with frequent small rounded stones.	Topsoil / Made Ground (Victorian to Modern)
1.20	1.00	0.50	0.70	0.20	Water settling deposit. Very compact, firm, malleable dark reddish purplish grey brown silty CLAY with some rooting.	Holocene - Tidal Mudflats 2
1.00	0.70	0.70	1.00	0.30	Water settling deposit. Very compact, malleable mid greyish-blue slightly silty CLAY.	
0.70	-0.80	1.00	2.50	1.50	Water settling deposit. Firm, malleable mid reddish greyish blue, slightly silty CLAY.	
-0.80	-2.20	2.50	3.90	1.40	Water settling deposit. Damp, malleable mid greyish-blue silty CLAY with pockets of peat throughout.	Holocene - organic deposits

Table 21 Deposit log for AOC53109_LF1-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_LF1_TP01		555183.8	375372	2.1		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.10	1.70	0.00	0.40	0.40	Topsoil. Firm, friable, dark greyish brown silty CLAY with fine rounded rocks and chalk flecks.	Topsoil / Made Ground (Victorian to Modern)

1.70	1.40	0.40	0.70	0.30	Subsoil. Soft, malleable mid blueish-grey with occasional iron panning, silvery fine sandy CLAY.	
1.40	1.00	0.70	1.10	0.40	Soft, malleable pale silvery grey with some yellow mottling laminated blue sandy CLAY. Some iron panning throughout.	Holocene - Tidal Mudflats 1
1.00	0.40	1.10	1.70	0.60	Soft, malleable, very dull mid brownish grey, very fine sandy laminated CLAY. Very sandy.	
0.40	-0.10	1.70	2.20	0.50	Soft, malleable banded black and grey, finely laminated sandy CLAY.	
-0.10	-1.40	2.20	3.50	1.30	Soft, wet, friable, mixed dark grey and black fine sandy CLAY. Salty and organic odour.	

Table 22 Deposit log for AOC53109_SKR-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_SKR_TP01		544790.8	354834.4	1.15		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
1.15	0.65	0.00	0.50	0.50	Topsoil. Firm, friable, mid greyish brown silty CLAY with small rounded stones and frequent to occasional modern debris.	Topsoil / Made Ground (Victorian to Modern)
0.65	0.25	0.50	0.90	0.40	Firm, friable mid grey with dull yellow laminated fine sandy CLAY with frequent iron staining.	Holocene - Tidal Mudflats 2
0.25	-0.15	0.90	1.30	0.40	Firm, friable, mid blueish-grey sandy CLAY with lenses of dull grey silvery fine SAND.	
-0.15	-0.35	1.30	1.50	0.20	Loose, dark brownish black desiccated PEAT with occasional bark and leaves. Dry.	'Holocene - organic deposits
-0.35	-1.55	1.50	2.70	1.20	Soft, malleable, mid greyish-blue silty CLAY with occasional small pockets of peat and dull yellow fine sand.	Holocene - Tidal Mudflats 1

Table 23 Deposit log for AOC53109_SR-TP01A

Location		Easting	Northing	Elevation		
AOC53109_SR_TP01A		538426.4	343898.6	2.85		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.85	2.45	0.00	0.40	0.40	Topsoil. Firm, crumbly, friable, mid greyish brown silty SAND with frequent small rounded stones.	Topsoil / Made Ground (Victorian to Modern)
2.45	2.05	0.40	0.80	0.40	Subsoil. Very compact, friable, dark greyish brown clayey silty SAND with frequent chalk flecks and rooting.	
2.05	0.35	0.80	2.50	1.70	FILL. Very compact, firm, friable, dark greyish brown, low clay content silty fine SAND with frequent rooting and chalk flecks. Some animal bone.	Archaeology - Post-Roman to Victorian (AOC DD Wide)

Table 24 Deposit log for AOC53109_SR-TP01B

Location		Easting	Northing	Elevation		
AOC53109_SR_TP01B		538424.1	343896.1	2.8		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.80	2.40	0.00	0.40	0.40	Topsoil. Firm, crumbly, friable, mid greyish brown silty SAND with frequent small rounded stones.	Topsoil / Made Ground (Victorian to Modern)
2.40	2.10	0.40	0.70	0.30	Subsoil. Very compact, friable, dark greyish brown clayey silty SAND with frequent chalk flecks and rooting.	
2.10	0.50	0.70	2.30	1.60	Friable, loose, dull yellow and pale grey thinly laminated fine SAND with some iron staining.	Holocene - Tidal Mudflats 1
0.50	-0.50	2.30	3.30	1.00	Loose, soft, damp, friable, pale white grey with clumps of yellow fine SAND.	

Table 25 Deposit log for AOC53109_TH1-TP01

Location		Easting	Northing	Elevation		
AOC53109_TH1_TP01		535955.3	340336.1	2.8		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.80	2.40	0.00	0.40	0.40	Topsoil/Made ground. Firm, friable, dark greyish-brown silty SAND with frequent small rounded rocks and modern debris of coal, pottery and clay tobacco pipe.	Topsoil / Made Ground (Victorian to Modern)

2.40	1.90	0.40	0.90	0.50	Made ground. Firm, very compact, friable, dark brown with frequent dull brown mottling and frequent inclusions of modern debris and some flecks of chalk and some rooting.	Holocene - Tidal Mudflats 1
1.90	1.30	0.90	1.50	0.60	Firm, malleable, mid blueish grey with some yellow mottling coarse sandy CLAY.	
1.30	0.50	1.50	2.30	0.80	Very compact, malleable, mid grey with occasional dull yellow mottling CLAY.	
0.50	-0.90	2.30	3.70	1.40	Soft, damp, malleable, mid blueish-grey silvery silty CLAY. Salty odour.	

Table 26 Deposit log for AOC53109_TH2-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_TH2_TP01		535744.8	340218.6	3		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.00	2.50	0.00	0.50	0.50	Topsoil. Firm, friable, mid greyish brown silty SAND with frequent rooting and small rounded stones.	Topsoil / Made Ground (Victorian to Modern)
2.50	2.00	0.50	1.00	0.50	Soft, friable, mid grey 'silvery' clayey SAND with some rooting and occasional iron staining.	Holocene - Tidal Mudflats 1
2.00	1.20	1.00	1.80	0.80	Firm, malleable, mid grey fine sandy CLAY.	
1.20	-0.10	1.80	3.10	1.30	Soft, friable, mid to dark blueish-grey (silvery) silty SAND. Damp. Laminated.	
-0.10	-0.50	3.10	3.50	0.40	Firm, compact, malleable, mid greyish blue (silvery) CLAY. Damp.	

Table 27 Deposit log for AOC53109_TW1-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_TW1_TP01		532370.2	332563.6	3.2		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.20	2.90	0.00	0.30	0.30	Topsoil. Soft, friable, mid greyish brown silty SAND with frequent rooting and occasional small subangular natural flint.	Topsoil / Made Ground (Victorian to Modern)

2.90	1.80	0.30	1.40	1.10	Compact, friable, mottled dull yellow and mid grey fine SAND with occasional patches of iron staining.	Holocene - Tidal Mudflats 1
1.80	0.50	1.40	2.70	1.30	Very compact, friable dull grey fine SAND with a low clay content. Damp.	
0.50	-0.30	2.70	3.50	0.80	Compact, friable, very damp mid blackish blueish grey silty SAND. Organic and salty odour.	

Table 28 Deposit log for AOC53109_TW2-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_TW2_TP01		532370.2	332563.6	3.2		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.20	2.80	0	0.4	0.40	TOPSOIL. Loose, soft, pale greyish brown sandy SILT with frequent small rounded stones and rooting.	Topsoil / Made Ground (Victorian to Modern)
2.80	2.50	0.4	0.7	0.30	Loose soft, friable dull beige yellow silty fine SAND.	Holocene - Tidal Mudflats 1
2.50	1.50	0.7	1.7	1.00	Compact, friable, mid to dark greyish brown laminated clayey fine SAND with some iron staining.	
1.50	0.70	1.7	2.5	0.80	Compact, friable, mid to dark grey, damp clayey SAND. Laminated.	
0.70	-0.30	2.5	3.5		Compact, friable, wet, dark grey fine SAND with small inclusions of gravel.	Pleistocene - Glaciofluvial

Table 29 Deposit log for AOC53109_WMN-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_WMN_TP01		528002.5	331073.5	3.55		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.55	3.25	0.00	0.30	0.30	Topsoil. Loose, friable dark greyish brown sandy SILT with frequent small rounded stones and frequent rooting.	Topsoil / Made Ground (Victorian to Modern)
3.25	3.05	0.30	0.50	0.20	Subsoil. Firm, compact, dark brown silty SAND with occasional small rounded stones.	
3.05	2.15	0.50	1.40	0.90	Compact, friable, mottled mix of mid grey and dull yellow fine silty SAND with occasional small rounded pebbles.	Holocene - Tidal Mudflats 1

2.15	1.15	1.40	2.40	1.00	Firm, friable mid grey with some iron staining. Damp. Clayey fine SAND.	
1.15	1.05	2.40	2.50	0.10	Soft, wet, friable mid blueish grey silty SAND. Organic odour.	

Table 30 Deposit log for AOC53109_WMS-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_WMS_TP01		529080.4	328525	3.7		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.70	3.30	0.00	0.40	0.40	Topsoil. Loose, friable mid greyish brown silty SAND with frequent small rounded stones and chalk flecks.	Topsoil / Made Ground (Victorian to Modern)
3.30	3.00	0.40	0.70	0.30	Subsoil. Very compact mid to dark brown silty SAND with occasional small rounded stones and chalk.	
3.00	2.10	0.70	1.60	0.90	Compact mid brownish grey with some dark yellow mottling fine silty SAND.	Holocene - Tidal Mudflats 1
2.10	1.50	1.60	2.20	0.60	Compact, friable, dull yellow with orange mottling clayey SAND. High iron content. Laminated with bands of dull grey clayey SAND.	
1.50	0.50	2.20	3.20	1.00	Very compact, friable, damp mid grey fine clayey SAND. Laminated.	
0.50	0.40	3.20	3.30	0.10	Soft, friable, dark blueish grey wet SAND. Organic odour.	

10 DEPOSIT MODEL

10.1 The following is updated from the GDBA (AOC, 2022) and Addendum (AOC, 2023A).

10.2 Eight stratigraphic units have been identified across the site. These units are summarised in Table 31 below and listed in stratigraphic order from the oldest to the most recent. The vertical deposit succession is illustrated on the transect(s) drawn across the site (Figure 10 to Figure 17). The major stratigraphic units are also represented by surface and/or thickness plots (Figure 18 to Figure 46).

Table 31 Summary of identified stratigraphic units (subdivision of the Holocene based Walker et al., 2012)

Stratigraphic unit (facies)	**Lithology/Description**	**Chronology**	**Environment of deposition**
Tertiary Bedrock: Mudstone / Siltstone / Sandstone / Limestone / Chalk (see section 4)	Combination of chalks, limestones, ironstones, sandstones, siltstones, mudstones. Chalks are identified closer to the	Mid Jurassic (Callovian) to Late Cretaceous (Turonian) Periods	Shallow marine deposits

	cost in the northeast, grading to limestones, ironstone, sandstone, and to siltstones and mudstones in the southwest.	(166.1 to 89.8 million years ago)	
Glacial Till	Very poorly sorted, with grain size ranging from clay to boulders	Devensian (*c*. 116,000 to 11,800 years ago)	Glacial conditions – formed beneath or adjacent to glaciers
Glaciofluvial Deposits	Sand and gravel	Devensian (*c*. 116,000 to 11,800 years ago)	Glacial to periglacial conditions – material transported by glacial meltwater
Tidal Mudflats (1)	Clay, silt, and sand deposits, often laminated	Mid Holocene / Northgrippian (c 8,276 – 4,200 BP/ 6,326 – 2,250 BC) to Late Holocene / Meghalayan (c 4200 BP/2250 BC onwards)	Low lying coastal and estuarine peri-marine deposits
Organic Deposits	Peat	Mid Holocene / Northgrippian (c 8,276 – 4,200 BP/ 6,326 – 2,250 BC) to Late Holocene / Meghalayan (c 4200 BP/2250 BC onwards)	Temperate wetland development within a coastal environment
Storm Beach	Primarily sand and silt, occasionally with gravel	Medieval period (*c*. AD 1200s) (Green, 2015)	Storm surges in 1287 and 1288 are regarded as the events that destroyed offshore islands which previously protected the coastline and provided a sheltered tidal lagoon (Green, 2015)
Tidal Mudflats (2)	Clay, silt, and sand, overlying organic and storm beach deposits	Late Holocene / Meghalayan (c 4200 BP/2250 BC onwards), or Medieval (AD 1200s) onwards	Low lying coastal and estuarine peri-marine deposits. Also includes warp, due to difficulty in differentiation.
Topsoil and made ground	Mid to dark brown / grey silt to sand, and redeposited material of local origin with additional modern inclusions (CBM etc)	Post-medieval to modern (19th Century AD onwards)	Reclamation / agriculture

Area 1 – Tertiary Bedrock

10.3 Bedrock within Area 1 includes Burnham Chalk Formation, Welton Chalk Formation, Ferriby Chalk Formation, Carstone Formation (sandstone), Roach Formation (mudstone and limestone), Tealby Formation (mudstone), and Claxby Ironstone Formation. These form bands in a northwest-southeast alignment, with increasing age toward the southwest.

10.4 A total of 78 interventions within Area 1 reach bedrock, with an even distribution across the space to provide a reliable illustration for the area.

10.5 In broad terms the surface of the bedrock across Area 1 (Figure 18) has been modelled to show ranges between approximately -45.5 and -2.5 m OD. The elevation of this surface is highest in the northwestern area of the Site, grading down eastwards towards the modern coastline from *c*. -5 to -20.5 m OD. This higher area is illustrated in Transect A (Figure 10). Across much of the modelled area, the lower elevation does not far exceed this value. However, towards the southern end of Area 1 the lowest elevation, of *c*. -45.5 m OD, is located to the west of the Marsh Lane to A158 – Skegness Road (WM3) route segment, in a discrete location (TF56NW7). This suggests probable erosion or removal of the bedrock and is illustrated in Transect C (Figure 12).

10.6 Within the Order Limits at Landfall the bedrock surface lies at c. -19 to -18 m OD as illustrated in the surface plot (Figure 18) and transect A (Figure 10). For the cable route over the Landfall to A52 Hogsthorpe (ECC1) segment the bedrock lies between -16 to -14 m OD but in isolated areas drops back down to -18m OD along its eastern edge (Figure 18 and Figure 11). Within the A52 Hogsthorpe to Marsh Lane (ECC2) and the Marsh Lane to A158 (ECC3) segments the bedrock is modelled between -14 and -13 m OD. However, for the latter and much of the A158 to Low Road (ECC4) segment the aforementioned isolated low of c. -45.5 m OD (TF56NW7, Figure 12), as well as some records of c. -18 m OD (e.g. TF565W9), do bring some lower levels into the model along the western edge of the Order Limits and occasionally encroaching into it.

Area 1 – Glacial Till

10.7 Till comprising very poorly sorted material deposited beneath or adjacent to glaciers during the Pleistocene epoch is prevalent across Area 1.

10.8 A thickness plot (Figure 19) has been produced to illustrate the distribution and survival of these deposits. Across the wider area the till is predominantly thickest across the north, where it reaches up to approximately 24 m in thickness and is broadly recorded with a thickness of *c*. 15 m or more. The intervention (TF56NW7) which recorded a particularly low bedrock surface to the west of the Marsh Lane to A158 – Skegness Road (ECC3) route segment is shown to record the thickest till deposits, reaching up to *c*. 35 m overlying the bedrock. This suggests a glacial feature, such as a kettle hole.

10.9 Within the Order Limits at Landfall the till is modelled between 7 and 14 m thick (Figure 19) and shown in records to extend from c. -5 down to -19 m OD (e.g. LF2-BH01, Figure 10). For the cable route over the Landfall to A52 Hogsthorpe (ECC1) segment the thickness of the till is between 12 to 19 m, for A52 Hogsthorpe to Marsh Lane (ECC2) it is 9-10 m thick, for the Marsh Lane to A158 (ECC3) it is 2-10 m thick, and for A158 to Low Road (ECC4)the till is 2-6 m thick (Figure 19).

Area 1 – Glaciofluvial Deposits

10.10 Glaciofluvial deposits comprising primarily sand and gravel represent the presence of glacial meltwater.

10.11 A thickness plot (Figure 20) has been generated to illustrate the distribution and survival of glaciofluvial deposits across Area 1. The deposits are recorded generally external to the AoS in discrete areas, although 1.1m thickness (-5.45 to -6.55 m OD) was encountered within the landfall Order Limits, in a GI intervention (AOC53109_LF1-BH01).

10.12 The distribution within the thickness plot (Figure 20) and transect A (Figure 10) suggests possible north-south aligned meltwater channels, or potentially more erratic channel routes from the west to the east, to have been present here. Although no other glaciofluvial deposits are recorded within the Order Limits for the cable route in Area 1, the thickness model (Figure 20) does indicate 0.5-1m thickness across the whole route, this is unlikely to be the case everywhere but isolated or linear formation may occur as illustrated for landfall.

10.13 The thickness and prevalence of such deposits towards the south of Area 1, west of the Marsh Lane to A158 – Skegness Road (ECC3) and A158 – Skegness Road to Low Road (ECC4) route segments suggests that such deposits are likely to be encountered within this region of the Order Limits as well.

Area 1 - Pleistocene Surface

10.14 A topographic plot (Figure 21) has been generated to illustrate the combined surface of glaciofluvial and till deposits across Area 1, illustrating the probable landscape at the beginning of the Holocene (*c*. 10,000 years ago).

10.15 The surface elevation ranges from approximately -16 to 12.5 m OD, with an overall decrease from west to east towards the coastline. The higher elevations, recorded in the northwest and southwest of Area 1, are likely to have remained continuously above the water level and provided stable dryland through much of the Early Holocene. Dryland that would have been suitable for more repetitive or continuous human occupation.

10.16 Towards the centre of Area 1, to the west of the A52 – Hogsthorpe to Marsh Lane (ECC2) route segment, the region of lower elevation extends further inland, potentially representing a former inlet. The western edge of this lower area roughly aligns with the modelled coastline from 3900 BC (Green, 2011) illustrated in Figure 4. East of here is a slightly risen area reaching up to *c*. 2 m OD, which may represent an area which remained drier as transgression began to fill the inlet to the west.

10.17 Within the Order Limits at Landfall the Pleistocene surface lies at c. -5 to -4 m OD as illustrated in the surface plot (Figure 21) and transect A (Figure 10). For the cable route within the Landfall to A52 Hogsthorpe (ECC1) segment the Pleistocene surface lies between -5 to -2 m OD. Within the A52 Hogsthorpe to Marsh Lane (ECC2) and the Marsh Lane to A158 (ECC3) segments the surface is modelled between -6 and -3 m OD. To the south of the latter and for much of the A158 to Low Road (ECC4) segment the surface lowers to -2 m OD and then -2 to 0.5 m OD, respectively, and may start to encroach within a 1.5m BGL window.

Area 1 – Tidal Mudflats (1)

10.18 Tidal mudflats represent (early to late) Holocene deposition of clay, silt, and sand within the intertidal zone providing peri-marine conditions with both wet and dry periods. Lamination is often recorded among these deposits representing those changing conditions.

10.19 A thickness plot (Figure 22) has been produced to illustrate the distribution and survival of the deposits. Overall, these deposits are recorded where the underlying Pleistocene surface (Figure 21) is at or below 1 m OD. Above this these sediments rarely formed or have rarely survived. The deposits are recorded predominantly across the eastern parts of Area 1, with units recorded overlying the lower surface of the possible inlet to the west of A52 – Hogsthorpe to Marsh Lane

(ECC2).

10.20 The thickest deposits are recorded to the east of the AoS at the Marsh Lane to A158 – Skegness Road (ECC3) route segment. Here, they reach up to approximately 25 m in thickness (TF56SW4), and *c*. 18.5 m further north (TF56NW12). Generally, the thicker deposits are found to be overlying depressions within the Pleistocene surface, however the thickest deposits of TF56SW4 are located on a gradual slope.

10.21 Transect A (Figure 10) illustrates a sharp drop in Pleistocene surface elevation towards the modern coastline in the east and within the Order Limits at landfall. Within the Order Limits here the deposits are modelled between 2 and 5m thick (Figure 22, e.g. TF57NW12 and AOC53109_LF2-BH01, Figure 10).

10.22 Within the Order Limits for the cable route in the Landfall to A52 Hogsthorpe (ECC1) segment the Tidal Mudflat (1) deposits are 0-3 m in thickness, for A52 Hogsthorpe to Marsh Lane (ECC2) they are 1.5-3 m thick, for the Marsh Lane to A158 (ECC3) they are 0-5 m thick, and for the A158 to Low Road segment (ECC4) they are 2.5-7 m thick (Figure 22). For much of the northern parts of the Order Limits in Area 1 the Tidal Mudflat (1) deposits are c. 1 m or more below a 1.5 m BGL window. However, Transect C (CP/PC-BH01, Figure 12) records these deposits just entering that 1.5 m BGL zone and this may be the case for other parts of the A158 to Low Road segment (WM4).

Area 1 – Holocene Organic Deposits

10.23 Holocene organic deposits resulting from formation of vegetated wetland and then subsequent inundation are recorded across the area. They are associated with coastal and fluvial environments.

10.24 A thickness plot (Figure 23) has been generated to illustrate the distribution and survival of these deposits across Area 1. It is evident that the deposits are more prominent across the southern and eastern parts of the area, with discrete occurrences to the northwest (TF47NE85 and TF47NE89). The deposits reach a maximum of *c*. 4.5 m in thickness (TF56NW15), at the boundary between route segments A52 – Hogsthorpe to Marsh Lane (ECC2) and Marsh Lane to A159 – Skegness Road (ECC3).

10.25 Across the south and east of Area 1, the organic deposits are generally recorded adjacent to the thicker tidal mudflats (1) deposits, on the slopes of the underlying Pleistocene surface below where it lies between *c*. -4 and 0 m OD. This trend suggests the formation of vegetated wetland on the coastal fringe prior to continued RSL rise and inland transgression of water.

10.26 Within the Order Limits at Landfall the organic deposits are not currently recorded but are modelled between 0 and 0.5 m thick as they might encroach into the edges of the Site. For the cable route, 3 m thickness of organics are modelled within the Order Limits at the edge between the Landfall to A52 Hogsthorpe (ECC1) segment and the A52 Hogsthorpe to Marsh Lane (ECC2) segment. In the south of the A52 Hogsthorpe to Marsh Lane (WM2) segment, and over much of the Marsh Lane to A158 segment (ECC3) and A158 to Low Road (ECC4) segment, they are modelled 1-3.5 m thick, because of the incidence of nearby thick deposits (Figure 23).

10.27 A topographic plot (Figure 24) of the surface of the organic and earlier deposits has been produced, illustrating the surface to be between approximately -6 and 12 m OD. It illustrates significant natural levelling of the landscape during the early Holocene period in comparison to the Pleistocene surface (Figure 21). Within the Order Limits at Landfall the surface is between -6 and -1.5 m OD,

however, the majority of the cable route is likely to encounter this surface between *c*. -1.5 and 2.5 m OD. These deposits, where present, are likely to be within a 1.5m BGL zone over much of the Area 1 Order Limits.

Area 1 – Storm Beach Deposits

10.28 Sorm beach deposits comprise primarily silt and sand resulting from 13th Century storm events eroding islands which previously sheltered the coastline. Storm beach is recorded only within 3 interventions (AOC53109_LF1-BH01, TF57NE1, and TF57NE2) on the coastline at Landfall, and with so few data points the unit has not been separately modelled here.

10.29 Storm beach deposits within the Order Limits are present between -4.75 and -5.28m OD (0.53m thick, AOC53109_LF1-BH01) within the Landfall (ECC1) segment.

Area 1 – Tidal Mudflats (2)

10.30 An upper (late Holocene) tidal mudflats unit has been designated for the Holocene clays and silts overlying organic and storm beach deposits across the site, although storm beach is recorded only within 3 interventions (AOC53109_LF1-BH01, TF57NE1, and TF57NE2) on the coastline at Landfall, and is not modelled here.

10.31 Additions of possible anthropogenic or redeposited alluvium further complicate the unit. The anthropogenic processes are suggested by descriptions of warp in the borehole logs but may also be related to saltern production. However, due to the inherent difficulty in distinguishing between natural and human formation processes in these records and the inconsistent use of the term warp in the logs, warp being described under till in some cases, these have not currently been explicitly classed as anthropogenic.

10.32 A thickness plot (Figure 25) has been generated to illustrate the distribution and survival of these deposits. The deposits reach up to *c*. 4 m in thickness, within the Landfall area of the Order Limits. This value is the result of the modelling smoothing out variations in all nearby interventions, but intervention AOC53109_LF1-BH01 actually records 6.9 m of the deposits.

10.33 Overall, the unit occupies areas of lower Pleistocene surface areas below approximately 1.5 m OD, overlying organic deposits. This suggests the likely extent of Holocene intertidal deposition to have reached significantly inland from the modern coast. The infilling of lower Pleistocene surfaces with the Holocene sequence, levelled off with the tidal mudflats (2) deposits, is illustrated in Transects A to C (Figure 10 to Figure 12). Transect A shows the thickest deposits within the landfall area (WM1) in the northeast of Area 1. In this area the sequence overlies storm beach deposits (AOC53109_LF1-BH01) as well as organic deposits.

10.34 Within the Order Limits for the cable route in the Landfall to A52 Hogsthorpe (ECC1) segment the Tidal Mudflat (2) deposits are 1-4 m in thickness, for A52 Hogsthorpe to Marsh Lane (ECC2) they are 0-32 m thick, for the Marsh Lane to A158 (ECC3) they are 1.5-2 m thick, and for the A158 to Low Road segment (ECC4) they are 1-1.5 m thick (Figure 25). For much of the Order Limits in Area 1 the Tidal Mudflat (2) deposits are within the 1.5 m BGL window.

Area 1 – Topsoil and Made Ground

10.35 Across the majority of Area 1, within and without the Order Limits, the thickness of topsoil and made ground (Figure 26) reaches up to a maximum of *c*. 1 m.

10.36 At Thurlby Grove, interventions TF47NE147 (Transect A: Figure 10) and TF47NE55 each record in excess of 3 m of made ground, suggesting significant modern disturbance at this location. More significant deposits reaching up to 4.88 m in thickness are recorded at Wold Sea Farm (TF57NW26/A) to the north of the Landfall to A52 – Hogsthorpe (ECC1) route segment. However, thick deposits appear to be an isolated occurrence and those currently recorded in the Area 1 model are over 2km from the Order Limits.

Area 2 – Tertiary Bedrock

10.37 Figure 27 illustrates the surface elevation of tertiary bedrock within Area 2. It ranges between approximately -18.5 and 5 m OD. The lowest of these elevations is recorded within the Low Road to Steeping River (ECC5) route segment. The highest bedrock is recorded to the northwest of the Order Limits at Fodder Dike Bank to Broadgate (ECC7). Throughout the majority of the area the bedrock is recorded between *c*. -6 and -11 m OD. Overall, it grades downwards towards the modern coastline.

10.38 Within the Order Limits of the cable route over the Low Road to Steeping River (ECC5) segment the bedrock lies between -17 to -9.5 m OD (Figure 13 and Figure 27). Within the Steeping River to Fodder Dike Bank (ECC6) and the Broadgate to Ings Drove (ECC8) segments the bedrock is modelled between -11 and -7.5 m OD. However, for the Fodder Dike Bank to Broadgate (A3) segment the bedrock is between -7 and -5.5 m OD. In the south the surface is modelled between -10 and -8 m OD for the Ings Drove to Church End Lane (ECC9) segment.

Area 2 – Glacial Till

10.39 The thickness of till across Area 2 is illustrated in Figure 28, showing distribution and survival of the deposits. It is generally recorded with a thickness of up to 5 m, though reaches 18.9 m (TF56SW6) within the Low Road to Steeping River (ECC5) route segment overlying the low bedrock surface. This suggests another probable glacial feature, such as a kettle hole.

10.40 Within the Order Limits of the cable route over the Low Road to Steeping River (ECC5) segment the thickness of the till is 4-14.5 m (Figure 13 and Figure 27). Within the Steeping River to Fodder Dike Bank (ECC6) to the Broadgate to Ings Drove (ECC8) segments the till is modelled 2-4.5 m thick. In the south the thickness is modelled 1-8 m for the Ings Drove to Church End Lane (ECC9) segment.

Area 2 – Glaciofluvial Deposits

10.41 A thickness plot (Figure 29) has been generated to illustrate the distribution and survival of glaciofluvial deposits.

10.42 The deposits reach up to a maximum thickness of *c*. 6 m, immediately southeast of the Order Limits at Old Leake (TF45SW1/A and TF45SW1/B), adjacent to the Broadgate to Ings Drove (ECC8) route segment. These thicker deposits are also represented in Transect F (Figure 15), infilling an area of lower till surface elevation. To the northeast, thickness of *c*. 4.5 m is reached to the south of the cable route Order Limits (TF56SW5), the position of which is also illustrated in Transect D (Figure 13).

10.43 No glacial fluvial deposits are recorded within the Order Limits across Area 2. Although, the thickness and prevalence of such units near to the Low Road to Steeping River (ECC5) and the Broadgate to Ings Drove (ECC8) segments suggests that such deposits are likely to be

encountered within these regions of the Order Limits.

Area 2 – Pleistocene Surface

10.44 Figure 30 represents the surface elevation of the combined Pleistocene till and glaciofluvial deposits to illustrate the probable land surface at *c*. 10,000 BC.

10.45 The surface generally grades downwards in a southeastern direction towards the modern coastline. It ranges between approximately -10 and 5 m OD. The highest surface is located to the northwest of the Fodder Dike Bank to Broadgate (ECC7) route segment, either side of which to the northeast and southwest are areas of lower elevation (*c*. -6 to -4 m OD) representative of river valleys or inlets.

10.46 To the northeast this is associated with the Steeping River and is therefore most likely associated with the river valley's former shape prior to sedimentation.

10.47 To the southwest, the lower area may represent an inlet, or a former river channel associated with a fluvial pattern prior to canalisation of watercourses. The thicker glaciofluvial sequence correlates with the position of this lower area, thus also posing the possibility of meltwater erosion of the till resulting in a reduced elevation prior to deposition of sand and gravel upon energy dissolution.

10.48 Within the Order Limits, the Pleistocene surface lies at c. -5 to -2.5 m OD as illustrated in the surface plot (Figure 30) for the cable route segments of Low Road to Steeping River (ECC5), Steeping River to Fodder Dike Bank (ECC6), Fodder Dike Bank to Broadgate (ECC7), and Broadgate to Ings Drove (ECC8). Within the Ings Drove to Church End Lane (ECC9) route segment the Pleistocene surface is modelled at c. -9 to -3.5 m OD. For all of the Order Limits of the cable route the Pleistocene surface is more than c. 5m BGL.

Area 2 – Tidal Mudflats (1)

10.49 A thickness plot (Figure 31) has been generated to illustrate the distribution and survival of tidal mudflats (1) deposits.

10.50 The deposits reach up to a maximum thickness of *c*. 11.5 m to the northeast of the Low Road to Steeping River (ECC5) route segment, overlying an areas of lower Pleistocene surface elevation at approximately -8.5 m OD. The deposits are recorded among other discrete positions along the route, generally of up to *c*. 3.5 m thickness.

10.51 Towards the southwest of Area 2 they become more prominent, with a thickness of up to *c*. 10.5 m to the southeast of the route division at Broadgate (AOC53109_SD/SF-BH01). This is illustrated in Transect F (Figure 15), showing thick deposits overlying the Pleistocene surface at approximately -8 m OD, and with an upper elevation of approximately 4 m OD. The distribution of the deposits suggests the southernmost depression in the Pleistocene surface to have remained more consistently exposed to peri-marine influence.

10.52 Within the Order Limits of the cable route over the Low Road to Steeping River (ECC5) and the Broadgate to Ings Drove (ECC8) segments the tidal mudflats (1) unit is modelled 1.5-4 m thick. In the south the thickness is modelled 1-8.5 m for the Ings Drove to Church End Lane (ECC9) segment. For much of the northern parts of the Order Limits in Area 2 the Tidal Mudflat (1) deposits are within c. 2-2.5 m BGL (e.g. Transect D, Figure 13), as in the Low Road to Steeping River (ECC5) segment, or within the 1.5m BGL window (e.g. Transect E, Figure 14), as in the Fodder

Dike Bank to Broadgate (ECC7) segment.

Area 2 – Holocene Organic Deposits

10.53 Figure 32 is a thickness plot representative of the distribution and survival of organic deposits across Area 2.

10.54 The thickness of organic deposits reaches a maximum of approximately 14 m (TF45SE4), also illustrated in Transect F (Figure 15), to the east of the thickest tidal mudflats (1) deposits (AOC53109_SD/SF-BH01).

10.55 Organic sequences are present throughout much of the Low Road to Steeping River (ECC5), Steeping River to Fodder Dike Bank (ECC6), and Broadgate to Ings Drove (ECC8) route segments. Transects D, E, and F (Figure 13 to Figure 15) highlight the frequency of organic deposits across Area 2, and their significant variety in elevation and thickness.

10.56 Within the Order Limits for Area 2 organic deposits are recorded up to c.7 m thick (see RWC2-BH01 in Appendix B) just outside of the Low Road to Steeping River (ECC5) segment, and up to 3 m thick (TF4SSW4) in the Fodder Dike Bank to Broadgate (ECC7) segment.

10.57 A topographic plot (Figure 33) illustrates the surface elevation of the organic and earlier deposits across Area 2. The surface ranges between *c*. -8 and 9 m OD, the highest area located to the northwest of Fodder Dike to Broadgate (ECC7) and the lowest to the east of the same area. Across the southern part of Area 2, the surface is more consistent, between *c*. -1 and 4.5 m OD.

10.58 Within the Order Limits the Organic unit surface lies at c. -0.5 to 3 m OD for the cable route segments of Low Road to Steeping River (ECC5), Steeping River to Fodder Dike Bank (ECC6), Fodder Dike Bank to Broadgate (ECC7), and Broadgate to Ings Drove (ECC8). Within the Ings Drove to Church End Lane (ECC9) route segment the Pleistocene surface is modelled at c. -2 to 3 m OD. These deposits, where present, are likely to be within a 1.5m BGL zone over much of the Area 2 Order Limits.

Area 2 – Storm Beach Deposits

10.59 A thickness plot (Figure 34) has been generated to illustrate the distribution and survival of storm beach deposits across Area 2. It shows the maximum thickness to be approximately 13 m (TF55SW3), located on the modern coast to the east of Fodder Dike to Broadgate (ECC7). Transect E (Figure 14) illustrates the thick accumulation on the coast which thins moving inland and overlies organic and tidal mudflats (1) deposits. To the south of the Order Limits, two GI interventions encountered the deposits at thickness of between 0.3 and 1.2 m (3-5m BGL, AOC53109_RW01-BH01, AOC53109_RW02-BH01, see Appendix B).

10.60 The deposits are also recorded to the north with a thickness of up to *c*. 9 m (e.g. TF56SW5, Figure 34), thinning out into the Order Limits within route segment Low Road to Steeping River (A1). This suggests potential for the deposits to survive within this part of the development area but limited potential elsewhere within he Order Limits of Area 2.

10.61 Figure 35 illustrates the modelled surface of storm beach and earlier deposits across Area 2, showing it to reside between *c*. -8 and 9 m OD. The topography is similar to that of the Holocene organics below, though significant rises are observed to the east of Fodder Dike to Broadgate (ECC7) on the coast, and throughout much of Low Road to Steeping River (ECC5). The area of

lower elevation through Steeping River to Fodder Dike Bank (ECC6) remains, aligning with the Steeping River valley.

10.62 Within the southern region of Area 2, a lesser differentiation is recorded. At Ings Drove to Church End Lane (ECC9), the surface falls to *c*. -2 m OD, whereas to the east towards the coastline, it rises up to *c*. 4.5 m OD.

Area 2 – Tidal Mudflats (2)

10.63 Tidal mudflats (2) are recorded across two regions of Area 2. Comprising clay, silt, and sand, they overlie organic and storm beach deposits.

10.64 Figure 36 illustrates survival and distribution of the deposits. In the north of Area 2 their thickness reaches a maximum of approximately 11 m, southeast of Steeping River to Fodder Dike Bank (ECC6) (AOC53109_SL-BH01, TF55NW2). Within the Order Limits here the deposits are modelled between 2 and 4.5 m in thickness. The deposits mirror the underlying topography, with thicker deposits in low lying regions, i.e. continuing northwest through the Steeping River Valley. The deposits extend slightly into Low Road to Steeping River (ECC5) to the northeast, and southwest into Fodder Dike Bank to Broadgate (A3), but only up to c. 1.5m thick. This is illustrated within the Order Limits at ECC5 (AOC53109_RWC1-BH01) in Transect D (Figure 13).

10.65 To the southwest in Area 2 thinner deposits of up to *c*. 4 m thick are recorded to the west of and extending into Ings Drove to Church End Lane (A5) (AOC53109_IR-BH01). This is also captured within Transect F (Figure 15). Being further inland, it is possible that these deposits represent later warping practices or alluvial deposition. However, they may be tidal mudflat deposits deposited by greater transgression which buried the organic material below. For much of the Order Limits in Area 2 the Tidal Mudflat (2) deposits are within the 1.5 m BGL window.

10.66 The Ings Drove to Church End Lane (A5) segment also included the sole archaeological feature recorded as part of the archaeological monitoring of the trial pits. A gully was identified within SR-TP01 (Table 23) at a height of 2.05 m OD and cut into the tidal mudflats (2) unit. The animal bone within the fill strongly suggesting the feature was archaeological in origin, possibly a minor field boundary but as only a small 1.7m length was visible in the TP, interpretation was limited.

Area 2 – Topsoil and Made Ground

10.67 Topsoil and made ground reaches up to *c*. 2 m in thickness within Area 2 (Figure 37). Across the majority of the modelled area, it is recorded between *c.* 0-1 m.

10.68 To the northwest of the boundary at the Steeping River (ECC5/6), an isolated occurrence of thick made ground is recorded reaching approximately 1.5 m (TF46SE3). It is likely associated with the canalisation of the Steeping River or with the construction of the adjacent Steeping Road bridge.

Area 3 – Tertiary Bedrock

10.69 A topographic plot (Figure 38) has been generated to illustrate the surface elevation of the tertiary bedrock across Area 3. It ranges in elevation between approximately -47 and -5 m OD, although generally remains above *c*. -20 m OD. Values below this are isolated, adjacent to Fosdyke Bridge (ECC12 / ECC13), where boreholes reaching *c*. 20 m bgl did not encounter bedrock (AOC53109_TW1-BH01, AOC53109_A17-BH01, GEL23_TW2-BH01), and a historic record (TF33SW4) encountered bedrock at *c*. 50 m bgl. This suggests a probable area of bedrock erosion

as those previously indicate in the north.

10.70 Within the Order Limits of the cable route over the Church End Lane to The Haven (ECC10) segment the bedrock lies between -12.5 to -9.5 m OD (Figure 16 and Figure 38). Within the Haven to Marsh Road (ECC11) segment it ranges from -18.5 to -9.5 m OD; and is modelled between -44.5 and -19 m OD across the Marsh Road to Fosdyke Bridge (ECC12) segment. Rising back up to -8 and -16.5 m OD for Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove (ECC13) and Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substation (ECC14) respectively.

Area 3 – Till

10.71 Glacial till is prevalent across Area 3. Its distribution and survival is represented in a thickness plot for the unit (Figure 39). Across the majority of the area the thickness is recorded between *c*. 5 and 7 m, though reaches up to *c*. 25 m thickness at Fosdyke Bridge (ECC12 / ECC13) where the bedrock surface is lowest, indicative of another glacial feature such as a kettle hole. The thickness of till is also recorded between *c*. 10 to 12.5 m within the route at The Haven (ECC10 / ECC11) and at the Surfleet Marsh OnSS/Marsh Drove (ECC13).

10.72 Within the Order Limits of Area 3 the till is between 6.5-12 m thick within the Church End Lane to The Haven (ECC10) segment, 3.5-12.5 m thick within the Haven to Marsh Road (ECC11) segment, 4-20 m thick across the Marsh Road to Fosdyke Bridge (ECC12) segment, 6.5-11.5 m thick for Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove (ECC13), and 5.5-7.5 m thick across the Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substation (ECC14) segment (Figure 39). In some locations (e.g. HHD2-BH01, Figure 16) the surface of the till is within a 2.5-3m BGL window within the Order Limits at the segment divide for The Haven (ECC10 / ECC11, Figure 39).

Area 3 – Glaciofluvial Deposits

10.73 Glaciofluvial deposits of sand and gravel are recorded within Area 3, though are not widespread throughout the area.

10.74 Figure 40 illustrates the distribution and survival of the deposits. It shows their accumulation at Fosdyke Bridge (ECC12 / ECC13), overlying the thick till within the depression in the bedrock surface. They also extend west into the Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove segment (ECC13) (TF23SE1 and TF33SW3). These deposits are all located adjacent to the River Welland, which runs northeast towards the coastline, suggesting potential for glacial meltwater to have determined the route of the channel. Within the Order Limits at the Fosdyke Bridge segment edge (ECC12 / ECC13, Figure 40), these units are modelled as 6-15m thick, and may begin 2.5 to 8m BGL (Figure 16).

Area 3 – Pleistocene Surface

10.75 A combined plot representing the surface of glaciofluvial and till deposits is presented in Figure 41. This represents the likely landscape at the beginning of the Holocene (*c*. 10,000 BC).

10.76 Generally, the surface elevation ranges from *c*. -10 to 0 m OD. The northeastern portion of Area 3 includes a higher area reaching up to *c*. 6 m OD immediately northwest of Church End Lane to The Haven (ECC10). This higher elevation of the till here is illustrated by Transect G (Figure 16). The surface of the till begins to rise up across the Order Limits, in a northwestern direction away from the coast.

10.77 To the northwest of Marsh Road to Fosdyke Bridge (ECC12) a single datapoint is present, which records significantly lower surface elevation of *c*. -18.5 m OD (TF33NW52). This data point records only Holocene superficial deposits overlying bedrock and is adjacent to the Kirton Drain. It may be the result of fluvial erosion or anthropogenic truncation. However, due to the lack of detail within the record's deposit descriptions, it is likely that the untruncated surface elevation is in fact higher. The level of detail renders it impossible to distinguish between what may be Pleistocene or Holocene in age, and thus results in what is likely to be an inaccurate representation of the sequence in this area, considering the deposit sequences recorded elsewhere within Area 3.

10.78 Within the Order Limits of the cable route over the Church End Lane to The Haven (ECC10) segment the Pleistocene surface lies between -3 to 0.5 m OD (Figure 16 and Figure 41). Within the Haven to Marsh Road (WM11) segment it ranges from -12.5 to -3 m OD; and is modelled between -13 and -2 m OD across the Marsh Road to Fosdyke Bridge (ECC12) segment. With the unit in Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove (ECC13) lying at -8.5 and -6.5 m OD. before dropping back down to -10.5 and -7.5 m OD for the Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substationsegment.

Area 3 – Tidal Mudflats (1)

10.79 Tidal mudflats (1) deposits are significant across Area 3. A thickness plot (Figure 42) has been produced to illustrate the distribution and survival of the deposits. The deposits reach a maximum thickness of *c*. 24 m to the northeast of Marsh Road to Fosdyke Bridge (ECC12), although this datapoint (TF33NW52) does not contain detailed descriptions, as mentioned above. For this reason it is not possible to confidently assign stratigraphic units, and although this may represent thick intertidal sequences, it is unlikely to be so thick and significant.

10.80 Across the majority of Area 3 the deposits are between approximately 4 and 10 m in thickness, suggesting significant peri-marine influence across the area. However, to the northwest of the Order Limits at Church End Lane to The Haven (ECC10), where the aforementioned higher Pleistocene till surface is recorded, the thickness of tidal mudflats (1) deposits is recorded below 4 m. This is illustrated in Transect G (Figure 16), which also highlights a reduced thickness of these deposits immediately northwest and southeast of the raised Pleistocene surface.

10.81 At the southeastern end of Area 3, within the Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove (ECC13) and Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substation (ECC14) route segments, the tidal mudflats are recorded with a thickness of between approximately 10 and 12 m. These are located seaward of the Roman (Smith et al., 2010) and 13th Century (Green, 2015) coastline models, suggesting continuous exposure to high water levels resulting in a long period of deposition.

10.82 Approximately 450 m to the west of the Church End Lane to The Haven (ECC10) route segment, *c*. 12 m of tidal mudflats (1) deposits are recorded (TF34SE2, TF34SE3). This is situated between the modelled Roman and 13th Century coastlines, suggesting deposition to have occurred between these time periods.

10.83 Specifically within the Order Limits the tidal mudflats (1) unit is between 2.5-7.5 m thick within the Church End Lane to The Haven (ECC10) segment, 3-15.5 m thick within the Haven to Marsh Road (ECC11) segment, 6-15 m thick across the Marsh Road to Fosdyke Bridge (ECC12) segment and 5.5-11m thick for Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove(ECC13). , and 5-12m thick

across the Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substation (ECC14) section (Figure 42). In some locations (e.g. WMN-BH01, Figure 17) the surface of the tidal mudflats (1) unit is within the 1.5m BGL window inside the Order Limits for Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove (ECC13, Figure 42).

Area 3 – Holocene Organic Deposits

10.84 Organic deposits have been recorded among 22 sequences in the wider Area 3, concentrated in two regions. Thickness plot (Figure 43) illustrates the distribution and survival of Holocene organic deposits across the area, highlighting a tendency towards two main regions of accumulation towards the northeast and southwest. To the northeast of Area 3 these deposits are located external to the Church End Lane to The Haven (ECC10) route segment and reach a maximum thickness of approximately 8.5 m (TF34SE5). This sequence is adjacent to further thick organic sequences (TF34SE6) and shielded from the coastline by the raised Pleistocene surface (RF34SE8, TF34SE7), as illustrated in Transect G (Figure 16). This may indicate a backwater environment allowing for development of significant vegetated wetland. Modelled coastlines (Figure 6) suggest the area to align with the Roman coastline (Smith et al., 2010), indicating the possibility for a similar age. A small area in the vicinity of these deposits is modelled within the Order Limits at the The Haven segment edge (ECC10/ECC11), with a thickness up 2 m (e.g., TH1-BH01, Figure 16). The surface of these deposits lies within 2 m BGL in the Order Limits.

10.85 Towards the southeast of Area 3, north from the Fosdyke Bridge segment break and near Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove and Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substation (ECC12 - ECC14), deposits reach up to approximately 7 m in thickness (TF33SW3). This intervention is located adjacent to the River Welland. Within the area, organic sequences are more dispersed and infill depressions in the underlying tidal mudflats (1) deposits. The distribution of the deposits is illustrated in Transect H (Figure 17), which highlights their presence within the Order Limits in two locations: AOC53109_A17-BH01 (ECC12) at which the organic sequence is 1.4 m thick and modelled to extend into the boundary from TF23SE25 (ECC13). AOC53109_A17-BH01 is located beside the Five Towns Drain, close to its confluence with the River Welland, and may be associated with precursor watercourses or wetlands. Further north of the Five Towns Drain, TF33SW5 records 5.5 m of organic deposits, likely of similar origin. To the southwest, TF23SE25 is roughly equidistant between the River Welland and Risegate Eau, thus may be situated within a low-lying wetland or floodplain environment associated with the watercourses. Potential for similar sequences are likely across this portion of the cable route within ECC13 and ECC14 and are modelled between 1 and 7 m in thickness and within 1.5 m BGL.

10.86 A topographic plot (Figure 44) has been generated to illustrate the surface elevation of Holocene organic and lower deposits across Area 3. It shows the surface to range between approximately -4 and 6 m OD. The lowest surface areas are generally associated with watercourses; the River Welland and its tributaries in the southwest, and the Haven in the northeast.

10.87 Within the Order Limits of the cable route over the Church End Lane to The Haven (ECC10) segment the organic unit's surface lies between 1 to 4 m OD (Figure 16 and Figure 41). Within the Haven to Marsh Road (ECC11) segment it ranges from 2 to 3.5 m OD, and similarly across the Marsh Road to Fosdyke Bridge (ECC12) segment. With Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove (ECC13) lying at -2 and 4.5 m OD before dropping back down to -4 m OD for the northern end of the Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substation (ECC14) section..

Area 3 – Storm Beach Deposits

10.88 Storm beach deposits are also recorded to the north of Area 3 within Church Lane to The Haven (ECC10) segment with a thickness of over 1 m (e.g. TH1-BH01, Figure 16) inside the Order Limits. These are quite near the surface, within the 1.5 m BGL window, and may be unconfirmed made ground.

Area 3 – Tidal Mudflats (2)

10.89 The upper tidal mudflats (2) deposits may also refer to warp or alluvium. It is difficult to distinguish within historic records.

10.90 A thickness plot (Figure 45) has been produced to illustrate the distribution and survival of the tidal mudflats (2) deposits across Area 3. Towards the northeast of Area 3, there are widespread occurrences of these deposits reaching up to approximately 3 m in thickness, particularly adjacent to The Haven (ECC10) boundary north and south of the route. The deposits extend into the Order Limits, as illustrated in Transect G (Figure 16), and are modelled between 1 and 1.5 m thick inside the route (Figure 45).

10.91 Across the central region, including much of The Haven to Marsh Road (ECC11) and Marsh Road to Fosdyke Bridge (ECC12), there is an absence of data points which record these upper tidal mudflat sequences.

10.92 In the southeast of Area 3 thicknesses reach up to approximately 8 m, with three further separate deposits modelled across the proposed cable route. At Fosdyke Bridge (ECC12 / ECC13) the deposits reach *c*. 6.5 m in thickness (TF33SW5) on the River Welland. Further west, within the Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove (ECC13) route segment, approximately 7 m of tidal mudflats (2) deposits are recorded (TF33SW3), also adjacent to the River Welland. Transect H (Figure 17) shows how the deposits are also identified within the AoS boundary throughout the southwest of Area 3. At the southernmost extent of the proposed cable route within the Weston marsh substation North to Weston Marsh South route segment, further significant deposits are modelled to *c*. 8 m in thickness (AOC53109_WMS-BH01 and AOC53109_WMS-TP01, Figure 45).

10.93 Tidal mudflat deposits, where present within the Order Limits, are likely to be encountered within a 1.5 m BGL window.

Area 3 – Topsoil and Made Ground

10.94 Figure 46 illustrates the distribution and thickness of topsoil and made ground across Area 3. This suggests the extent of disturbance and truncation of the underlying sequence. Throughout most of Area 3 the thickness does not exceed *c*. 1 m. To the north and south of Fosdyke Bridge (ECC12 / ECC13) and extending into the Order Limits, made ground of up to 2 m is recorded and is likely associated with road construction and canalisation of the river. At the southwestern extent of the modelled area the made ground reaches up to *c*. 3 m in thickness, some 2km southwest of Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substation (ECC14) Order Limits.

Deposit Model Reliability and Limitations

10.95 Within Area 1, 190 data points contributed to the deposit modelling. Of these, 78 (41%) reached bedrock, 147 (77%) reached Pleistocene glaciofluvial or till deposits. This provides a strong dataset for modelling the Holocene sediment sequence across this area. Data points are well distributed throughout the area, with few significant gaps along the proposed cable route (Order Limits).

10.96 Modelling across Area 2 implemented 142 deposit records. Of these, 23 (16%) reached tertiary bedrock, and 67 (47%) encountered glacial till or glaciofluvial deposits. The data points are less dense than in Area 1, and there are gaps generally to the north of the Order Limits which may skew the models towards more coastal sequences.

10.97 Area 3 included 92 data points. Of these, only 9 (10%) reached tertiary bedrock. 32 (35%) of the data points reached Pleistocene glaciofluvial or till deposits. The data points are concentrated in the southwest, at the Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove and Surfleet Marsh OnSS/Marsh Drove to Weston Marsh NG Substation (ECC13 and ECC14) segments, and the northeast at Church End Lane to The Haven (ECC10). This results in a dearth of data points in the central region of Area 3, and therefore reduced confidence in the modelling for this area.

10.98 Many deposit records throughout the full site provided sufficient detail to interpret the deposit sequence. Some historic data, however, led to generalisation because of low detail. For example in the central part of Area 3 where only 1 data point is present and provided low detail descriptions which could not support determination of a Holocene Pleistocene interface.

10.99 Overall, the models can be regarded with moderate to high confidence. The addition of monitored GI borehole records has enabled enhancement of the deposit detail throughout the route. However, it should be noted that segments such as Steeping River to Fodder Dike Bank (ECC6), Broadgate to Ings Drove (ECC8), Ings Drove to Church End Lane (ECC9), The Haven to Marsh Road (ECC11), and Marsh Road to Fosdyke Bridge (ECC12) have significantly fewer data points than other parts of the site, or they are distributed in a skewed manner. As such, modelling in these areas should be considered as less reliable than elsewhere. Generally, where this is the case, there is skewing in thickness and topography which is presented as linear modelling effects where the shapes appear to stretch as data is extrapolated outward.

11 ARCHAEOLOGICAL AND PALAEOENVIRONMENTAL POTENTIAL

11.1 The following is updated from the GDBA (AOC, 2022) and Addendum (AOC, 2023A).

Archaeological Potential and Significance

11.2 Based on distribution and character of the deposit sequence, as identified in the deposit model, and illustrated in the figures, areas of archaeological and palaeoenvironmental potential have been mapped for the site. These are shown on Figure 47 to Figure 49 and the differing character and potential of each area is outlined in Table 32.

11.3 The Areas of Potential include the following:

- AoP-A1: Tidal Mudflats with saltern deposits (more coastal)
- AoP-A2: Tidal Mudflats without saltern deposits (more inland)
- AoP-B: Organic Deposits
- AoP-C: Storm Beach Deposits
- AoP-D: Glaciofluvial deposits
- AoP-E: Glacial Till

11.4 Areas of Potential A1 and A2 do not represent either unit Tidal Mudflats 1 or Tidal Mudflats 2 alone, rather represents both deposits regarding their position within the site and their potential to contain anthropogenically redeposited material associated with salt production.

Table 32 Areas of Potential (AoP) for archaeological and palaeoenvironmental remains within the site

AoP	Character of area	Archaeological potential	Palaeoenvironmental Potential
A1	**Tidal Mudflats with saltern deposits** Low-lying surfaces of the Pleistocene till, glaciofluvial, and bedrock forming rivers, kettle holes, wetland, saltmarshes, and mudflats; providing access to resources associated with the terrestrial to wetland ecotone. Potentially sealed by widespread anthropogenic redeposition of mudflat deposits as a result of historic salt production. Areas 2 and 3, on the coastline. To the southeast of ECC5-9, extending into the southern end of ECC9. ECC10-14 lie within this area.	AOC53109_SR-TP01 identified a single, undated archaeological gully feature during archaeological monitoring of GI TP interventions; the only archaeological feature recorded throughout the exercise. Evidence of Mesolithic activity and early Neolithic activity within tidal zones may be present beneath these deposits, cut into or upon the underlying Pleistocene or bedrock geology. On the whole this should reflect short term activity associated with wetland margins and access to the rich resources they provided past human communities. Isolated remains of longer-term late prehistoric / Roman settlement may exist to the very western fringe of the search area prior to inundation and storm surge events. These are unlikely to be present within the footprint of the Order Limits which was most likely east of the coastline from the Neolithic period until later coastal recession in the post Roman period. Remains associated with seasonal or long-term occupation throughout the prehistoric period may survive in association with the roddons in the intertidal deposits, indicative of creek systems which inundated and fossilised. As the creeks were	Minerogenic deposits from within these low-lying regions provide moderate potential for the preservation of palaeoenvironmental proxies (e.g. pollen, ostracods, diatoms) which can be used to reconstruct changes in local hydrology, regional RSL, local ecology, and climate. This may include indirect evidence of human influence. Organic deposits may exist within these sequences, although not currently recorded in this AoP, would present moderate to high potential for preservation of proxies such as pollen and plant macrofossils, which can aid in reconstruction of changing environments in the past. General potential for AoP - Moderate to high significance x moderate to high probability = **moderate to high potential**

AoP	Character of area	Archaeological potential	Palaeoenvironmental Potential
		active, they may have been utilised for their resources and remains such as fish traps or jetties may survive. Associated wetland fringes may present potential for the preservation of wooden trackways, which provided stable access to and passage through wetland areas. Due to the nature of the depositional environment and estuarine tidal processes (including storm surges) any remains are likely to have been eroded and may not be in situ, but Roman settlement is assumed to lie above c. 1.5-2m OD. Pre-Roman / Iron Age and Anglo Saxon salt processing is recorded to the west of the Order Limits. Intensive Late Saxon evidence of salterns is associated with widespread redeposition of alluvial/estuarine deposits, *c.* 3.5m of anthropogenic redeposition may blanket earlier (prehistoric to Roman) in situ deposits and may extend into the Order Limits. General potential for AoP – Moderate to high significance x low probability = **low to moderate potential**	
A2	**Tidal Mudflats** Low-lying surfaces of the Pleistocene till, glaciofluvial, and bedrock forming rivers,	Evidence of prehistoric to historic activity may be present beneath these deposits, cut into or upon the underlying Pleistocene or bedrock geology. On the whole this should reflect short term	Minerogenic deposits from within these low-lying regions provide moderate potential for the preservation of palaeoenvironmental proxies (e.g. pollen, ostracods, diatoms) which can be used

AoP	Character of area	Archaeological potential	Palaeoenvironmental Potential
	kettle holes, wetland, saltmarshes, and mudflats; providing access to resources associated with the terrestrial to wetland ecotone. Covering the majority of the Order Limits for Area 1, and fringing Areas 2 and 3 for route segments: ECC1-ECC9.	activity associated with wetland margins and access to the rich resources they provided past human communities. Isolated remains of longer-term settlement may exist prior to inundation and storm surge events (i.e. underneath the deposits), more rarely isolated remains of human activity may found within the sediment. The zone is situated between the 3800 BC coastline and intertidal models (Green, 2011) and the modelled Roman coastline (Smith et al., 2010), suggesting that the zone would have been an intertidal wetland during the Neolithic to Roman period, becoming a dryland area during the Roman period. A subsequent late Roman/Anglo Saxon inundation would have brought large parts of the area into saltmarsh tidal conditions until falling sea levels in the medieval period. Remains associated with access and exploitation of wetlands of the marine fringe may also survive. These may be associated with the roddons of a since inundated and fossilised creek system in the intertidal deposits. This system may have provided opportunity for use of jetties and fish traps. Repetitive flooding or high-water levels may have resulted in more permanent solutions to access, for example the construction of wooden trackways to navigate	to reconstruct changes in local hydrology, regional RSL, local ecology, and climate. This includes human influence. Organic deposits may exist within these sequences, although not currently recorded in this AoP, would present moderate to high potential for preservation of proxies such as pollen and plant macrofossils, which can aid in reconstruction of changing environments in the past. General potential for AoP - Moderate to high significance x moderate to high probability = **moderate to high potential**

AoP	Character of area	Archaeological potential	Palaeoenvironmental Potential
		through the wetland environment. However, due to the nature of the depositional environment and estuarine tidal processes (including storm surges) these are likely to have been eroded and may not be in situ. General potential for AoP – Moderate to high significance x moderate probability = **moderate potential**	
B	**Organic Deposits** Low-lying surfaces of the Pleistocene till, glaciofluvial, and bedrock forming rivers, kettle holes, and wetland; providing access to resources associated with the terrestrial to wetland ecotone. Where the presence of surviving organic deposits have so far been confirmed. Isolated records representing localised deposits or more widespread/linear deposits in Areas 1, 2, and 3, inside the Order Limits for route segments: ECC1-3, ECC5, ECC7, ECC10-11, ECC13.	Evidence of short term prehistoric to Roman activity may be present beneath these deposits, cut into or upon the underlying Pleistocene or bedrock geology. Historic England (2023) peat database records suggest remains of Neolithic to Iron Age date have been recovered from organic horizons in the vicinity, Rare prehistoric wooden structures (such as jetties) may survive within the fills of these low-lying areas. Trackways may survive across organic deposits, the latter being representative of hard to access but resource rich wetland areas. Due to the nature of the depositional environment and estuarine tidal processes (including storm surges) these may have been eroded. Although the stable vegetated environments represented by organic horizons do indicate that remains, if found, will be in situ.	Organic deposits present high potential for preservation of proxies such as pollen and plant macrofossils, which can aid in reconstruction of changing local hydrology, regional RSL, local ecology, and climate. This includes human influence. Records from the Historic England Peat Database (2023) indicate significant portions of the peat deposits in the area to contain large, often in situ, tree remains including trunks and stumps. These may provide material suitable for dating as well as representing the local flora. The records indicate that peat formation has occurred on both the seaward and inland sides of the route. The database also indicates that some samples sent for paleoenvironmental assessment from the Lincolnshire coast did not return results for diatom assemblages (e.g., 245)

AoP	Character of area	Archaeological potential	Palaeoenvironmental Potential
	It is likely that localised deposits will be present across the Order Limits not highlighted within the deposit model.	General potential for AoP – High significance x low to moderate probability = **moderate potential**	although pollen was abundant. General potential for AoP - Moderate to high significance x high probability = **high potential**
C	**Storm Beach Deposits** Predominantly coarse-grained erosional deposits resulting from historic storm surges. May be mixed with modern beach deposits when on the current coastline. Linear features crossing the boundary in the north of Area 2 - ECC1 - Landfall to A52 Hogsthorpe Linear features abutting the boundary in the north of Area 2 - ECC5 - Low Road to Steeping River Linear features crossing the boundary in the north of Area 3 - ECC10 - Church Lane to The Haven	Representing sediments resulting from the erosion and natural redeposition of coastal features such as islands and beaches during storm surges, these deposits are unlikely to contain in situ remains of human activity. The deposits may seal prehistoric to historic remains of settlement however, due to the nature of the depositional storm event these are likely to have been heavily eroded and are unlikely to remain in situ. General potential for AoP – moderate significance x low probability = **low to moderate potential**	The coarse-grained and redeposited nature of the units will not provide conditions for well-preserved, chronologically robust, sequences of paleoenvironmental remains (e.g. pollen, ostracods, diatoms). Although, identifying storm beaches and storm surge events within the broader alluvial / estuarine sequences of AoP A1, A2, B, and C could help to inform on the nature, frequency and date of such events. General potential for AoP – moderate significance x low probability = **low potential**
D	**Glaciofluvial Deposits**	Prehistoric (Palaeolithic to early Mesolithic) archaeological	High energy depositional environments and coarse

AoP	Character of area	Archaeological potential	Palaeoenvironmental Potential
	Sand and gravel accumulating in or adjacent to depressions in the underlying glacial till, representing high energy late glacial meltwater channels. Isolated records representing localised deposits or more widespread/linear deposits in Areas 1, 2, and 3, inside or fringing the Order Limits for route segments: ECC1, ECC8, ECC12, ECC13.	remains (e.g., lithics) may survive within these deposits, although due to the nature of deposition and reworking of these deposits by water it is highly unlikely that any remains will survive in situ. It is also likely that they will have undergone significant erosion. Later archaeological remains (Mesolithic onwards) may survive on the surface of these deposits, from which time they represented the current land surface. Compared with surrounding glacial till deposits these areas would have been better drained, and potentially higher, providing suitable locations for more long-term settlement and land use. General potential for AoP - High significance x low to high probability = **moderate to high potential**	clastic deposits yield low potential for preservation of palaeoenvironmental proxies and faunal remains due to high erosion and reworking, unless interglacial horizons are identified within the unit. General potential for AoP – Moderate significance x very low potential = **low potential**
E	**Glacial Till** Poorly sorted, very mixed, containing clay, silt, sand, gravel, boulders. Deposited in Glacial conditions. Underlying many of the later deposits across the AoS, but near surface inside or fringing the Order Limits in limited parts of Area 1, including route segments: ECC1 and ECC2.	Archaeological features of prehistoric origin onwards may survive at the surface of the till, where it represented the land surface at the end of the Pleistocene (c. 12,000 years BP onwards). These may include remains of fires, cut features, structures, lithics etc. Where these features remained close to modern surface throughout the Holocene period, remains may be associated with Mesolithic to Modern date. General potential for AoP - Moderate to high significance x moderate to high probability =	Till presents little opportunity for preservation of palaeoenvironmental proxies and organic horizons. General potential for AoP - Moderate significance x very low Probability = **low potential**

AoP	Character of area	Archaeological potential	Palaeoenvironmental Potential
		moderate to high potential	

Area 1 – Landfall to Low Road

11.5 Area 1 includes the landfall area, and the ECC to Low Road (ECC1-4). Five areas of potential were identified across the Order Limits for Area 1 (Figure 47):

- AoP-E: Glacial Till
- AoP-D: Glaciofluvial Deposits
- AoP-C: Storm Beach Deposits
- AoP-A2: Tidal Mudflats
- AoP-B: Organic Deposits

11.6 Near-surface till (AoP-E) has been identified in the northern part of Area 1, within or fringing the ECC at Landfall to A52 – Hogsthorpe (ECC1) and A52 – Hogsthorpe to Marsh Lane (ECC2). It is also identified within 2 km of the ECC at Marsh Lane to A158 - Skegness Road (ECC3). Monitoring of GI interventions confirmed the presence of higher till in this area, with a depth of 6.2 m at the northern end of ECC2 (AOC53109_WDC-BH01), supporting that there may be even shallower deposits in the vicinity.

11.7 Glaciofluvial deposits (AoP-D) are present within Area 1 in localised deposits, within the ECC of ECC1, and within 1 km of ECC2-4. Such deposits were recorded within the GI borehole at landfall (AOC53109_LF1-BH01), with a thickness of 1.1 m and an upper surface of 8 m bgl (-5.45 m OD). There is potential for them elsewhere. These deposits may preserve Palaeolithic flint finds such as those found at Addlesthorpe, *c*. 1.5 km to the east of the Order Limits. Areas of high gravel, such as those of AoP-D, also provide stable positions for long term occupation and settlement. These deposits may be impacted by the landfall works.

11.8 Projected coastline models (Figure 4) place these areas of AoP-D and AoP-E landward from *c*. 4900 BC. As such archaeological remains from the prehistoric onwards may be preserved on the Pleistocene surface here. To the south of Marsh Lane to A158 (ECC3) and for much of the A158 to Low Road (ECC4) segment the Pleistocene surface lies at -2 to 0.5 m OD and may start to encroach within a 1.5m BGL window that could be impacted by the ECC onshore works and potentially investigated by some limited stepped evaluation trenching if deemed appropriate. Although Figure 50 illustrates the thickness of overlying deposits and the potential depth of the Pleistocene surface as below the impact depth in this area, there is a paucity of datapoints within or adjacent to the Order Limits along much of the route which may hinder precise modelling in those areas, due to the distance over which the data is interpolated (e.g., ECC2, ECC3, ECC4). The modelling for ECC1 to ECC3 contains areas where records exist within or very close to the site boundary, which show ranges bordering a 1.5m BGL Pleistocene surface in isolated spots. Considering the wide distribution of data points in ECC4 and lack of data points within the red line boundary here, it would be prudent to assume a similar character in ECC4 as in ECC1-3, and that

isolated areas of the Pleistocene surface may border the 1.5m BGL depth that is vulnerable to impact.

11.9 Storm beach deposits (AoP-C) are recorded on the coastline at landfall. With a thickness of 0.53 m (AOC53109_LF1-BH01), the area of potential for these deposits within Area 1 is confined to the northeastern extent of the ECC.

11.10 Prior to c. 5500 BC the Lincolnshire Marsh, of which the north of Area 1 falls into the southern margins of, would have been similar to modern Holderness and defined by the undulating surface of the glacial till (Ellis et al 2001). As post-glacial temperature-rise in the early Holocene continued to drive RSL rise into the Neolithic the low-lying ground across Doggerland to the east became inundated, the coastline progressed further inland (Figure 4, Shennan et al 2000 and Green 2011). Particularly across the high gravel of AoP-D which would have remained islands within surrounding wetland (AoP-A2 and B) from the prehistoric onwards, AoP-D and E would have provided dry ground for settlement but also access to the rich resources of the adjacent wetland environments.

11.11 In the lower lying areas, the till was overlain with freshwater to marine alluvial deposits driven by local hydrology changes and regional RSL rise. AoP-A2 illustrates the distribution of this environment of deposition throughout the development area. Across Area 1, it is identified throughout the route but is most prominent towards the south from A52 – Hogsthorpe to Low Road (ECC2-ECC4). For much of the northern parts of the Order Limits in Area 1 the Tidal Mudflat (1) deposits are c. 1 m or more below a 1.5 m BGL window. Tidal Mudflat (2) deposits will be the main unit impacted on and will have a lower interest being the more recent deposition. So the likelihood of impact from the onshore ECC works on the deeper deposits of AoP-A2 is reduced, as is the potential of reaching the deposits in unstepped evaluation trenches. However, Transect C (CP/PC-BH01, Figure 12) records Tidal Mudflat (1) deposits just entering that 1.5 m BGL zone so there may be opportunity to investigate the surface of these assumed earlier deposits in parts of the A158 to Low Road segment (ECC4).

11.12 Organic deposits (AoP-B) are commonly identified within these sequences. They are represented in discrete areas throughout the ECC route (ECC1-4). These deposits were encountered in less significant quantities within GI interventions across Area 1 (AOC53109_CP/PC-TP01, AOC53109_LF1-BH01, AOC53109_WDC-BH01, AOC53109_WDC-TP01), emphasising that they may be present throughout the areas of Holocene deposits, such those of AoP-A2. Furthermore, where present these deposits are likely to be within a 1.5m BGL zone over much of the Area 1 Order Limits, so they may be impacted by the onshore ECC works. Where they have been identified near to ground level it may be possible to investigate the surface of the deposits via unstepped evaluation trenches.

11.13 Many of these organic deposits may relate to meres, which formed in depressions within the surface of the glacial till, or to later stabilised wetland development during period where the effects of RLS rise lessened. The organic deposits and minerogenic deposits could be related to regional models such as the sequences of low freshwater peat (*c*. 5500 BC), minerogenic inundation, upper Fen carr peat (*c*. 1700 BC), and the sealing layer on Iron Age and Roman estuarine clay and intercalated peats identified by Ellis et al. (2001). Deposit sequences in AoP-A2 and especially AoP-B provide potential for late Glacial to early Holocene remains of palaeoenvironmental importance, potentially preserving ecofactual proxies which can be utilised to reconstruct changing climate, hydrology, and ecology of the area and add to the known corpus from the area (e.g., from Aby Grange, Butterbump,

and the Great Eau valley, Ellis et al 2001).

11.14 Additional to their palaeoenvironmental significance, these vegetated wetland and mudflat zones would have provided resources for human exploitation. Remains associated with access to the wetland environment (e.g., trackways), or obtaining and processing the resources (e.g., fish traps, lithic tools) may survive in AoP-B. This is of particular significance here given the 7 records from the coastline (Historic England, 2023) which show in situ peat deposits from which archaeological remains of between Neolithic and Iron Age date have been recovered.

11.15 Continuous prehistoric activity has been represented by remains identified within the vicinity of Area 1, often closely associated with the saltmarshes and salt production. This includes salt processing evidence from prehistoric sites at Tetney and Hogsthorpe, through to sporadic Roman evidence, rare Anglo-Saxon evidence for salterns from Marshchapel, and then significant Medieval accounts of salt production (Canti 2009). This would suggest potential for remains of prehistoric age onwards to exist within Area 1, particularly within proximity of AoP-D. However, as a result of marine inundation, the changing location of the coast and intertidal zone (Figure 3 and Figure 4), and the changing character of the coastline (e.g., storm surges and the loss of near shore protective barrier islands) remains of settlement/activity may have been subsequently eroded, like at Skegness and Ingoldmells (Lane 1992).

Area 2 – Low Road to Church End Lane

11.16 Area 2 encompasses the ECC from Low Road to Church End Lane (ECC5-ECC9). Six areas of potential are identified across the Order Limits for Area 2 (Figure 48):

- AoP-E: Glacial Till
- AoP-D: Glaciofluvial Deposits
- AoP-A2: Tidal Mudflats
- AoP-C: Storm Beach
- AoP-B: Organic Deposits
- AoP-A1: Tidal Mudflats with Saltern Deposits

11.17 Near-surface glacial till is confined to a small discrete area 2 km northwest of the ECC at Low Road (ECC5). It is possible that it extends towards the development area, there is a low frequency of data points of the landward side of the AoS available to confirm the northwestern deposit sequences along much of the route in Area 2. Remains of prehistoric age onwards may survive on these surfaces. Deposits within 1.5 m – 2.0 m bgl are mapped adjacent to the ECC route at Friskney, however elsewhere on the route this is shown to be unlikely (Figure 51). At the segment Broadgate to Ings Drove (ECC8), datapoints are located to the southeast of the boundary and show the Pleistocene surface to be approximately 3.5 to 2.5 m bgl. The surface may become shallower further from the coast inland towards the Order Limits as intertidal deposition becomes less significant, particularly as the thickness plots (Figure 31, Figure 32, Figure 34, Figure 36, and Figure 37) suggest no significant overlying deposits.

11.18 AoP-D represents glaciofluvial deposits with a surface within c. 10m BGL and is mapped

immediately south of the ECC Order Limits at Low Road to Steeping River (ECC5) and across the ECC at Broadgate to Ings Drove (ECC8). As outlined above, these areas would have provided relatively high, well drained positions within the landscape for temporary human activity and more long-term settlement. Remains of prehistoric human activity onwards may survive on these surfaces. However, if confirmed at the currently indicated depths these deposits are unlikely to be impacted by the onshore ECC works or be reachable by unstepped evaluation trenches.

11.19 As in Area 1, AoP-A2 represents areas of lower lying Pleistocene surface upon which accumulation of freshwater to marine alluvial deposits has occurred. These deposits are present throughout the majority of the ECC across Area 2.

11.20 For much of the Order Limits in Area 2 the Tidal Mudflat (2) deposits are within the 1.5 m BGL window and will be the main deposit impacted by the onshore ECC works. Due to their position in the sequence and the waterlogged nature of the depositional environments they represent, they are assumed to be more recent and have a generally lower archaeological potential. For much of the northern parts of the Order Limits in Area 2 the surface of the Tidal Mudflat (1) deposits are within c. 2-2.5 m BGL (e.g. Transect D, Figure 13), as in the Low Road to Steeping River (ECC5) segment. The likelihood of impact from the onshore ECC works on the deeper deposits of AoP-A2 is reduced, as is the potential of reaching the deposits in unstepped evaluation trenches. However, Tidal Mudflat (1) deposits are within the 1.5m BGL window in the Fodder Dike Bank to Broadgate (ECC7) segment (e.g. Transect E, Figure 14) and this area may provide a more practical opportunity to reach the assumed earlier deposits by unstepped evaluation trenches in order to assess any impact from the ECC works.

11.21 AoP-A1 represents similar deposits to those of AoP-A2, located to the southeast of AoP-A2 on the coastline. They are external to the Order Limits throughout most of the Area 2 ECC route, with the exception of the south of ECC9. These may, however, extend further northwest inland. They too include minerogenic deposits related to marine and estuarine inundation as a result of RSL rise, but also include anthropogenic redeposition related to salt production in the top of the sequence (saltern deposits). As with AoP-A1 organic deposits are frequently recorded beneath the saltern deposits. The remains of the historic human activity, buried by up to c.3.5m of potential saltern redeposition, may be present in the upper levels of the tidal mudflat units. The anthropogenic saltern redeposition is of generally low archaeological interest itself but it may seal earlier remains. As a result, if present, the majority of the onshore ECC works will only impact the potential saltern deposits. Unstepped evaluation trenches may help to investigate whether earlier remains sealed by saltern redeposition are present, but it seems likely limited sondages within trenches may also be required to achieve this.

11.22 Organic deposition, represented by AoP-B, is mapped within the Order Limits at Steeping River (ECC5/6) and Fodder Dike Bank to Broadgate (ECC7). Further instances of organic accumulation are scattered throughout Area 2 within 2 km of the ECC. Within Area 2 a total of 13 GI interventions encountered organic deposits within the tidal sequences, indicating that the presence of such deposits is widespread throughout. Of these, 9 are located within the Order Limits (AOC53109_IR-BH01, AOC53109_IR-TP01, AOC53109_RWC1-BH01, AOC53109_RWC1-TP01, AOC53109_RWC2-BH01, AOC53109_RWC2-TP01, AOC53109_RWC3-BH01A, AOC53109_RWC3-TP01, AOC53109_SKR-TP01). Where present, the surface of these deposits is likely to be within a 1.5m BGL zone over much of the Area 1 Order Limits, so they may be impacted by the onshore ECC works. Where they have been identified at shallow depths it may be

possible to investigate the surface of the deposits via unstepped evaluation trenches.

11.23 Many of these organic sequences may relate local hydrology (e.g., rivers and meres) and the more minerogenic sequences could be related to the regional deposit sequences proposed by Ellis et al (2001) for the Lincolnshire Marsh in the north (AoP-A2), or in the south (AoP-A1) to those put forward for the Fenland by French (2003). French (2003) proposed a six-part sequence of alternating strata of peats, representing stabilised wetland vegetation, and minerogenic deposits, representing marine inundation from the sea or estuarine inundation from The Wash. Local topography and hydrology (e.g. rivers and mires) may alter proposed regional trends but sequences from AoP-A1 and AoP-B should produce paleoenvironmental records that can contribute to the understanding of local landscape development (e.g. Hayes and Lane 1992, Smith et al 2010 and 2012) as well as regional models.

11.24 In addition to their palaeoenvironmental potential, remains associated with access to the wetland environment (e.g., trackways), or obtaining and processing the resources (e.g., fish traps, lithic tools) may also survive in AoP-B. In Addition, the sequences in AoP-A1 are often sealed by saltern deposits. Salt production was already mentioned for Area 1 above but further work by Lane (1992) in the Wrangle area (Ivy House Farm / Marsh Yard to Staples Farm segment – WM7) suggests widespread landscape modification.

11.25 As mentioned previously the undulating surface of the till probably provided a similar mosaic of drier land and wetland meres and lakes, much like modern Holderness (Ellis et al 2001). In AoP-A1 marine/estuarine inundation occurred by at least the early Bronze Age east of ECC3. North of the Order Limits (AoP-A2) along this segment, inundation did not progress until the mid/late Bronze Age, and again in the Iron Age with estuarine sedimentation from the Steeping estuary. Roddon formation was associated with backing up of natural drainage and drove freshwater wetland development, also in AoP-A2 and north of the Order Limits. After a short-lived Iron Age marine transgression (540- 395 cal BC, 2825 2385 ± 60 BP) and some small-scale evidence of Iron Age salt production, Roman settlement is present at *c.* 1m OD (Lane 1992). However, the main impact comes from the intensive salt production of the Late Saxon period where human salt processing resulted in large-scale redeposition of minerogenic deposits creating a prominent *c.* 1.5km ridge of *c.* 3.5m of anthropogenic material sealing Roman and earlier remains. These artificially formed ridges of saltern deposits (Tofts) continue along the coastline and border much of The Wash (Lane 1992).

11.26 It has not been possible to identify any saltern deposits from the level of detail provided by the BGS or GI data and the absence of frequent records within this part of the Order Limits and AoS. Although using the modelled Roman coastline (Smith et al 2010, Figure 5) an area of potential has been demarcated in line with Lane's (1992) findings and projected along the coastline of The Wash.

11.27 Despite recognition that widespread saltern deposits may blanket and protect underlying in situ archaeology and sequences it should also be kept in mind that salt production sites found across the Fenland have made significant contributions to our understanding of the process and their local environments (Lane and Morris 2001, Canti 2009), suggesting similar additions could be produced from findings along the ECC.

11.28 Finally, Area 2 includes liner features related to Storm Beach deposits (AoP-C), which result from intense storm surges and flooding, culminating in the 13th Century AD, and eroding away protective

barrier islands off the Lincolnshire coast. Then the material was deposited along a projected 13th Century coastline (Green, 2015 and Figure 5), which now lies *c.* 4km inland. AoP-C is mapped, as projected by the BGS (2023) data, to the southeast of the ECC, though abuts the Order Limits at Low Road to Steeping River (ECC5). Within this area, two GI interventions encountered the deposits at thickness of between 0.3 and 1.2 m (3-5m BGL, AOC53109_RW01-BH01, AOC53109_RW02-BH01).

11.29 The deposits might bury earlier remains of settlement and activity however, the depositional nature of the storm event will likely result in any remains having been heavily eroded and no longer in situ. Any palaeoenvironmental or archaeological remains in the deposit itself will have been mixed by the erosional event and provided little potential for effective investigation. Although, identifying storm beaches and storm surge events within the broader alluvial / estuarine sequences of the other AoP could contribute to regional deposit sequences and help to inform on the nature, frequency and date of such events.

11.30 The Ings Drove to Church End Lane (ECC9) segment of Area 2 also included the sole archaeological feature recorded. A gully was identified within SR-TP01 (Table 23) at a height of 2.05 m OD and cut into the tidal mudflats (2), the animal bone within the fill strongly suggesting the feature was archaeological in origin, possibly a minor field boundary.

Area 3 – Church End Lane to Weston Marsh South

11.31 Area 3 includes the ECC from Church End Lane southwest to Weston Marsh Substation North and southwards to Weston Marsh South. Four areas of potential are identified across Area 3:

- AoP-D: Glaciofluvial Deposits
- AoP-A2: Tidal Mudflats
- AoP-C: Storm Beach
- AoP-B: Organic Deposits
- AoP-A1: Tidal Mudflats

11.32 Shallowly buried glaciofluvial deposits (AoP-D, with a surface within c. 2.5 to 8m BGL) were recorded in a single localised zone, entering the Order Limits at Marsh Road to Fosdyke Bridge (ECC12) and extending southwest into Fosdyke Bridge to Surfleet Marsh OnSS/Marsh Drove (ECC13). As discussed in the preceding segments these would have provided high dry zones suitable for temporary human activity and long-term settlement within a landscape becoming increasing wet over the Holocene. Remains of archaeological activity from the prehistoric onwards may survive on the gravel surface in these areas. However, if confirmed below 1.5-3m BGL these deposits are unlikely to be impacted by the onshore ECC works or be reachable by unstepped evaluation trenches.

11.33 In areas where the till surface is low-lying it is overlain with freshwater to estuarine/marine alluvial deposits resulting from local hydrology changes and regional RSL rise. As in Area 1 and 2, AoP-A2 highlights these deposits and models that they do not enter the Order Limits across Area 3 but only fringe the northern limits of the AoS.

11.34 AoP-A1 covers the majority of the Order Limits and AoS for Area 3. These sequences are similar to those discussed for this AoP in Area 2. They include potential for prehistoric archaeology on the till surface overlain by minerogenic deposits with some potential to inform on marine and estuarine inundation as a result of RSL rise, as well as the possible *c.* 3.5m of anthropogenic saltern redeposition at the top of the sequence that generally has limited archaeological potential. As a result, if present, the majority of the onshore ECC works will only impact the potential saltern deposits. Unstepped evaluation trenches may help to investigate whether earlier remains are sealed below saltern redeposition, but sondages within trenches may also be needed if this was deemed necessary. In some locations (e.g. WMN-BH01, Figure 17) the surface of the tidal mudflats (1) unit is within the 1.5m BGL window inside the Order Limits for Fosdyke Bridge to Surfleet Marsh Substation North (WM13, Figure 42) and such areas may provide an opportunity to investigate levels below any potential saltern deposits.

11.35 Within the intertidal sequences, and below the saltern deposits, there are occasional organic deposits. Six GI interventions within the ECC boundary (AOC53109_A17-BH01, AOC53109_A17-TP01, AOC53109_HHD2-TP01, AOC53109_TH1-BH01, AOC53109_TH2-BH01, AOC53109_WMS-BH01) encountered organic deposits of varying thicknesses and depths. Sequences with organic horizons in particular would provide dateable records that can be used to contribute to the palaeoenvironmental detail of local landscape development as well as regional models (e.g., Ellis et al 2001, French 2003, Hayes and Lane 1992, Smith et al 2010 and 2012), and may also preserve archaeological remains of wetland exploitation (e.g., trackways, fish traps) may also survive in AoP-B.

11.36 A small area of organic deposits is modelled within the Order Limits at The Haven segment edge (ECC10/ECC11), with a thickness up 2m (e.g. TH1-BH01, Figure 16). Potential for similar sequences are likely across this portion of the cable route within ECC13 and are modelled between 1 and 7m in thickness and within 1.5m BGL. The surface of these deposits lies within 2m BGL in the Order Limits and may be reachable by evaluation trenching in combination with sondages.

11.37 Inside the Order Limits isolated storm beach deposits are also recorded within Church Lane to The Haven (ECC10) section with a thickness of over 1 m (e.g. TH1-BH01). These are quite near the surface, within the 1.5m BGL window but may also be unconfirmed made ground. This incidence has not represented within AoP-C (Figure 49) because it is relatively isolated, and a higher priority is placed on illustrating the organic deposits in the same location (AoP-B) underlying the possible Storm Beach unit.

Depth of Pleistocene Surface

11.38 As the majority of the cable route is anticipated to impact 1.5 m in depth, illustrations (Figure 50 to Figure 52) have been produced to demonstrate the depth of the Pleistocene surface in relation to this value. These are in addition to the 1.5m BGL depth line that is included on the transects (Figure 10 to Figure 17). The figures also highlight depths of up to 5 m below ground level, in order to inform decisions on investigative procedures.

11.39 The distribution of these deposits and their depth below ground level determine the locations of AoP-D and E (Figure 47 to Figure 49). Glaciofluvial deposits (AoP-D) represent areas which would have drained more efficiently and provided more stable ground for long term settlement. Where glacial till is closer to the surface (AoP-E), conditions are more likely to have remained dry for long periods, also providing more suitable locations for long term settlement of recurrent human activity.

Each of these areas indicate probable drier areas throughout the Holocene, providing access to the resources of nearby intertidal and coastal environments.

11.40 Figure 50 illustrates the depth of the Pleistocene surface below ground level. To the northeast of Area 1 the Pleistocene surface is up to *c*. 1.5 m below ground level, external to the Order Limits. Across the southern part of ECC1, much of ECC2, and an isolated point of ECC3, the thickness of overlying Holocene deposits is below approximately 5 m but not within a 1.5m depth. Landfall disturbances may exceed the average 1.5m BGL impact depth of the cable route. The depth of the Pleistocene surface in this area ranges between approximately 6 and 10 m BGL, and as such investigation may be required dependant on the depth of impact in the area.

11.41 The depth of the Pleistocene surface across Area 2 is illustrated in Figure 51. It shows that nowhere on the cable route is the surface expected to be less than 1.5 m below the surface, although this is the case to the north of the route at Low Road to Steeping River (ECC5). Throughout the route, isolated instances of a depth of less than 5 m bgl occurs in each of the route segments ECC5-ECC9.

11.42 Figure 52 represents the depth below ground level of the Pleistocene surface across Area 3. Only in areas within Church End Lane to The Haven (ECC10) and The Haven to Marsh Road (ECC11) are the surfaces less than 5 m below ground level, however they are in excess of 1.5 m deep. At the southwestern end of Area 3 the Surfleet Marsh Substation North is expected to be constructed (ECC13), which is likely to have more significant impacts. Within the area of the proposed substation, the depth of the Pleistocene surface is between approximately 7 and 12 m bgl, although adjacent datapoints suggest it may be possible for a rise to above 5 m bgl.

11.43 As is evident from Figure 50 to Figure 52, the Pleistocene surface does not fall within the average 1.5m BGL impact window within any of the Order Limits, rarely even reaching 3m BGL within the model. There are only two locations where the model suggests a c.2.5m BGL depth for the Pleistocene surface, within Fodder Dike Bank to Broadgate (ECC7) and Church End Lane to The Haven (ECC10). As such the cable route impacts (assumed average of 1.5m BGL) and traditional trench evaluation (c. 1.2m BGL) will be unlikely to reach the surface of Pleistocene deposits and will rarely breach further than the upper historic mudflat deposits.

12 CONCLUSIONS AND RECOMMENDATIONS

12.1 The following section reviews the significance of the results of the geoarchaeological monitoring of geotechnical investigation works in relation to the development and makes recommendations for an appropriate evaluation and mitigation strategy. It utilises the findings to update the GDBA conclusions (AOC, 2022) as well as those of the alternative route addendum (AOC, 2023a).

12.2 The suggested approaches for different AoPs indicated below are not to be considered exhaustive and approaches for one AoP may be able to be combined with those of another to achieve the same end in fewer interventions (e.g. boreholes, trenches). The appropriate mitigation strategy for the site will be decided by and agreed with the Local Authority and their archaeological advisors.

Area of Potential A1 – Tidal Mudflats with Saltern Deposits

12.3 AoP-A1 extends across much of the Order Limits within Area 3, as well as the southwestern end of Area 2. This includes the southern end of segment ECC9 to ECC13.

12.4 To more fully understand the nature of the potential archaeological and paleoenvironmental remains as outlined in section 10, a staged approach for investigation and potential mitigation in AoP-A1 is recommended:

12.5 Select areas where deep deposits of previously unidentified geoarchaeological / palaeoenvironmental interest are identified, and which may be impacted by development, should be targeted for purposive geoarchaeological boreholes (e.g. wetland sequences with potential for saltern production). Areas/approaches under consideration should include:

- The substation zone where deeper more extensive impacts are expected, and as such, may warrant a number of purposive geoarchaeological boreholes appropriate to the design and impact of the development.

12.6 Select areas where the thickness of expected overlying saltern deposits are thinner than the depth of construction impact, should undergo targeted intrusive evaluation utilising slit trenches and test pits where soil stability dictates, to look for artefactual/structural evidence of the utilisation of the rich ecotonal resource by past people (e.g. trackways, jetties, fish traps, salt production etc) in near surface waterlogged deposits. Areas/approaches under consideration should include:

- The substation zone where deeper more extensive impacts are expected and as such may warrant a number of evaluation trenches.
- Other areas where a combination of trenches and sondages to investigate the depth of possible deposits within the depths of disturbance may affect salterns and if archaeological remains are found to be sealed beneath such deposits.
- Potentially focusing on the Fodder Dike Bank to Broadgate (ECC7) route segment, where the base of the Tidal Mudflats 2 deposits are modelled at predominantly 1 m bgl, and 1.5 m bgl in the northeast (Figure 51). This trend extends southwest into ECC8 Broadgate to Ings Drove, generally between 0.5 and 1.0 m bgl becoming deeper towards the southeast and Ings Drove.

12.7 Samples from the boreholes and trenches should be retained for paleoenvironmental assessment and possible future analysis/publication should that be recommended by post-excavation assessment or updated project designs.

Area of Potential A2 – Tidal Mudflats

12.8 AoP-A2 is identified within Areas 1 and 2 affecting the Order Limits between landfall and the southern end of ECC9. It is also identified immediately west of the Order Limits in Area 3 at The Haven to Marsh Road (ECC11) and Marsh Road to Fosdyke Bridge (ECC12) and may extend within the Order Limits.

12.9 To more fully understand the nature of the potential archaeological and paleoenvironmental remains as outlined in section 10, a staged approach for investigation and potential mitigation in AoP-A2 is recommended:

12.10 Select areas where deep deposits of previously unidentified geoarchaeological / palaeoenvironmental interest are identified, and which may be impacted by development, should be targeted for purposive geoarchaeological boreholes (e.g. wetland sequences with potential for saltern production). Areas/approaches under consideration should include:

- The landfall zone where deeper more extensive impacts are expected, and as such, may warrant a number of purposive geoarchaeological boreholes appropriate to the design and impact of the development.

12.11 Select areas should undergo targeted trench evaluation to look for artefactual/structural evidence the utilisation of the rich ecotonal resource by past people (e.g. trackways, jetties, fish traps, salt production etc) in near surface waterlogged deposits, as guided by any forthcoming geophysical surveys. Areas/approaches under consideration should include:

- Evaluation trenching should focus on segments where unstepped interventions (c.1.2m) may have a more practical opportunity to reach the assumed earlier deposits of Tidal Mudflat (1) and assess any impact from the ECC works.

12.12 Samples from the investigations should be retained for paleoenvironmental assessment and possible future analysis/publication should that be recommended by post-excavation assessment or updated project designs.

Area of Potential B – Organic Deposits

12.13 AoP-B is present throughout as localised zones extending into the Order Limits throughout Areas 1-3 (ECC1-4, ECC5, ECC7, ECC10-11, ECC13-14), including Landfall.

12.14 To more fully understand the nature of the potential archaeological and paleoenvironmental remains as outlined in section 10, a staged approach for investigation and potential mitigation in AoP-B is recommended:

12.15 Select areas where thick deposits of geoarchaeological / palaeoenvironmental interest are indicated, and which may be impacted by development, should be targeted for purposive geoarchaeological boreholes (e.g. organic mere, riverine, wetland sequences). Areas/approaches under consideration should include:

- Where trial trenching is not taking place and development impacts exceed 1.5m BGL, purposive geoarchaeological boreholes should be undertaken within the Order Limits in the vicinity of mapped organic deposits to confirm their age, palaeoenvironmental potential, and that deposits are not within the impact depths.
- Where trial trenching is not taking place and development impacts exceed 1.5m BGL,

within Area 1 a proposed 3 locations near to GI interventions AOC53109_CP/PC-TP01, AOC53109_WDC-BH01, and AOC53109_WDC-TP01; as well as 3-4 locations where mapped organic deposits outside of the Order Limits combine with a lack of data from within it.

- Where trial trenching is not taking place and development impacts exceed 1.5m BGL, within Area 2 a proposed 5 locations near to GI interventions AOC53109_IR-BH01, AOC53109_IR-TP01, AOC53109_RWC1-BH01, AOC53109_RWC1-TP01, AOC53109_RWC2-BH01, AOC53109_RWC2-TP01, AOC53109_RWC3-BH01A, AOC53109_RWC3-TP01, AOC53109_SKR-TP01; as well as 2 locations where mapped organic deposits outside of the Order Limits combine with a lack of data from within it.

- Where trial trenching is not taking place and development impacts exceed 1.5m BGL, within Area 3 a proposed 4-5 locations near to GI interventions AOC53109_A17-BH01, AOC53109_A17-TP01, AOC53109_HHD2-TP01, AOC53109_TH1-BH01, AOC53109_TH2-BH01, AOC53109_WMS-BH01; as well as 3-4 locations where mapped organic deposits outside of the Order Limits combine with a lack of data from within it.

12.16 Select areas of deposits which may be impacted by development should undergo targeted trench evaluation to look for artefactual/structural evidence the utilisation of the rich ecotonal resource by past people (e.g. trackways, jetties, fish traps, salt production etc) in near surface waterlogged deposits, as guided by any forthcoming geophysical surveys. Areas/approaches under consideration should include:

- Following purposive geoarchaeological boreholes as detailed above, trenching may be targeted to investigate any organic deposits that exist within impact ranges and practical investigation depths (c.1.2m BGL).

12.17 Samples from the boreholes and trenches should be retained for paleoenvironmental assessment and possible future analysis/publication should that be recommended by post-excavation assessment or updated project designs.

Area of Potential C – Storm Beach Deposits

12.18 Extremely limited AoP-C are recorded within the Order Limits at landfall (ECC1) and at Low Road to Steeping River segment (ECC5). At these locations development would comprise construction compounds and (at landfall) a haul road. Disturbance is therefore anticipated to be restricted to c.0.3-4m at these locations. This would not be anticipated to breach layers with a potential for this deposit.

12.19 Another location where isolated deposits may be present have been recorded in ECC10 within GI intervention TH1-BH01. At this location the following is recommended -

- Trenching could focus on GI intervention TH1-BH01, which recorded storm beach deposits within Church Lane to The Haven (ECC10) segment with a thickness of over 1 m and within the 1.5m BGL.

12.20 Samples from the boreholes and trenches should be retained for paleoenvironmental assessment and possible future analysis/publication should that be recommended by post-excavation assessment or updated project designs.

Area of Potential D – Glaciofluvial Deposits

12.21 AoP-D occurs in localised instances along the route throughout Areas 1-3 (ECC1-3, ECC8, ECC12-

13) and are most likely to be impacted by the ECC. These instances are often sealed beneath intertidal deposits but provide potential for greater drainage of the surface resulting in more accessible areas.

12.22 To more fully understand the nature of the potential archaeological and paleoenvironmental remains as outlined in section 10 a staged approach for investigation and potential mitigation in AoP-D is recommended:

12.23 Select areas where palaeoenvironmental sensitive interglacial horizons are identified within deposits or where Palaeolithic finds have been previously associated with glaciofluvial units and may be impacted by the development, should be targeted for purposive geoarchaeological boreholes or trial pits, respectively, in order to record the deposits in more detail; and/or sieve for palaeolithic flint artefacts or faunal remains, and to collect samples for OSL dating etc. Areas/approaches under consideration should include:

- Purposive geoarchaeological boreholes should be undertaken within the Order Limits in the vicinity of mapped glaciofluvial deposits to potentially confirm their age and that deposits are not within the impact depths (e.g., *c*. 1.5 m bgl within the ECC Order Limits).
- As part of purposive geoarchaeological borehole surveys within the landfall impact zone in order to investigate the deposits recorded within the GI borehole there (AOC53109_LF1-BH01).
- A series of six purposive geoarchaeological boreholes should be undertaken within the ECC of ECC1-4 near to mapped deposits and where data is currently absent in order to improve the modelling of the sequence and aid understanding of what is likely to be encountered along the route of the ECC.
- A single purposive geoarchaeological borehole should be undertaken within the Order Limits in the vicinity of glaciofluvial deposits mapped immediately south of the Low Road to Steeping River (ECC5) in order to confirm or deny their presence.
- One to two purposive geoarchaeological boreholes should be undertaken where deposits are mapped across Broadgate to Ings Drove (ECC8) in order to confirm or deny their presence.
- Two to three purposive geoarchaeological boreholes should be undertaken where deposits are mapped across Marsh Road to Fosdyke Bridge (ECC12) and extending southwest into ECC13 in order to confirm or deny their presence.

12.24 As dryland and near surface archaeology is predominantly expected, the main route of investigation should be led by geophysical survey and standard archaeological trial trenching where near surface deposits exist. Areas under consideration should include:

- If found to be within impact depths, the age and potential of the deposits may necessitate a programme of palaeolithic test pitting.

Area of Potential E – Glacial Till

12.25 Only limited areas in the north of the Order Limits fall into AoP-E, including ECC1 and the north of ECC2. The impacts will be primarily from the ECC. Potential impacts are set out within the Outer Dowsing Offshore Wind submission documents, Volume 1, Chapter 20. To more fully understand the nature of the potential archaeological and paleoenvironmental remains as outlined in section 10 a staged approach for investigation and potential mitigation in AoP-E is recommended:

- As dryland and near surface archaeology is predominantly expected, the main route of investigation should be led by geophysical survey and standard archaeological trial trenching.
- The landfall zone where deeper more extensive impacts are expected and as such will likely warrant a programme of trenching. The base of the Tidal Mudflats (2) unit, representing the possible pre-Roman surface, lies between approximately 3 to 5 m bgl in this area (Figure 53) and as such any impacts exceeding these values may reach that surface.
- On the whole the surface of the till in Area 1 is below the impact depth of the ECC but limited trenching to confirm this where near surface till (c. 6m BGL) has been identified may be useful within the Landfall to A52 – Hogsthorpe (ECC1), A52 – Hogsthorpe to Marsh Lane (ECC2), and Marsh Lane to A158 - Skegness Road (ECC3) segments.
- In the absence of better data distribution, it is still possible that near-surface glacial till may extend into the Order Limits along parts of the route in Area 2. Remains of prehistoric age onwards may survive on these surfaces and may be accessible via unstepped evaluation trenches.

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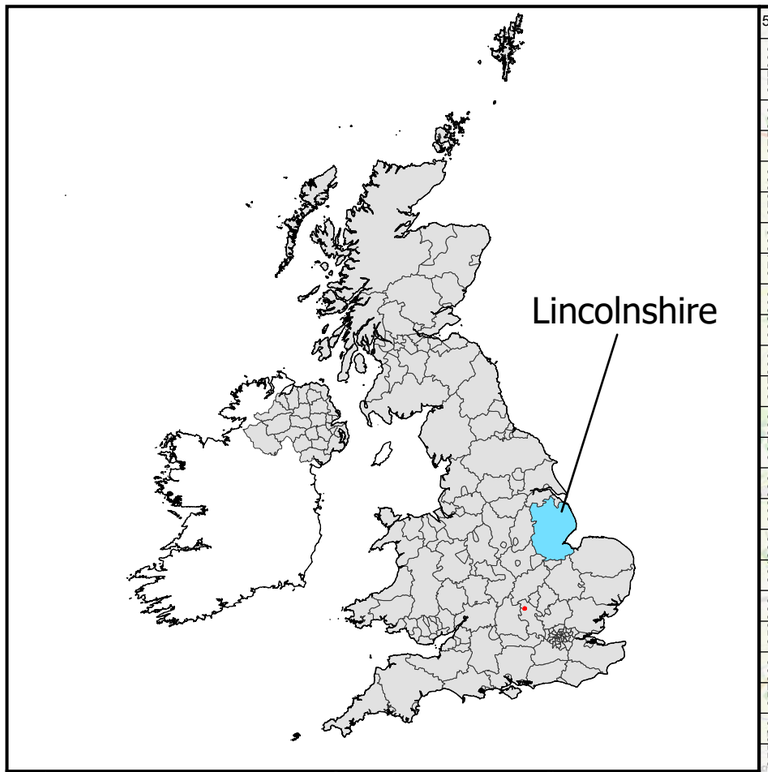

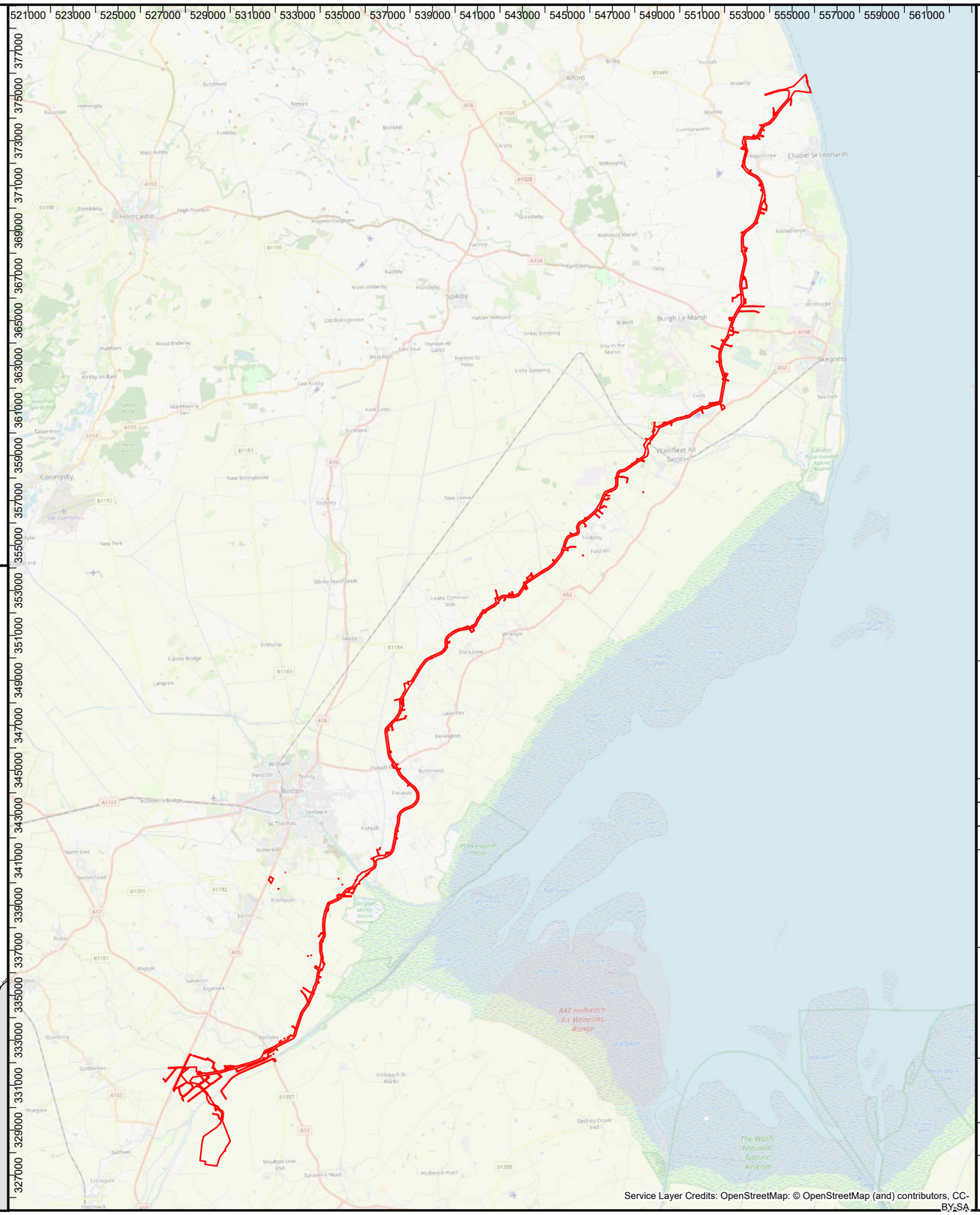

Figure	1

Site Location Map

Legend

Order Limits

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38 Chancery Ln
London
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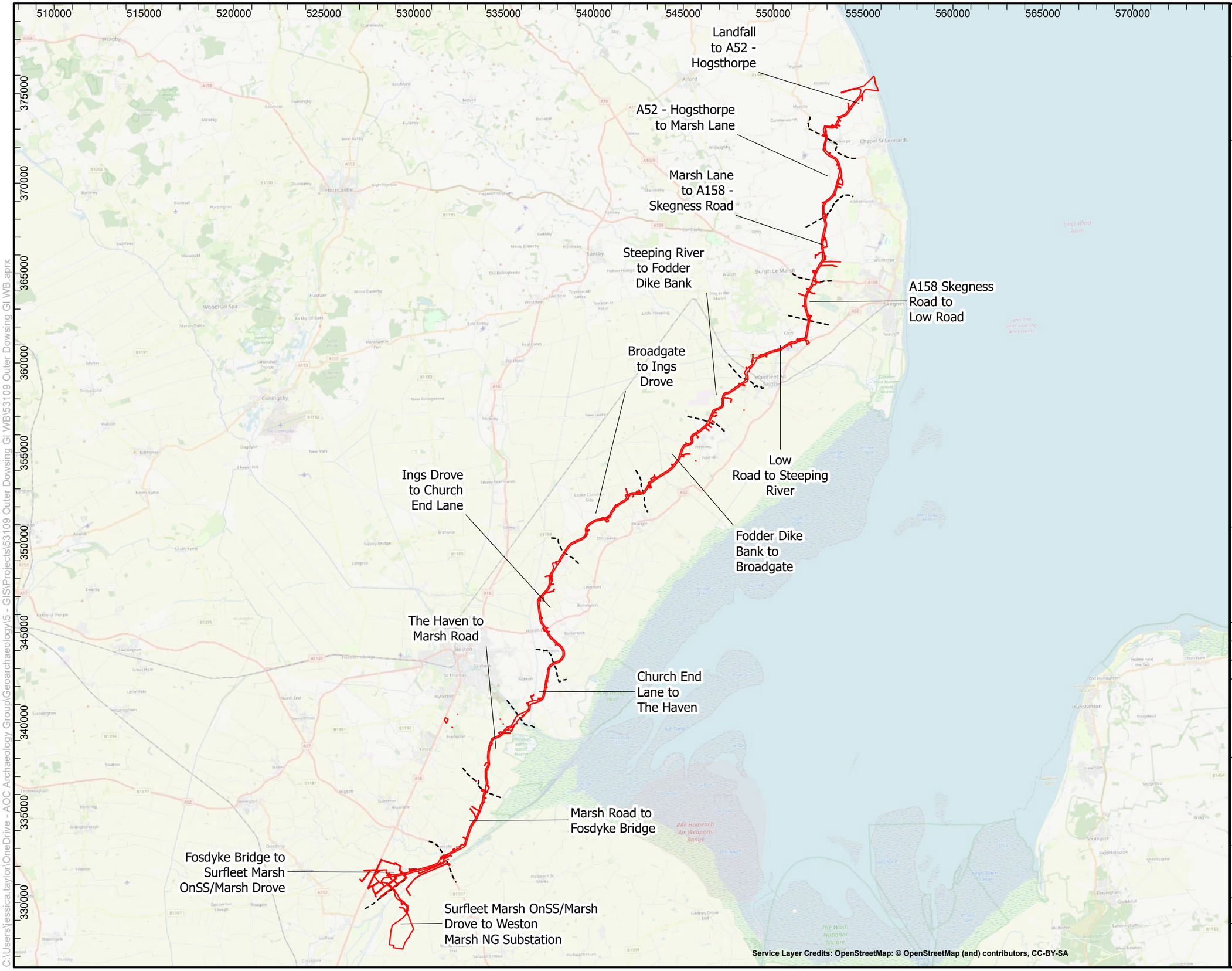

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Figure	2

Assessment area and route divisions

Legend

- Order Limits
- Onshore Segment Breaks

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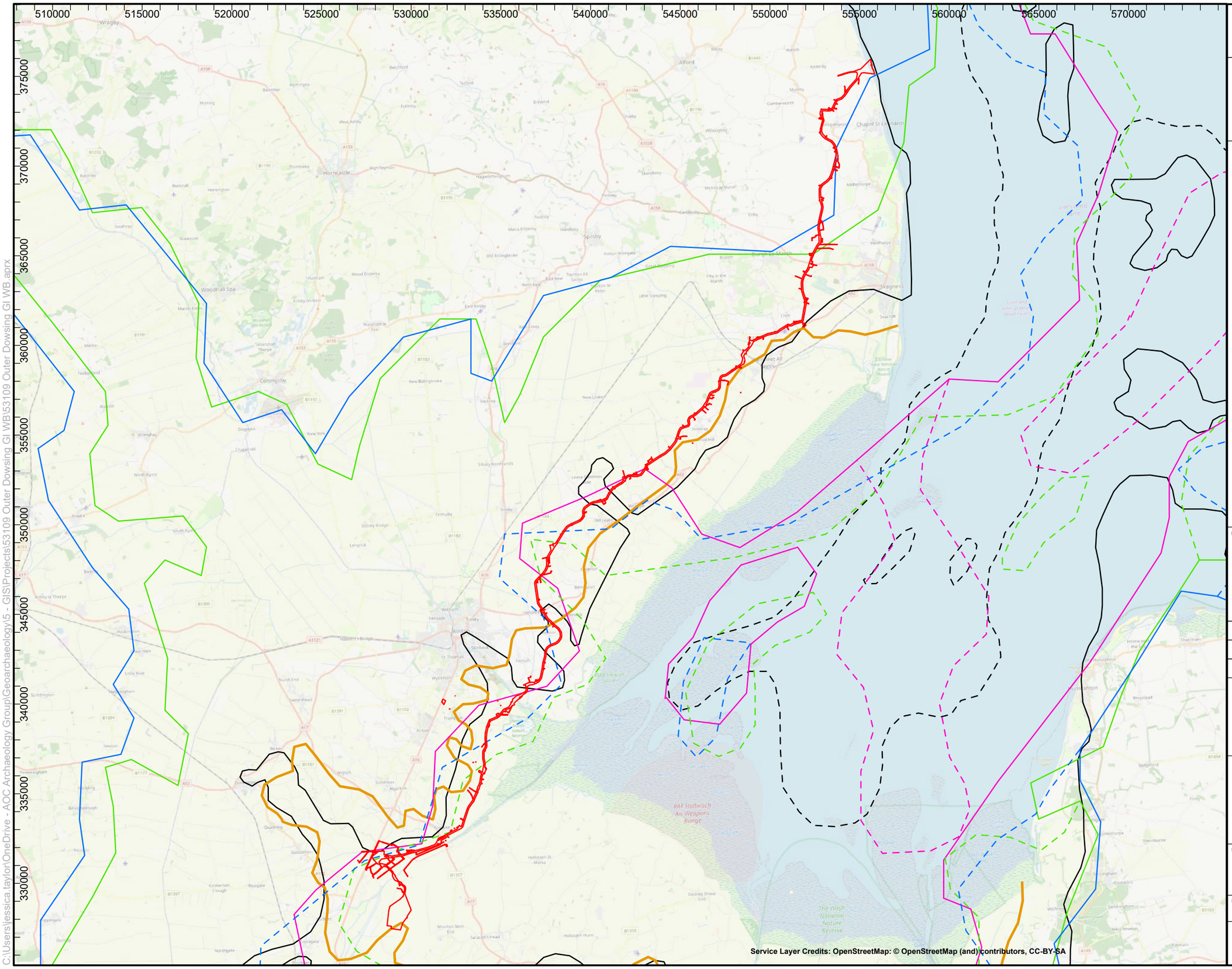

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Figure	3

Projected past coastlines and intertidal limits - Full Site

Legend

- Order Limits
- 3900BC Coastline (Green, 2011)
- 3900BC Intertidal Limit (Green, 2011)
- 4900BC Coastline (Green, 2011)
- 4900BC Intertidal Limit (Green, 2011)
- 5900 BC Coastline (Green, 2011)
- 5900BC Intertidal Limit (Green, 2011)
- Roman Coastline (Smith et al., 2010)
- 13th C Coastline (Green, 2015)
- 13th C Sands, Silts, Channels (Green, 2015)

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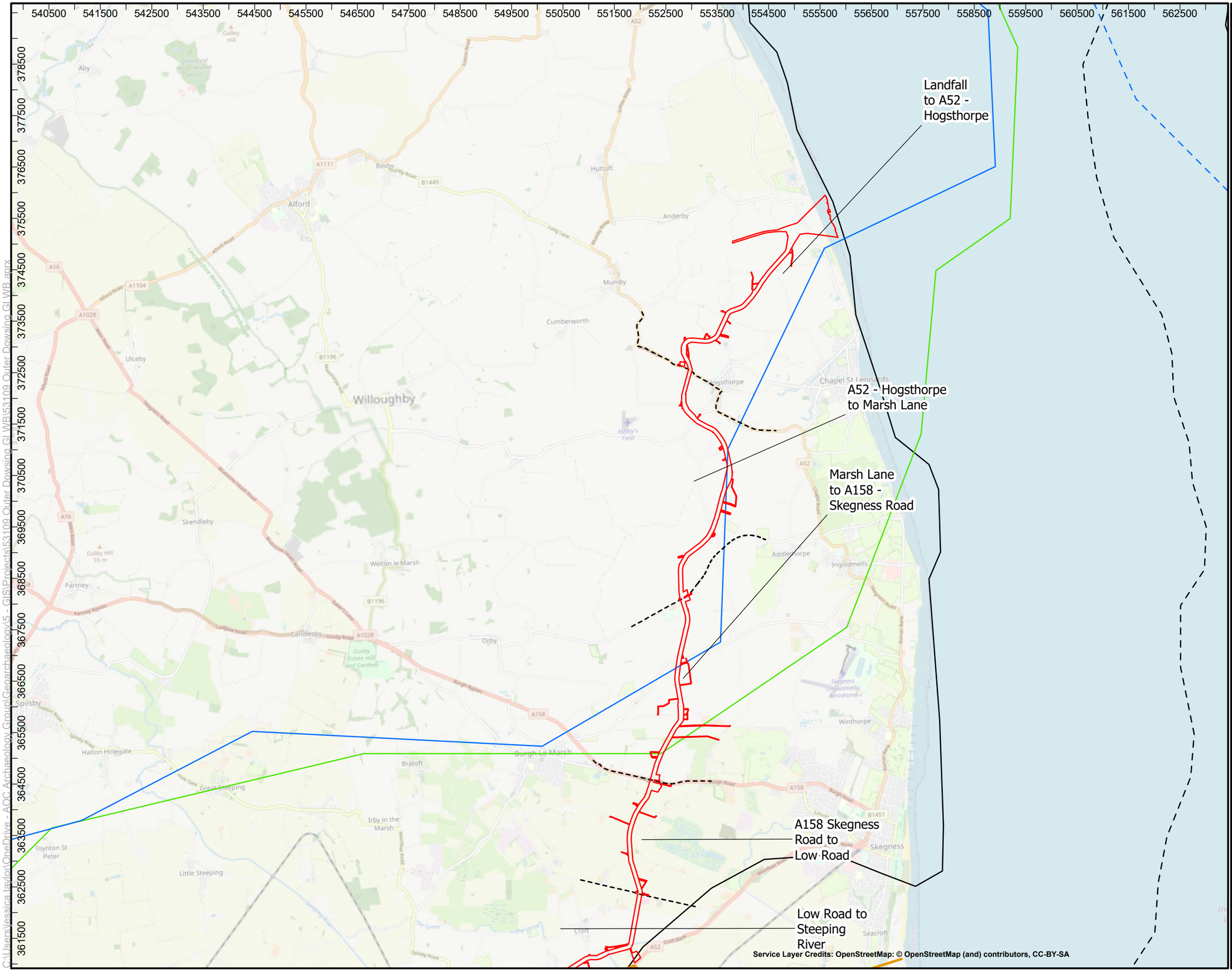

Figure	4

Projected past coastlines and intertidal limits - Area 1

Legend

- Order Limits
- Onshore Segment Breaks
- 3900BC Coastline (Green, 2011)
- 3900BC Intertidal Limit (Green, 2011)
- 4900BC Coastline (Green, 2011)
- 4900BC Intertidal Limit (Green, 2011)
- 5900 BC Coastline (Green, 2011)
- 5900BC Intertidal Limit (Green, 2011)
- Roman Coastline (Smith et al., 2010)
- 13th C Coastline (Green, 2015)
- 13th C Sands, Silts, Channels (Green, 2015)

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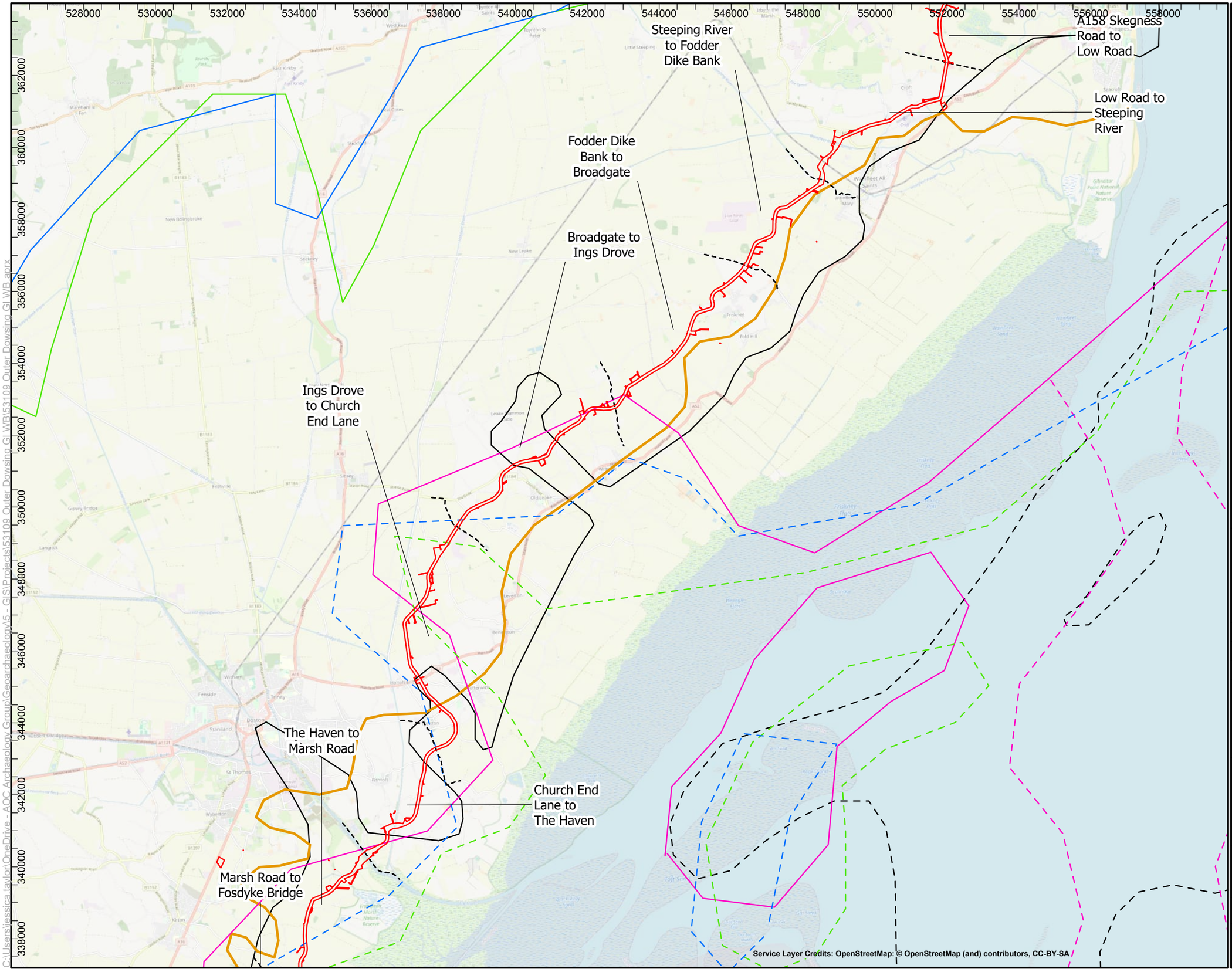

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Figure	5

Projected past coastlines and intertidal limits - Area 2

Legend

- Order Limits
- Onshore Segment Breaks
- 3900BC Coastline (Green, 2011)
- 3900BC Intertidal Limit (Green, 2011)
- 4900BC Coastline (Green, 2011)
- 4900BC Intertidal Limit (Green, 2011)
- 5900 BC Coastline (Green, 2011)
- 5900BC Intertidal Limit (Green, 2011)
- Roman Coastline (Smith et al., 2010)
- 13th C Coastline (Green, 2015)
- 13th C Sands, Silts, Channels (Green, 2015)

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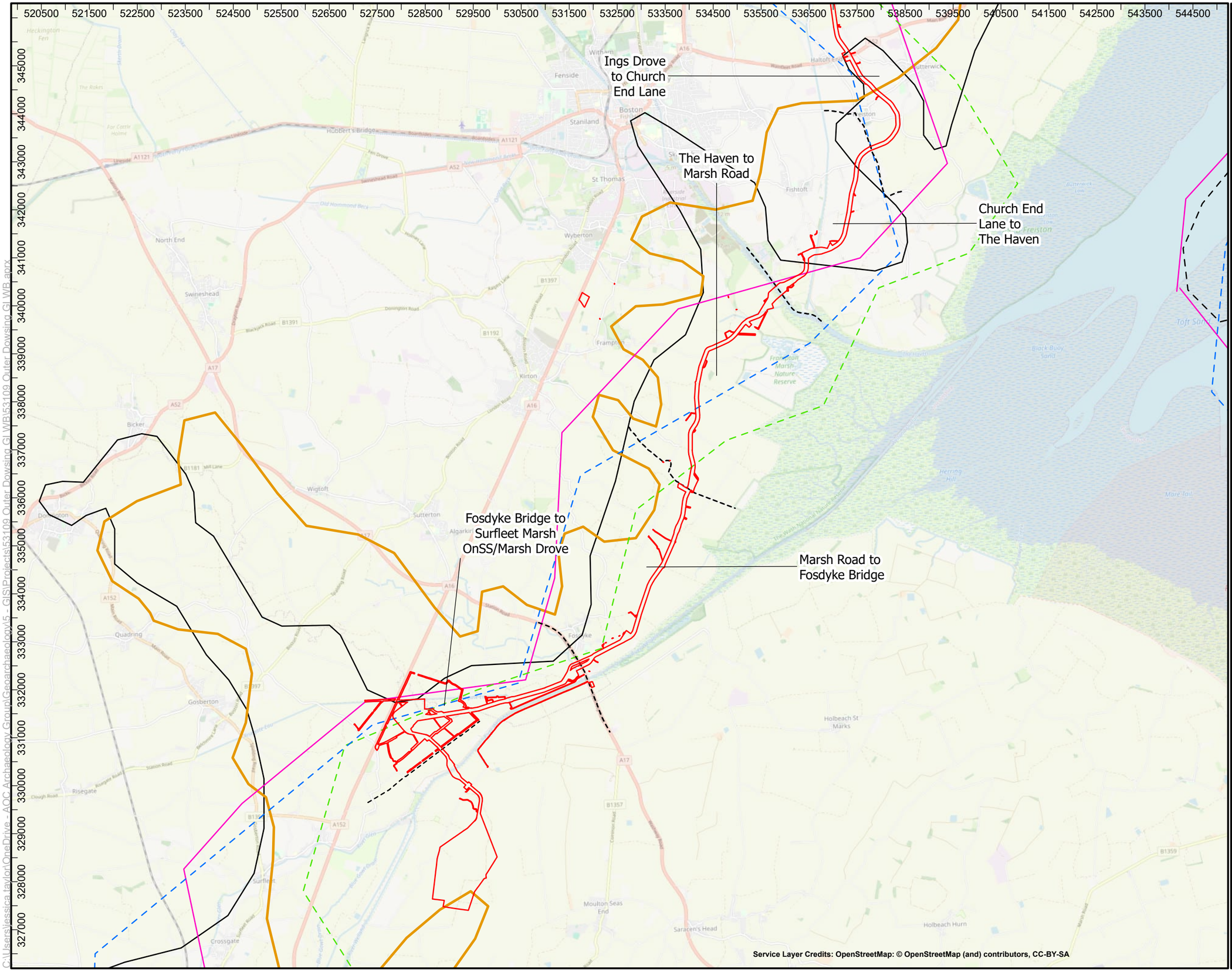

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Figure	6

Projected past coastlines and intertidal limits - Area 3

Legend

- Order Limits
- Onshore Segment Breaks
- 3900BC Coastline (Green, 2011)
- 3900BC Intertidal Limit (Green, 2011)
- 4900BC Coastline (Green, 2011)
- 4900BC Intertidal Limit (Green, 2011)
- 5900 BC Coastline (Green, 2011)
- 5900BC Intertidal Limit (Green, 2011)
- Roman Coastline (Smith et al., 2010)
- 13th C Coastline (Green, 2015)
- 13th C Sands, Silts, Channels (Green, 2015)

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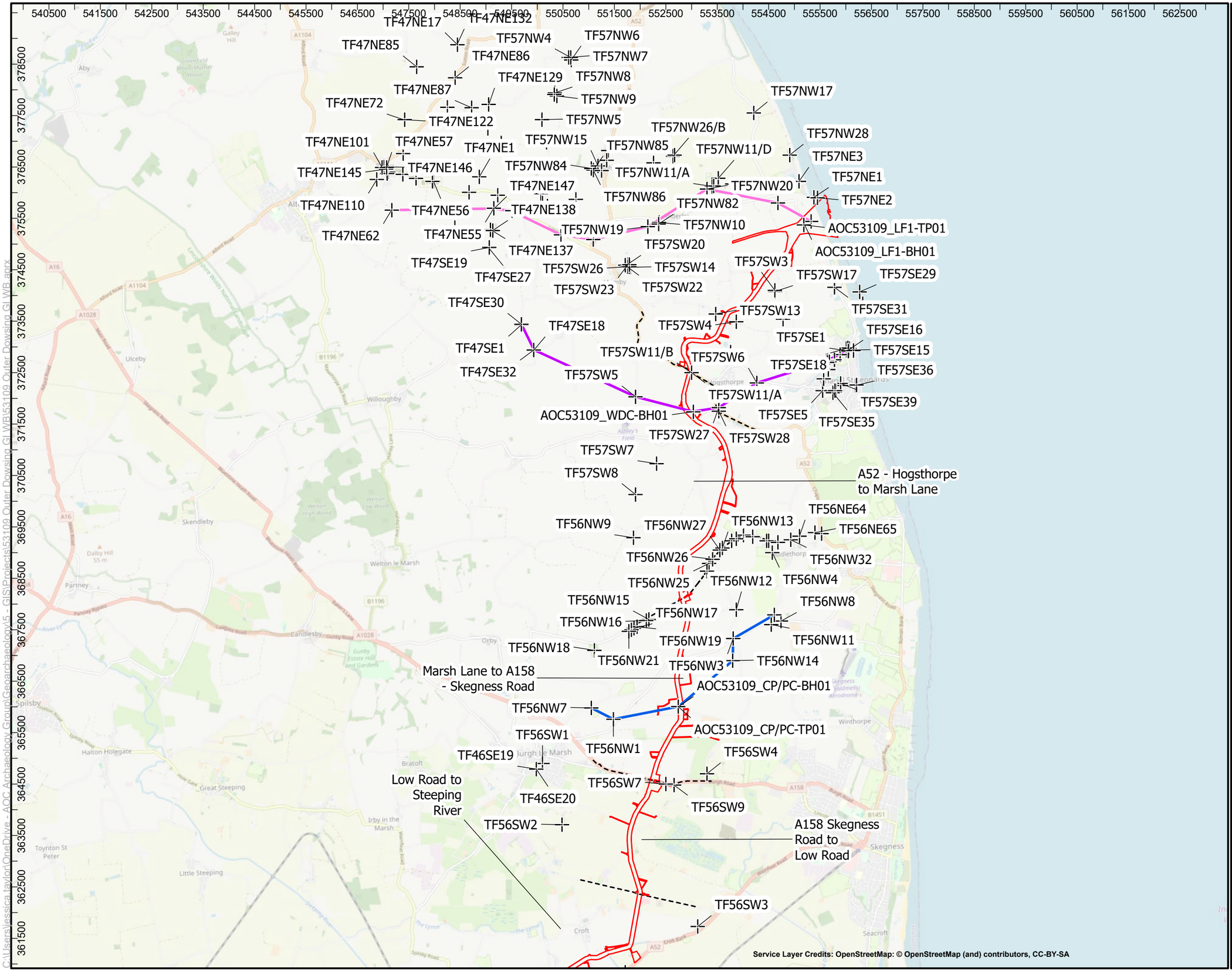

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Figure	7

Data points and transect locations - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

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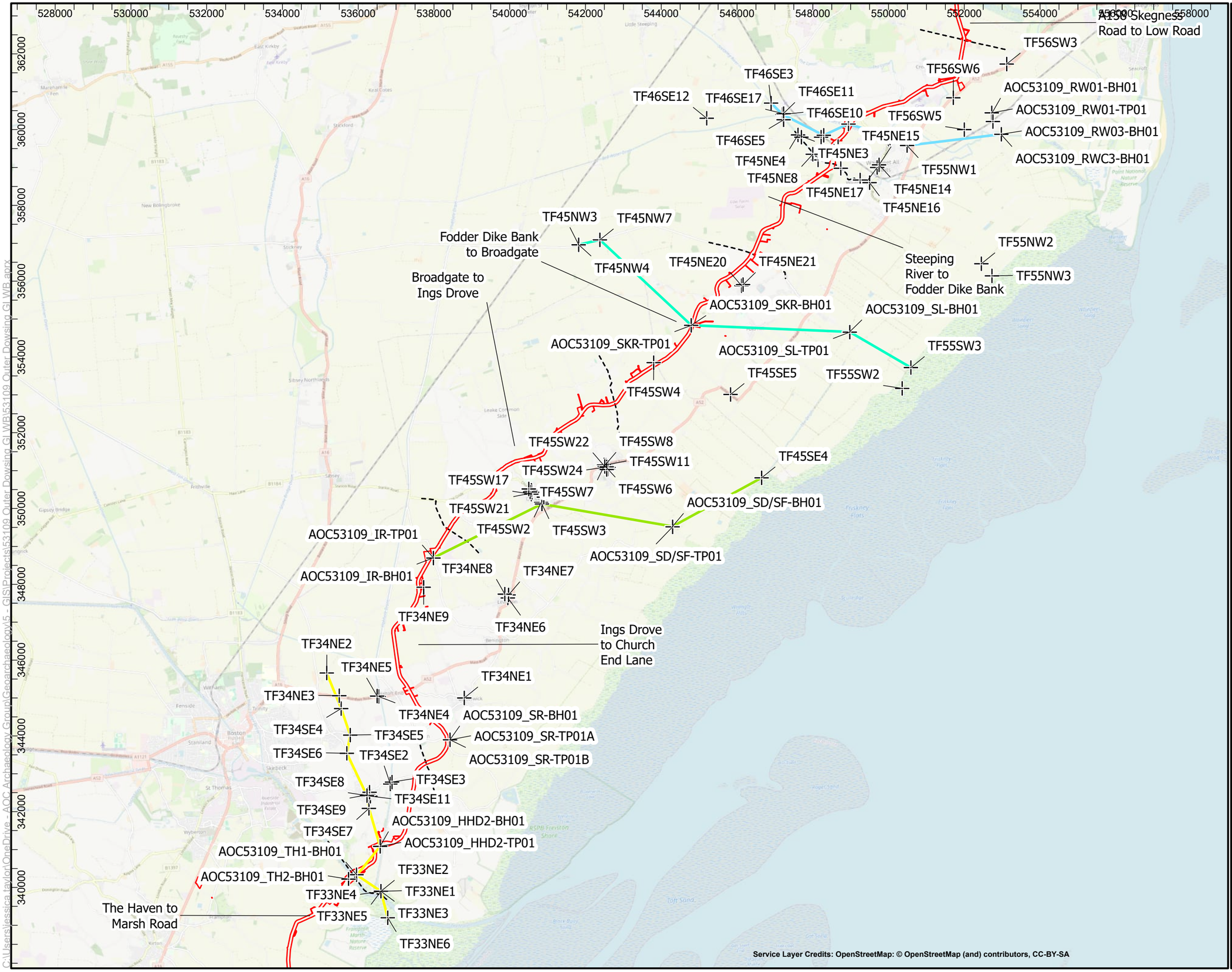

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Figure	8

Data points and transect locations - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

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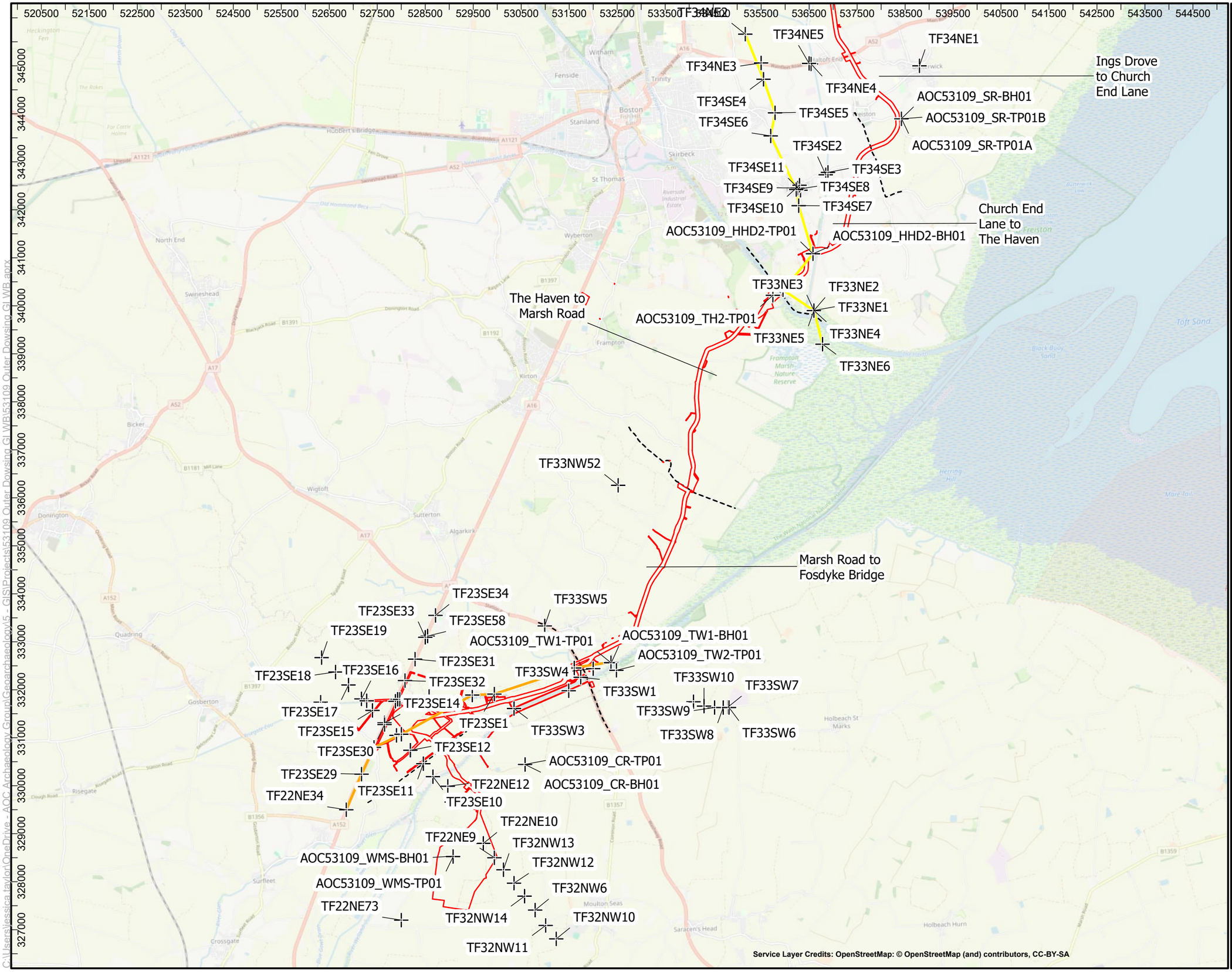

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Figure 9

Data points and transect locations - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

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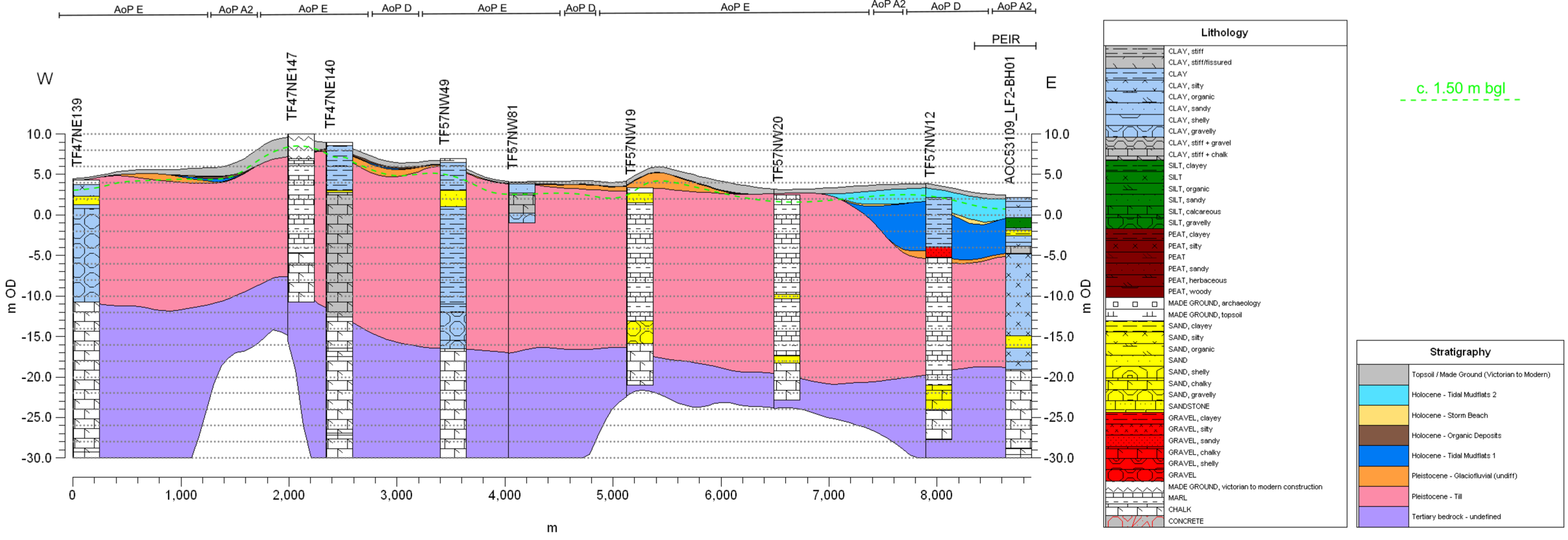
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Lithology
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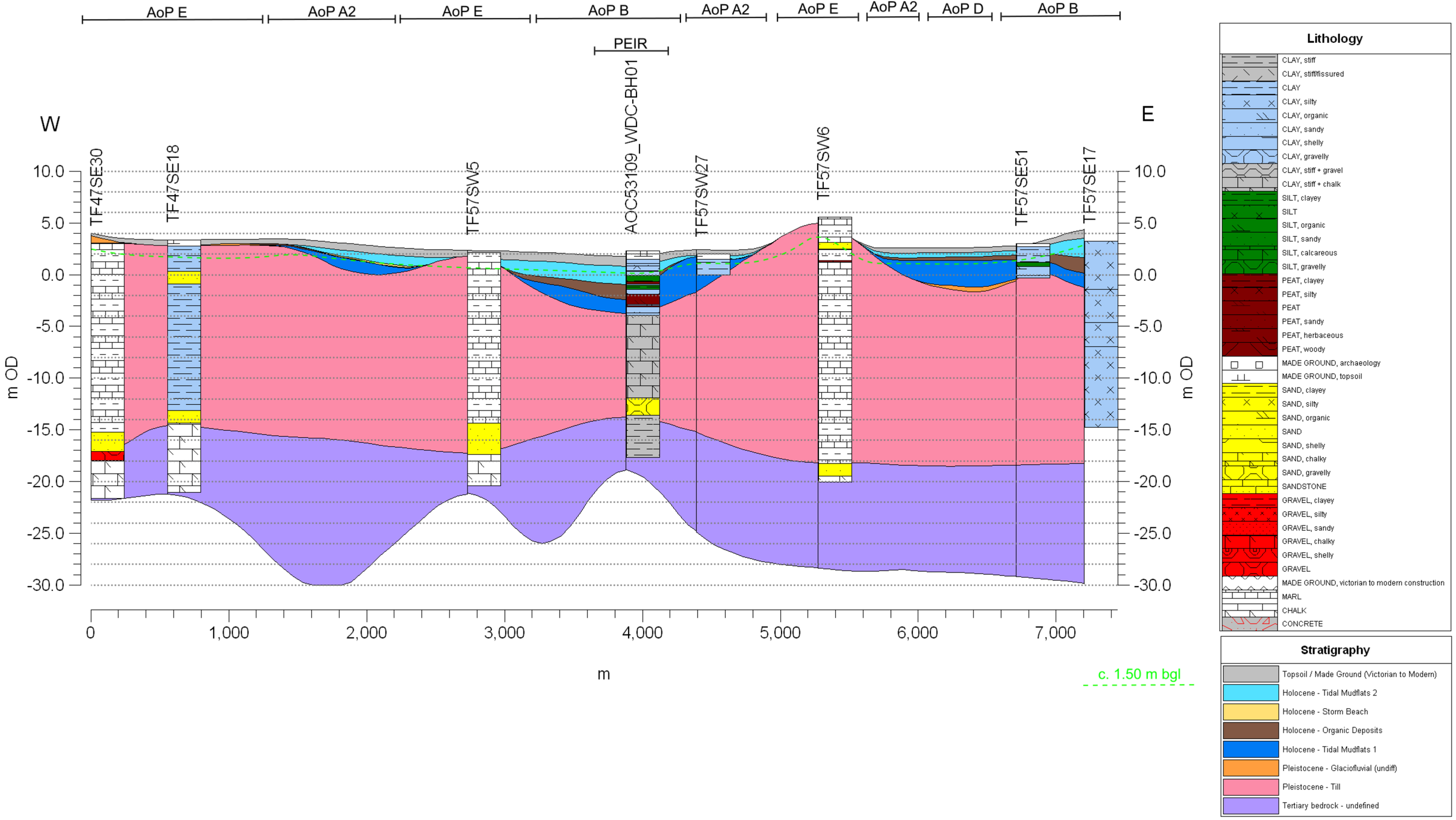
CLAY, silty
CLAY, organic
CLAY, sandy
CLAY, shelly
CLAY, gravelly
CLAY, stiff + gravel
CLAY, stiff + chalk
SILT, clayey
SILT
SILT, organic
SILT, sandy
SILT, calcareous
SILT, gravelly
PEAT, clayey
PEAT, silty
PEAT
PEAT, sandy
PEAT, herbaceous
PEAT, woody
MADE GROUND, archaeology
MADE GROUND, topsoil
SAND, clayey
SAND, silty
SAND, organic
SAND
SAND, shelly
SAND, chalky
SAND, gravelly
SANDSTONE
GRAVEL, clayey
GRAVEL, silty
GRAVEL, sandy
GRAVEL, chalky
GRAVEL, shelly
GRAVEL
MADE GROUND, victorian to modern construction
MARL
CHALK
CONCRETE
c. 1.50 m bgl
Stratigraphy
Topsoil / Made Ground (Victorian to Modern)
Holocene - Tidal Mudflats 2
Holocene - Storm Beach
Holocene - Organic Deposits
Holocene - Tidal Mudflats 1
Pleistocene - Glaciofluvial (undiff)
Pleistocene - Till
Tertiary bedrock - undefined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Lithology
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CLAY, stiff/fissured
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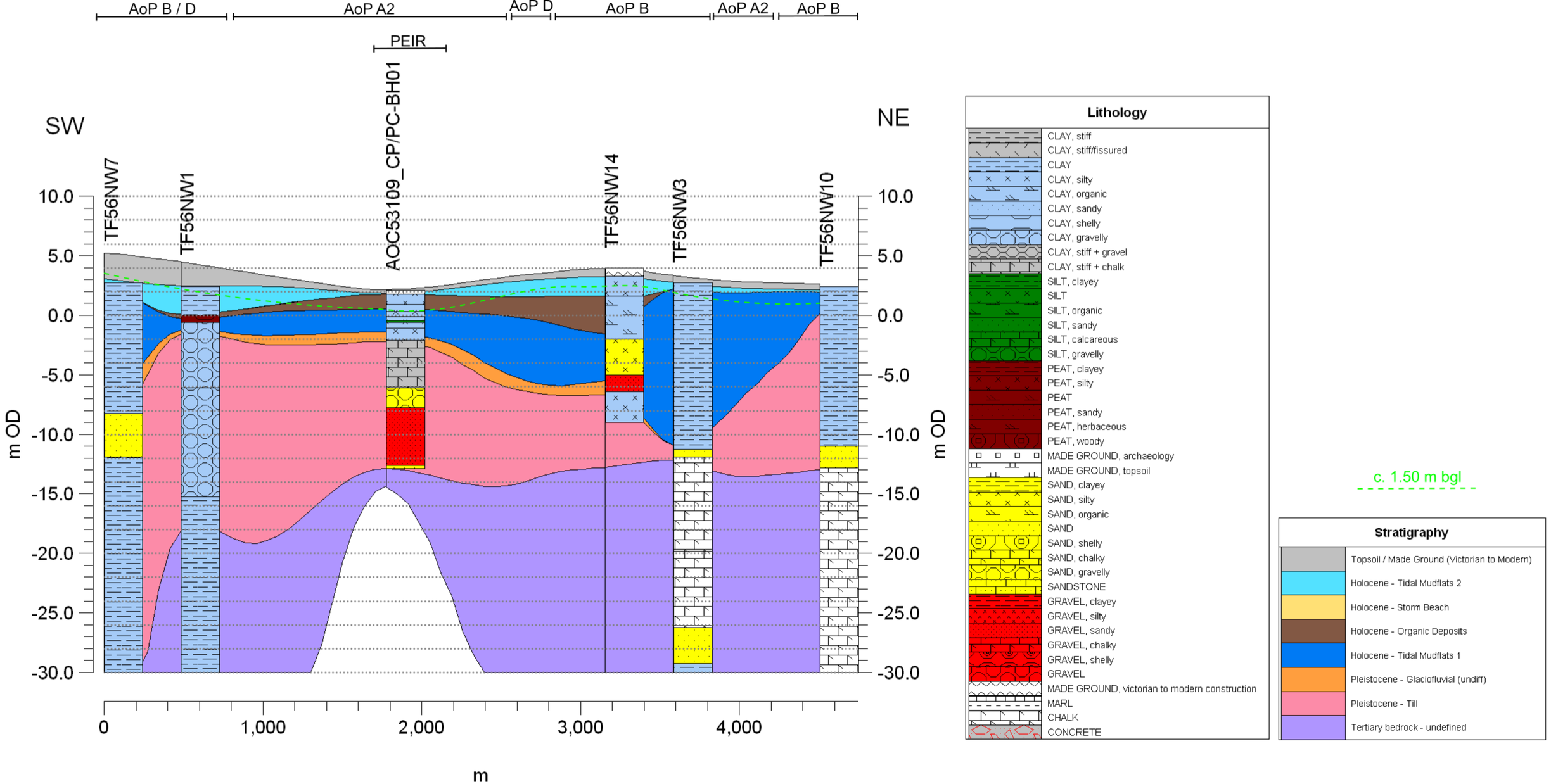
CLAY, silty
CLAY, organic
CLAY, sandy
CLAY, shelly
CLAY, gravelly
CLAY, stiff + gravel
CLAY, stiff + chalk
SILT, clayey
SILT
SILT, organic
SILT, sandy
SILT, calcareous
SILT, gravelly
PEAT, clayey
PEAT, silty
PEAT
PEAT, sandy
PEAT, herbaceous
PEAT, woody
MADE GROUND, archaeology
MADE GROUND, topsoil
SAND, clayey
SAND, silty
SAND, organic
SAND
SAND, shelly
SAND, chalky
SAND, gravelly
SANDSTONE
GRAVEL, clayey
GRAVEL, silty
GRAVEL, sandy
GRAVEL, chalky
GRAVEL, shelly
GRAVEL
MADE GROUND, victorian to modern construction
MARL
CHALK
CONCRETE
Stratigraphy
Topsoil / Made Ground (Victorian to Modern)
Holocene - Tidal Mudflats 2
Holocene - Storm Beach
Holocene - Organic Deposits
Holocene - Tidal Mudflats 1
Pleistocene - Glaciofluvial (undiff)
Pleistocene - Till
Tertiary bedrock - undefined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-20.0
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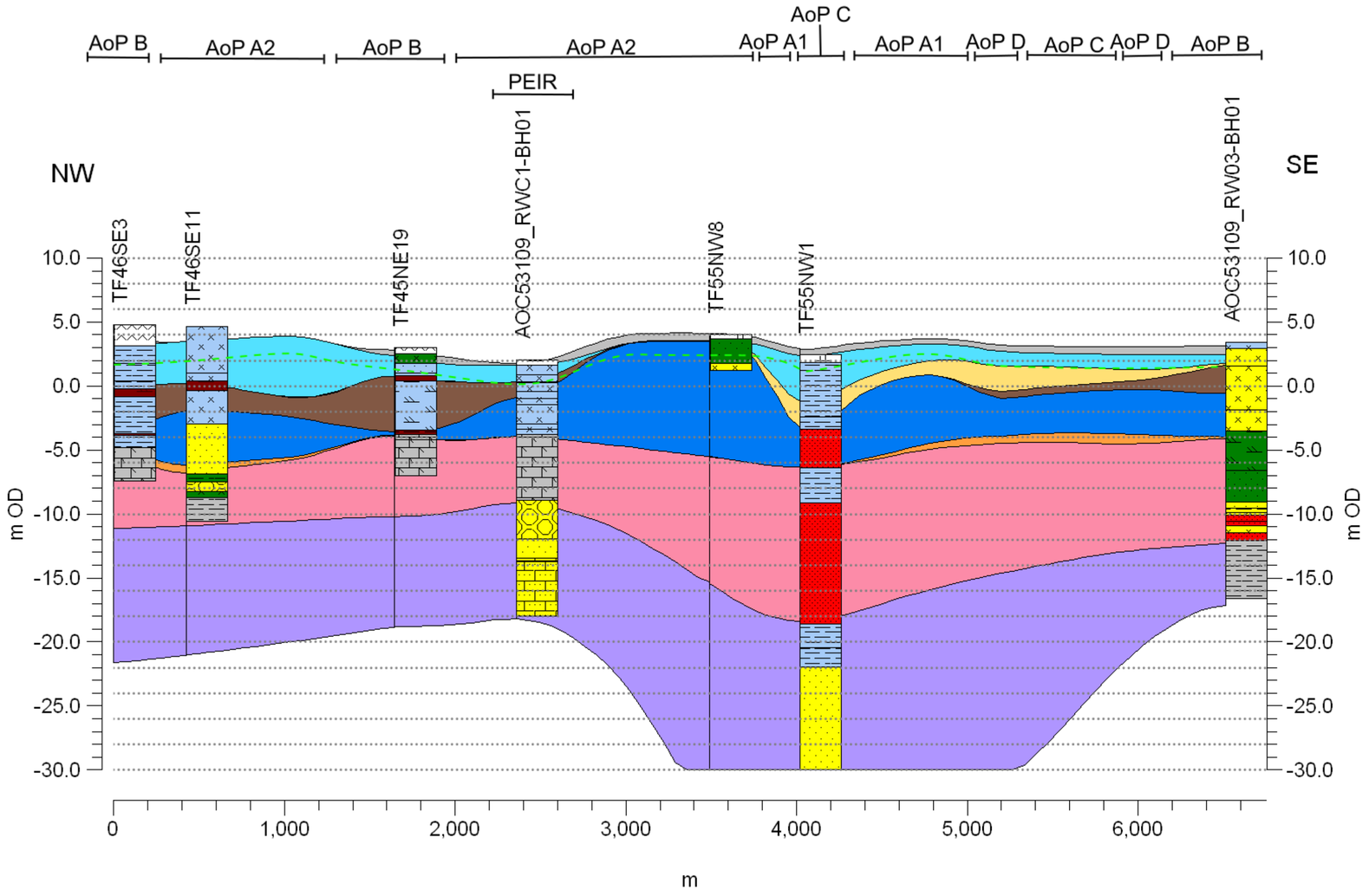
-30.0
m OD
0
1,000
2,000
3,000
4,000
m
Lithology
CLAY, stiff
CLAY, stiff/fissured
CLAY
CLAY, silty
CLAY, organic
CLAY, sandy
CLAY, shelly
CLAY, gravelly
CLAY, stiff + gravel
CLAY, stiff + chalk
SILT, clayey
SILT
SILT, organic
SILT, sandy
SILT, calcareous
SILT, gravelly
PEAT, clayey
PEAT, silty
PEAT
PEAT, sandy
PEAT, herbaceous
PEAT, woody
MADE GROUND, archaeology
MADE GROUND, topsoil
SAND, clayey
SAND, silty
SAND, organic
SAND
SAND, shelly
SAND, chalky
SAND, gravelly
SANDSTONE
GRAVEL, clayey
GRAVEL, silty
GRAVEL, sandy
GRAVEL, chalky
GRAVEL, shelly
GRAVEL
MADE GROUND, victorian to modern construction
MARL
CHALK
CONCRETE
c. 1.50 m bgl
Stratigraphy
Topsoil / Made Ground (Victorian to Modern)
Holocene - Tidal Mudflats 2
Holocene - Storm Beach
Holocene - Organic Deposits
Holocene - Tidal Mudflats 1
Pleistocene - Glaciofluvial (undiff)
Pleistocene - Till
Tertiary bedrock - undefined



Lithology

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- CLAY, stiff/fissured
- CLAY
- CLAY, silty
- CLAY, organic
- CLAY, sandy
- CLAY, shelly
- CLAY, gravelly
- CLAY, stiff + gravel
- CLAY, stiff + chalk
- SILT, clayey
- SILT
- SILT, organic
- SILT, sandy
- SILT, calcareous
- SILT, gravelly
- PEAT, clayey
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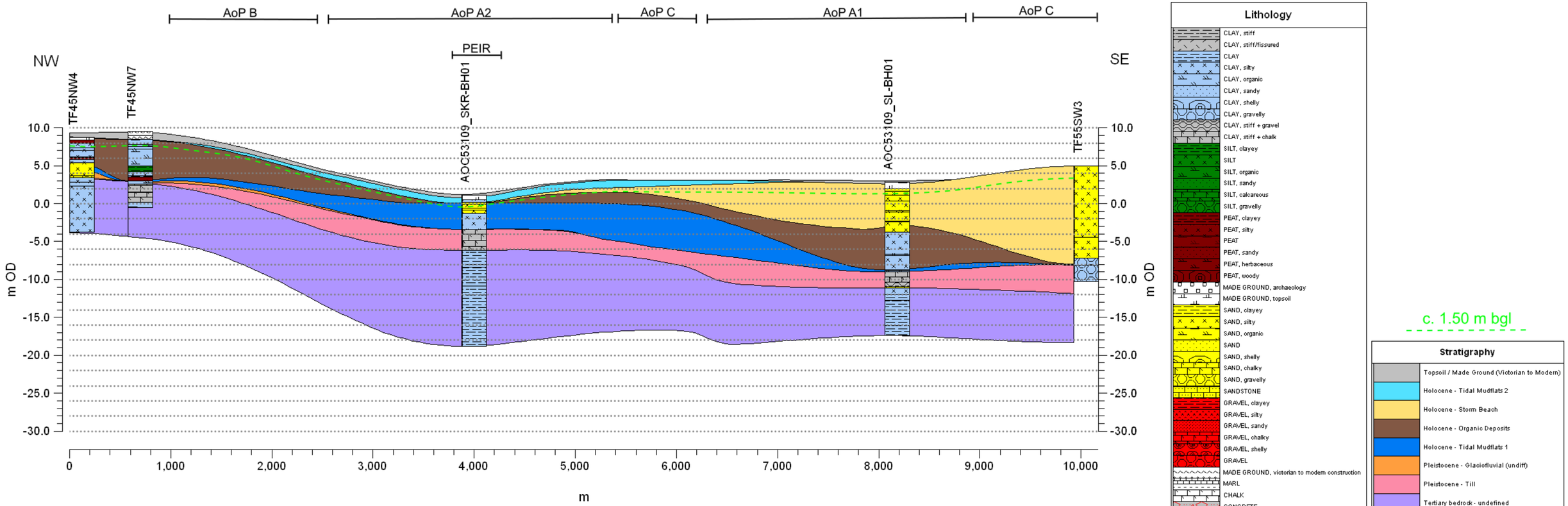
- PEAT
- PEAT, sandy
- PEAT, herbaceous
- PEAT, woody
- MADE GROUND, archaeology
- MADE GROUND, topsoil
- SAND, clayey
- SAND, silty
- SAND, organic
- SAND
- SAND, shelly
- SAND, chalky
- SAND, gravelly
- SANDSTONE
- GRAVEL, clayey
- GRAVEL, silty
- GRAVEL, sandy
- GRAVEL, chalky
- GRAVEL, shelly
- GRAVEL
- MADE GROUND, victorian to modern construction
- MARL
- CHALK
- CONCRETE

c. 1.50 m bgl

Stratigraphy

- Topsoil / Made Ground (Victorian to Modern)
- Holocene - Tidal Mudflats 2
- Holocene - Storm Beach
- Holocene - Organic Deposits
- Holocene - Tidal Mudflats 1
- Pleistocene - Glaciofluvial (undiff)
- Pleistocene - Till
- Tertiary bedrock - undefined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AoP C
AoP A1
AoP C
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NW
SE
TF45NW4
TF45NW7
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AOC53109_SL-BH01
TF55SW3
m OD
m
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CLAY, stiff + chalk
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PEAT, sandy
PEAT, herbaceous
PEAT, woody
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MADE GROUND, topsoil
SAND, clayey
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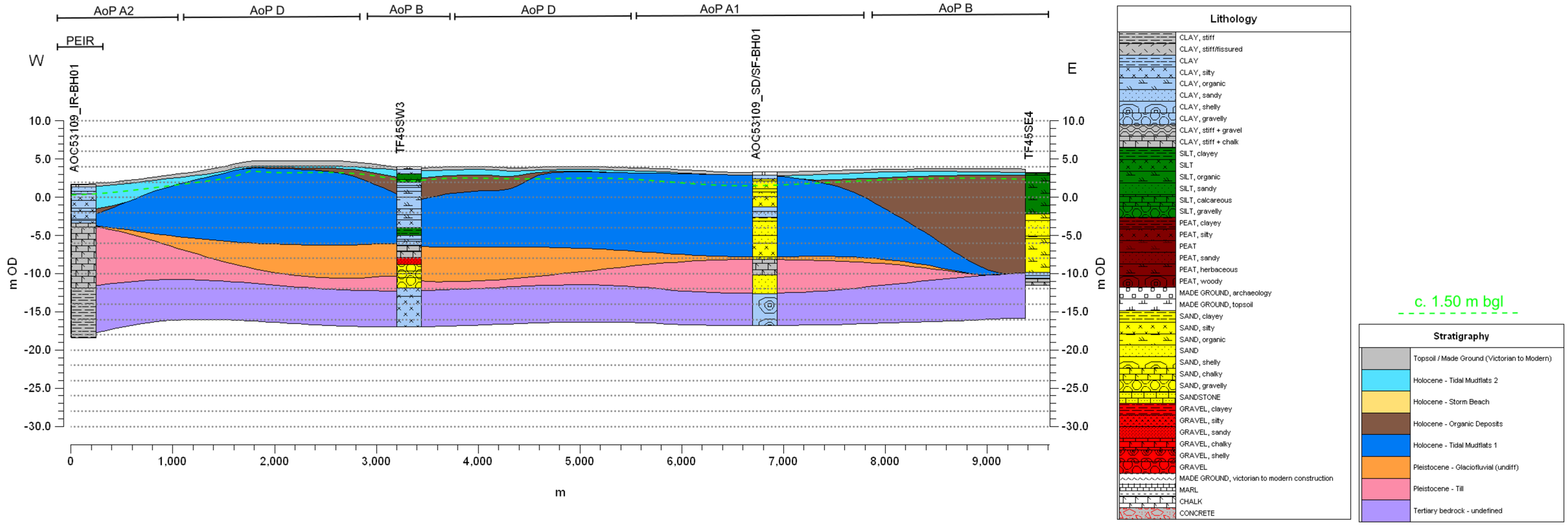
SANDSTONE
GRAVEL, clayey
GRAVEL, silty
GRAVEL, sandy
GRAVEL, chalky
GRAVEL, shelly
GRAVEL
MADE GROUND, victorian to modern construction
MARL
CHALK
CONCRETE
c. 1.50 m bgl
Stratigraphy
Topsoil / Made Ground (Victorian to Modern)
Holocene - Tidal Mudflats 2
Holocene - Storm Beach
Holocene - Organic Deposits
Holocene - Tidal Mudflats 1
Pleistocene - Glaciofluvial (undiff)
Pleistocene - Till
Tertiary bedrock - undefined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AoP D
AoP B
AoP D
AoP A1
AoP B
PEIR
W
E
AOC53109_IR-BH01
TF45SW3
AOC53109_SD/SF-BH01
TF45SE4
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
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m OD
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Lithology
CLAY, stiff
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CLAY, shelly
CLAY, gravelly
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SILT
SILT, organic
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PEAT, clayey
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PEAT
PEAT, sandy
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SAND, chalky
SAND, gravelly
SANDSTONE
GRAVEL, clayey
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GRAVEL, sandy
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GRAVEL, shelly
GRAVEL
MADE GROUND, victorian to modern construction
MARL
CHALK
CONCRETE
c. 1.50 m bgl
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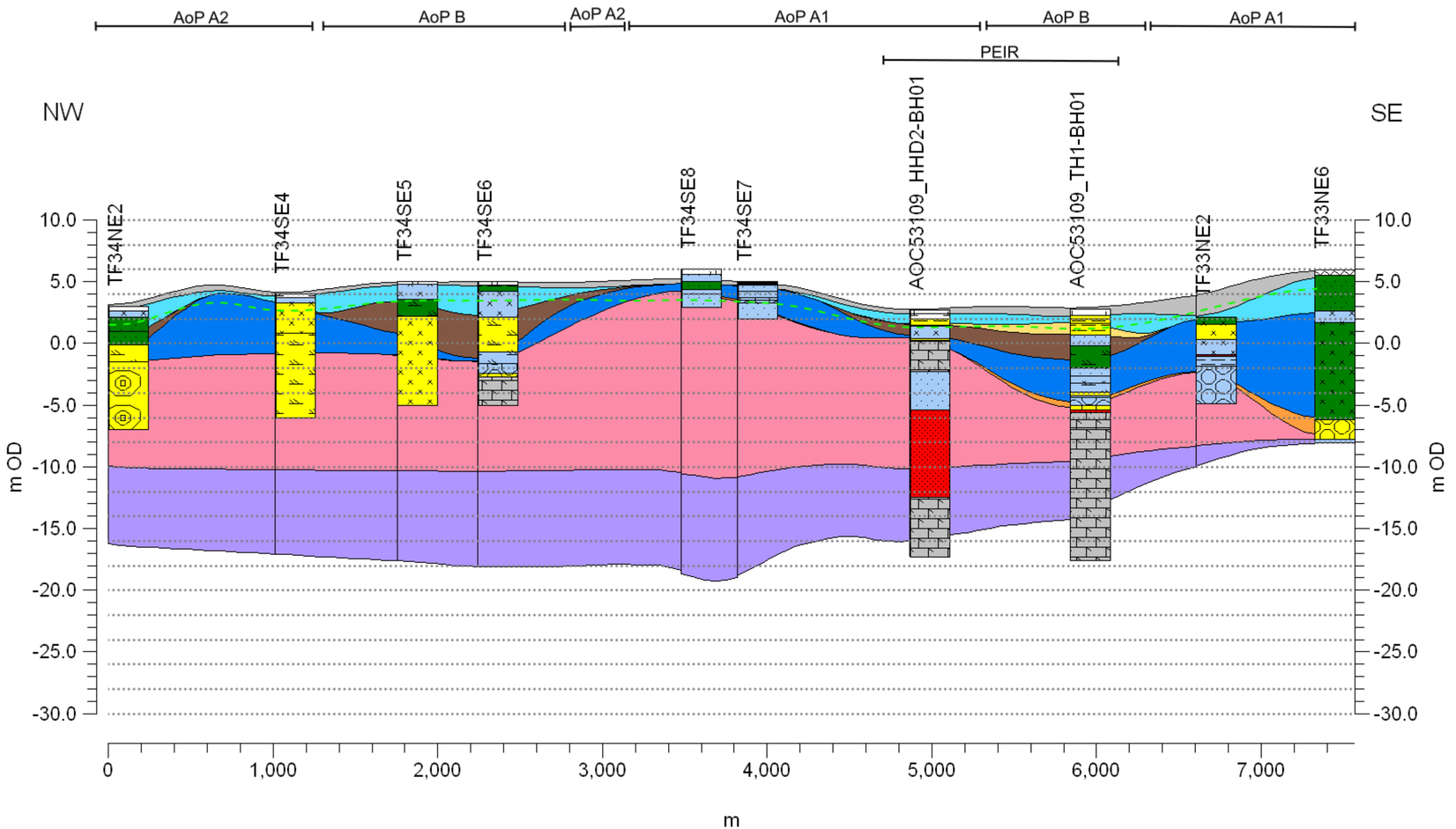
Holocene - Tidal Mudflats 2
Holocene - Storm Beach
Holocene - Organic Deposits
Holocene - Tidal Mudflats 1
Pleistocene - Glaciofluvial (undiff)
Pleistocene - Till
Tertiary bedrock - undefined



Lithology

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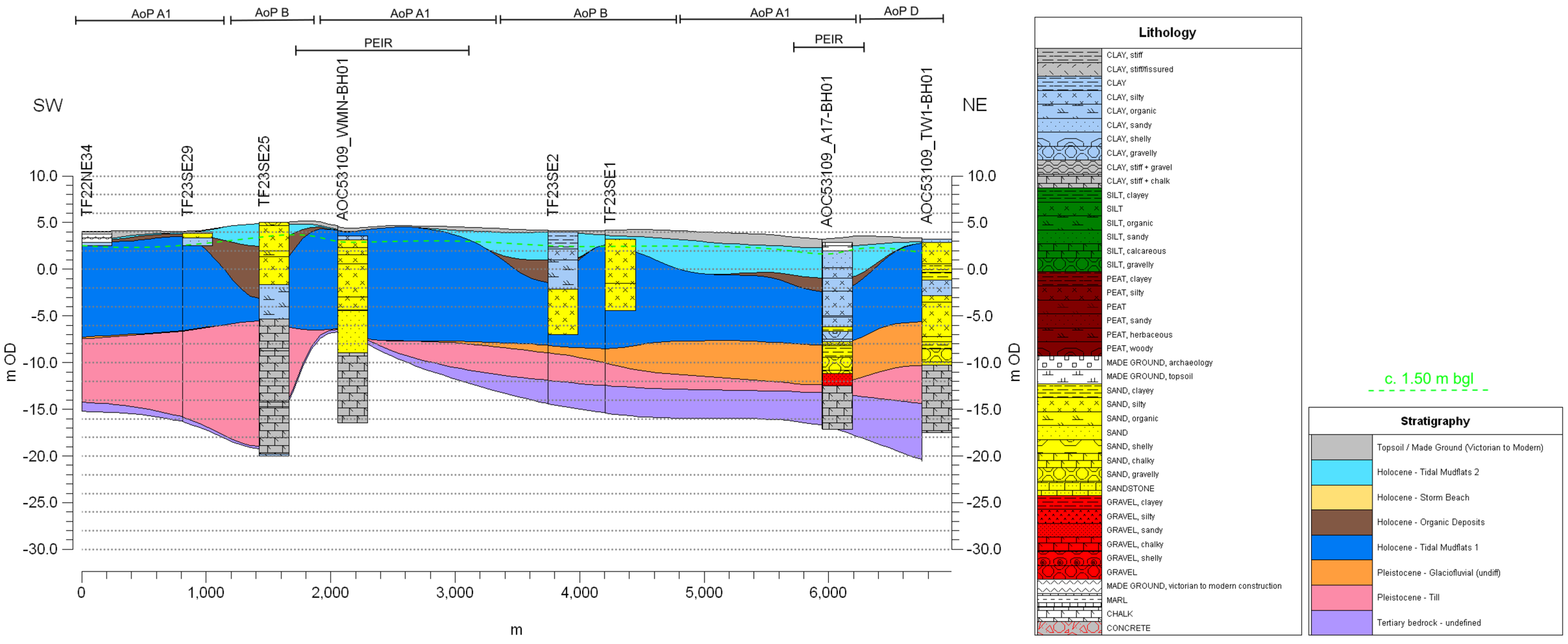
- CLAY, stiff/fissured
- CLAY
- CLAY, silty
- CLAY, organic
- CLAY, sandy
- CLAY, shelly
- CLAY, gravelly
- CLAY, stiff + gravel
- CLAY, stiff + chalk
- SILT, clayey
- SILT
- SILT, organic
- SILT, sandy
- SILT, calcareous
- SILT, gravelly
- PEAT, clayey
- PEAT, silty
- PEAT
- PEAT, sandy
- PEAT, herbaceous
- PEAT, woody
- MADE GROUND, archaeology
- MADE GROUND, topsoil
- SAND, clayey
- SAND, silty
- SAND, organic
- SAND
- SAND, shelly
- SAND, chalky
- SAND, gravelly
- SANDSTONE
- GRAVEL, clayey
- GRAVEL, silty
- GRAVEL, sandy
- GRAVEL, chalky
- GRAVEL, shelly
- GRAVEL
- MADE GROUND, victorian to modern construction
- MARL
- CHALK
- CONCRETE

c. 1.50 m bgl

Stratigraphy

- Topsoil / Made Ground (Victorian to Modern)
- Holocene - Tidal Mudflats 2
- Holocene - Storm Beach
- Holocene - Organic Deposits
- Holocene - Tidal Mudflats 1
- Pleistocene - Glaciofluvial (undiff)
- Pleistocene - Till
- Tertiary bedrock - undefined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AoP A1
AoP B
AoP A1
AoP D
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PEIR
SW
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TF22NE34
TF23SE29
TF23SE25
AOC53109_WMN-BH01
TF23SE2
TF23SE1
AOC53109_A17-BH01
AOC53109_TW1-BH01
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-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
m OD
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1,000
2,000
3,000
4,000
5,000
6,000
m
Lithology
CLAY, stiff
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SANDSTONE
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Holocene - Organic Deposits
Holocene - Tidal Mudflats 1
Pleistocene - Glaciofluvial (undiff)
Pleistocene - Till
Tertiary bedrock - undefined

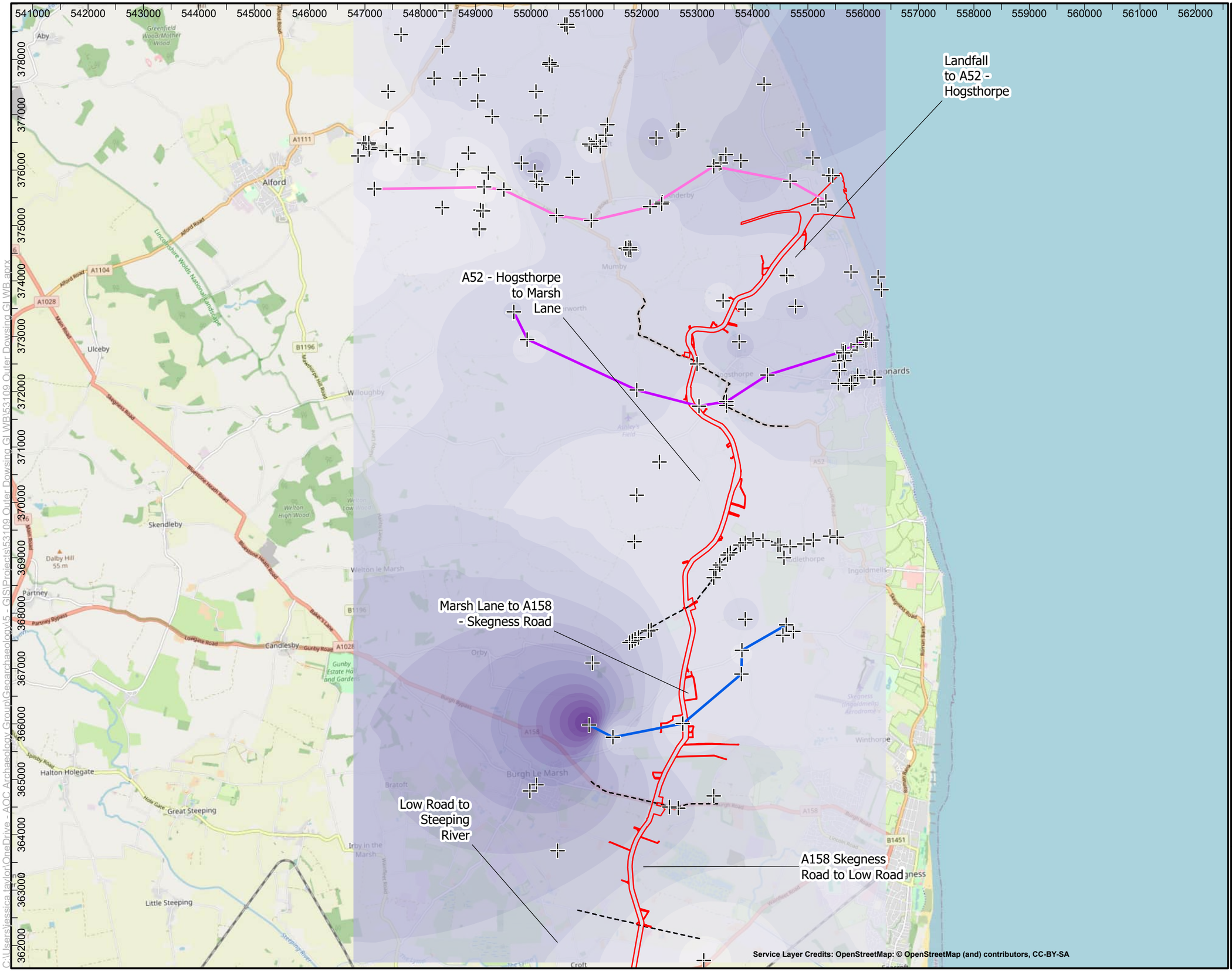

Figure	18

Topographic plot of the surface of the below ground solid bedrock geology (extrapolated from deposit records) - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

Bedrock Surface - Area 1

m OD

- -4.999999 - -2.500000
- -7.499999 - -5.000000
- -9.999999 - -7.500000
- -12.499999 - -10.000000
- -14.999999 - -12.500000
- -17.499999 - -15.000000
- -19.999999 - -17.500000
- -22.499999 - -20.000000
- -24.999999 - -22.500000
- -27.499999 - -25.000000
- -29.999999 - -27.500000
- -32.499999 - -30.000000
- -34.999999 - -32.500000
- -37.499999 - -35.000000
- -39.999999 - -37.500000
- -42.499999 - -40.000000
- -44.999999 - -42.500000
- -45.500000 - -45.000000

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AOC Project No.:	53109

AOC Archaeology Group

SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 — 3,000m

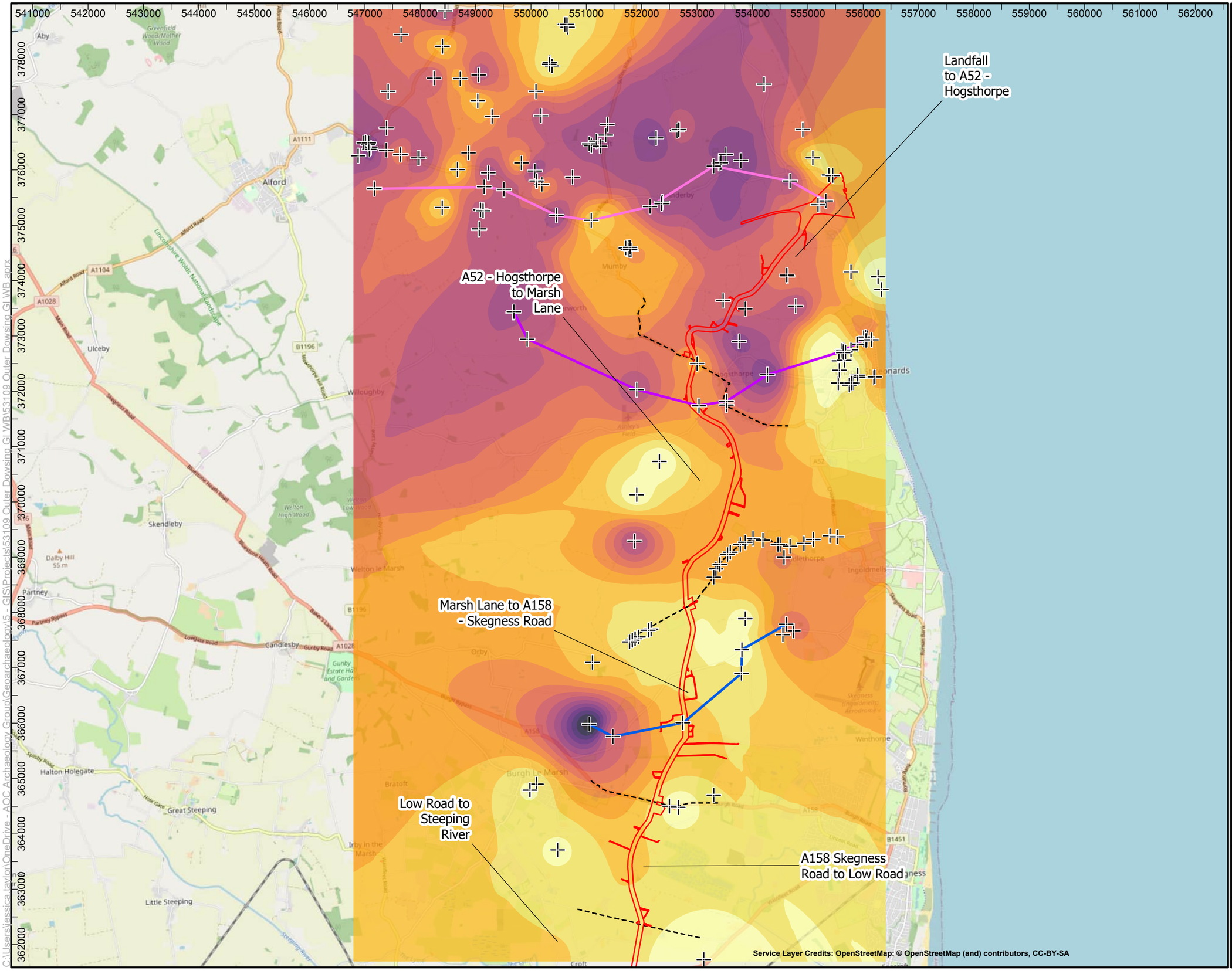

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Figure	19

Thickness plot of the below ground till (extrapolated from deposit records), representing deposit survival - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

Till Thickness - Area 1

m

- 0.000000 - 2.500000
- 2.500001 - 5.000000
- 5.000001 - 7.500000
- 7.500001 - 10.000000
- 10.000001 - 12.500000
- 12.500001 - 15.000000
- 15.000001 - 17.500000
- 17.500001 - 20.000000
- 20.000001 - 22.500000
- 22.500001 - 25.000000
- 25.000001 - 27.500000
- 27.500001 - 30.000000
- 30.000001 - 32.500000
- 32.500001 - 35.000000

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AOC Project No.:	53109

AOC Archaeology Group

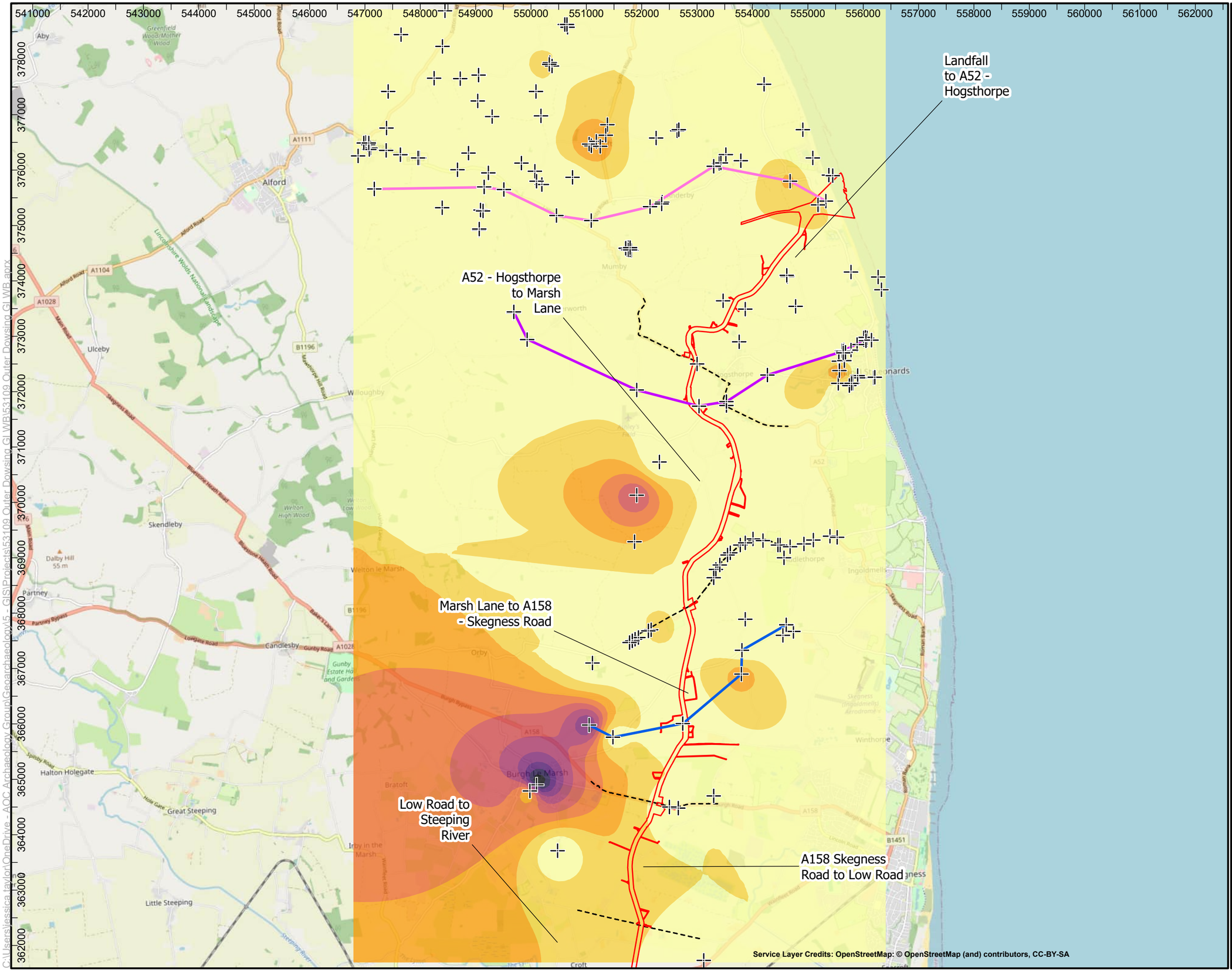
SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 3,000m



Service Layer Credits: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA

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Figure	20

Thickness plot of the below ground glaciofluvial deposits (extrapolated from deposit records), representing deposit survival - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

Glaciofluvial Thickness - Area 1

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000
- 4.500001 - 5.000000

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AOC Project No.:	53109

AOC Archaeology Group

N

SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 — 3,000m

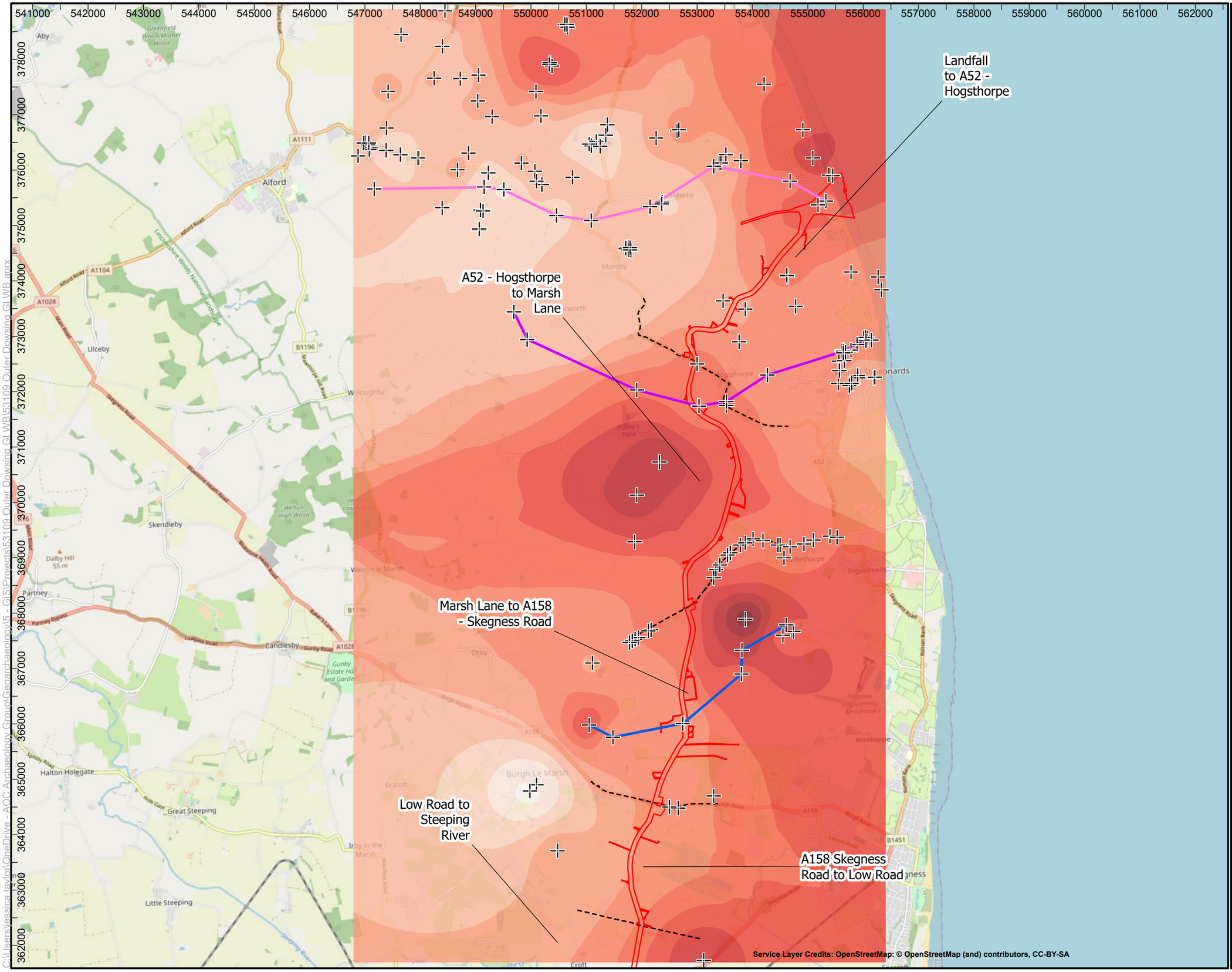

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Figure 21

Topographic plot of the surface of the below ground solid (Pleistocene or earlier) geology (extrapolated from deposit records), suggesting the form of the ancient land surface at c. 10,000 BC - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

Pleistocene Surface - Area 1

m OD

- 10.000001 - 12.500000
- 7.500001 - 10.000000
- 5.000001 - 7.500000
- 2.500001 - 5.000000
- 0.000001 - 2.500000
- -2.499999 - 0.000000
- -4.999999 - -2.500000
- -7.499999 - -5.000000
- -9.999999 - -7.500000
- -12.499999 - -10.000000
- -14.999999 - -12.500000
- -16.000000 - -15.000000

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AOC Project No.:	53109

AOC Archaeology Group

SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 3,000m

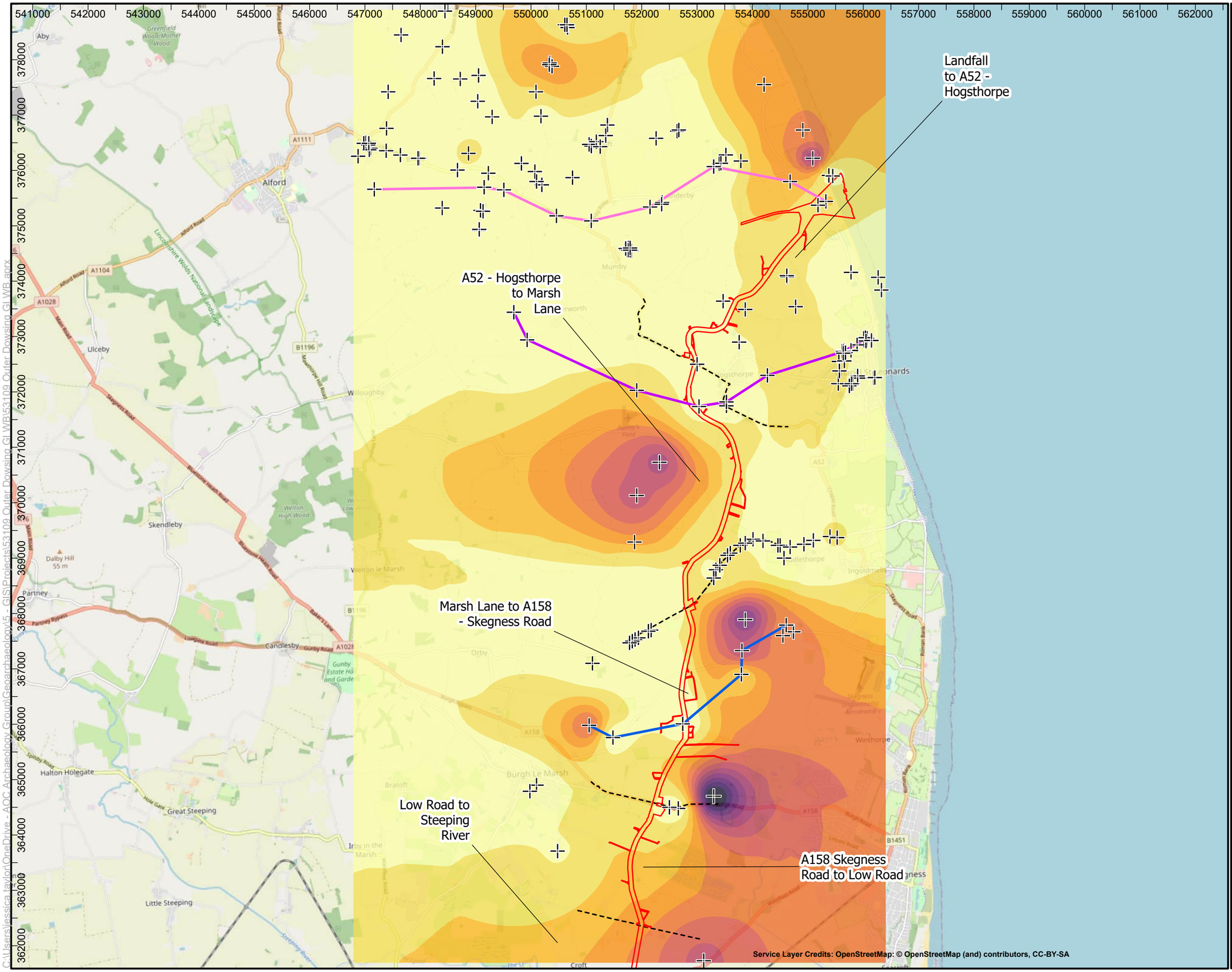

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Figure	22

Thickness plot of the below ground Holocene tidal mudflats (1) deposits (extrapolated from deposit records), representing deposit survival - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

Tidal Mudflats 1 Thickness - Area 1

m

- 0.000000 - 2.000000
- 2.000001 - 4.000000
- 4.000001 - 6.000000
- 6.000001 - 8.000000
- 8.000001 - 10.000000
- 10.000001 - 12.000000
- 12.000001 - 14.000000
- 14.000001 - 16.000000
- 16.000001 - 18.000000
- 18.000001 - 20.000000
- 20.000001 - 22.000000
- 22.000001 - 24.000000
- 24.000001 - 26.000000

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AOC Project No.:	53109

AOC Archaeology Group

N

SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 — 3,000m

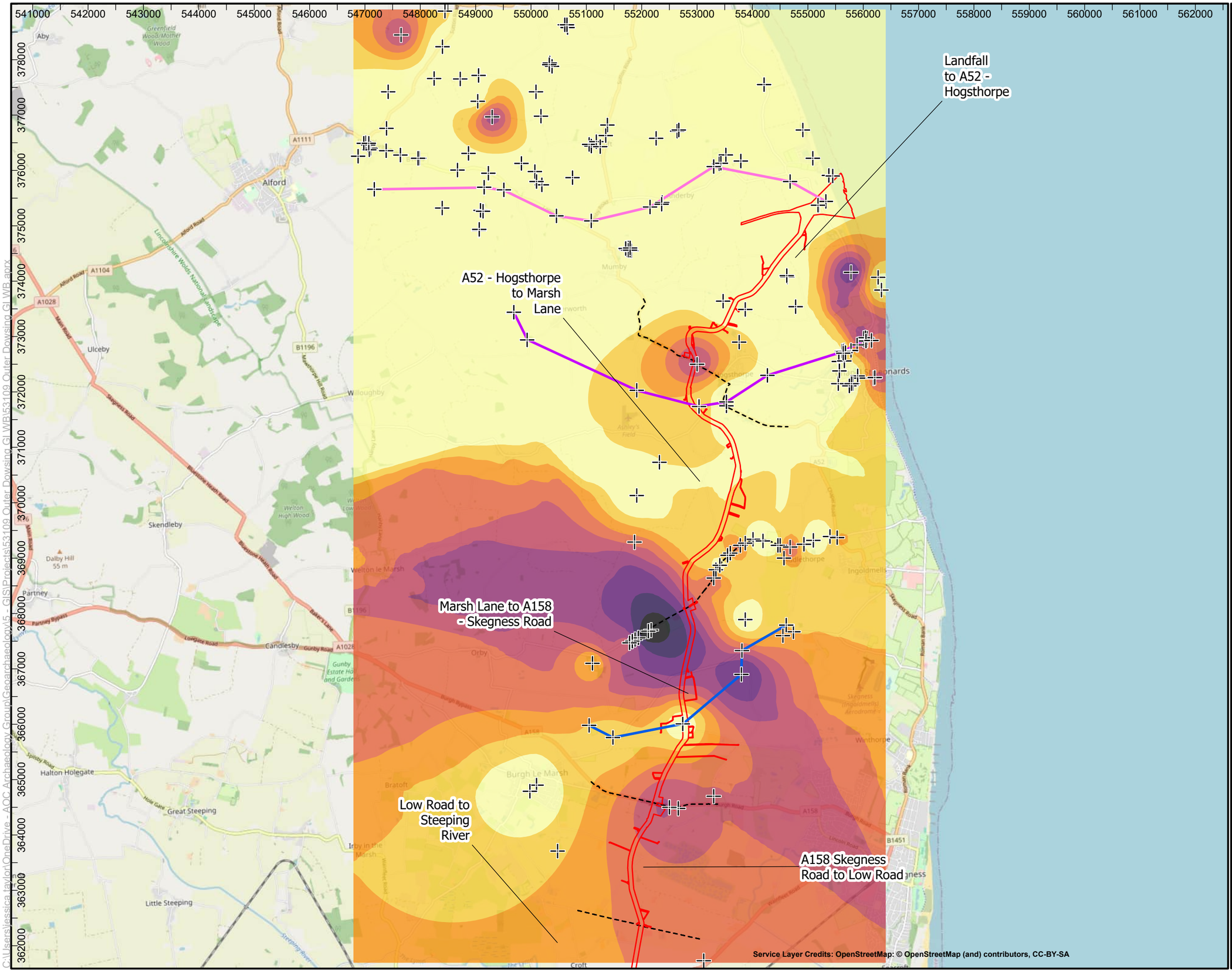

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Figure	23

Thickness plot of the below ground Holocene organic deposits (extrapolated from deposit records), representing deposit survival - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

Organic Thickness - Area 1

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000

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London
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Drawn/checked:	JT/NH
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AOC Project No.:	53109

AOC Archaeology Group

N

SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 — 3,000m

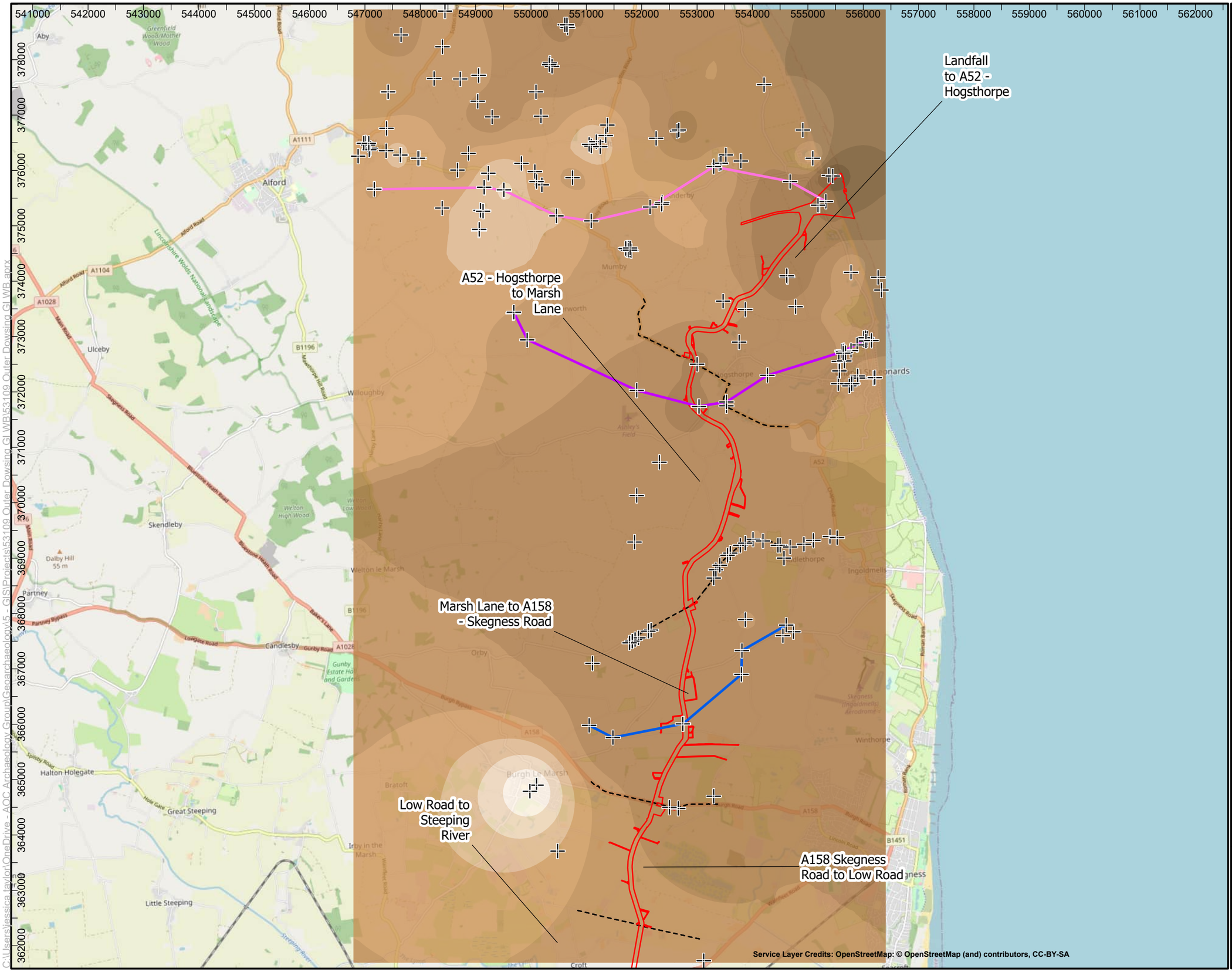

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Figure	24

Topographic plot of the surface of the below ground Holocene organic deposits (Extrapolated from deposit records) - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

Organic Surface - Area 1

m OD

- 10.000001 - 12.000000
- 8.000001 - 10.000000
- 6.000001 - 8.000000
- 4.000001 - 6.000000
- 2.000001 - 4.000000
- 0.000001 - 2.000000
- -1.999999 - 0.000000
- -3.999999 - -2.000000
- -5.999999 - -4.000000
- -6.000000

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London
WC24 1EN

Drawn/checked:	JT/NH
DWG no / Date:	27/02/24
AOC Project No.:	53109

AOC Archaeology Group

N

SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 — 3,000m

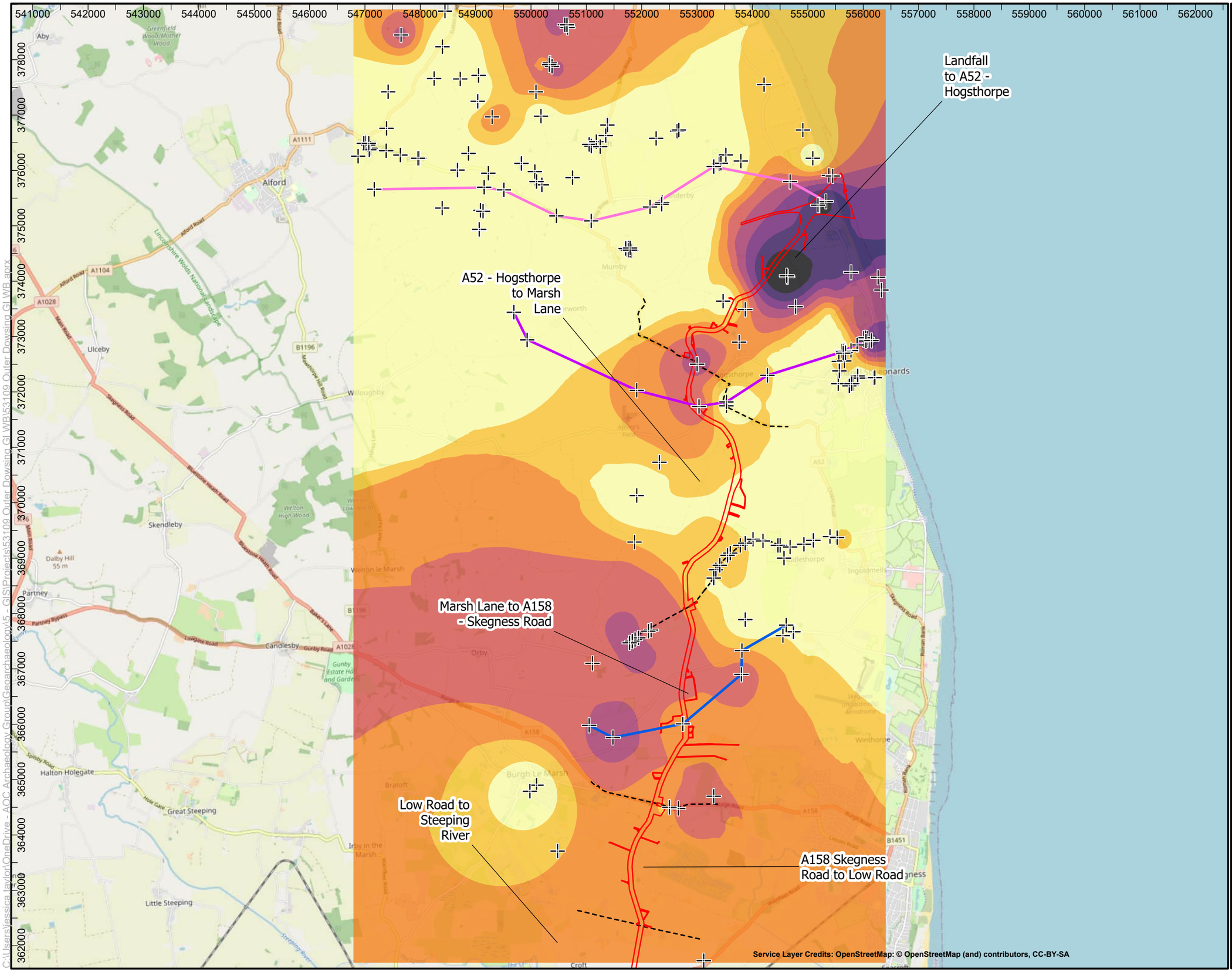

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Figure	25

Thickness plot of the below ground Holocene tidal mudflats (2) deposits (extrapolated from deposit records), representing deposit survival - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

Tidal Mudflats 2 - Area 1

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000

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WC24 1EN

Drawn/checked:	JT/NH
DWG no / Date:	27/02/24
AOC Project No.:	53109

AOC Archaeology Group

N

SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 — 3,000m

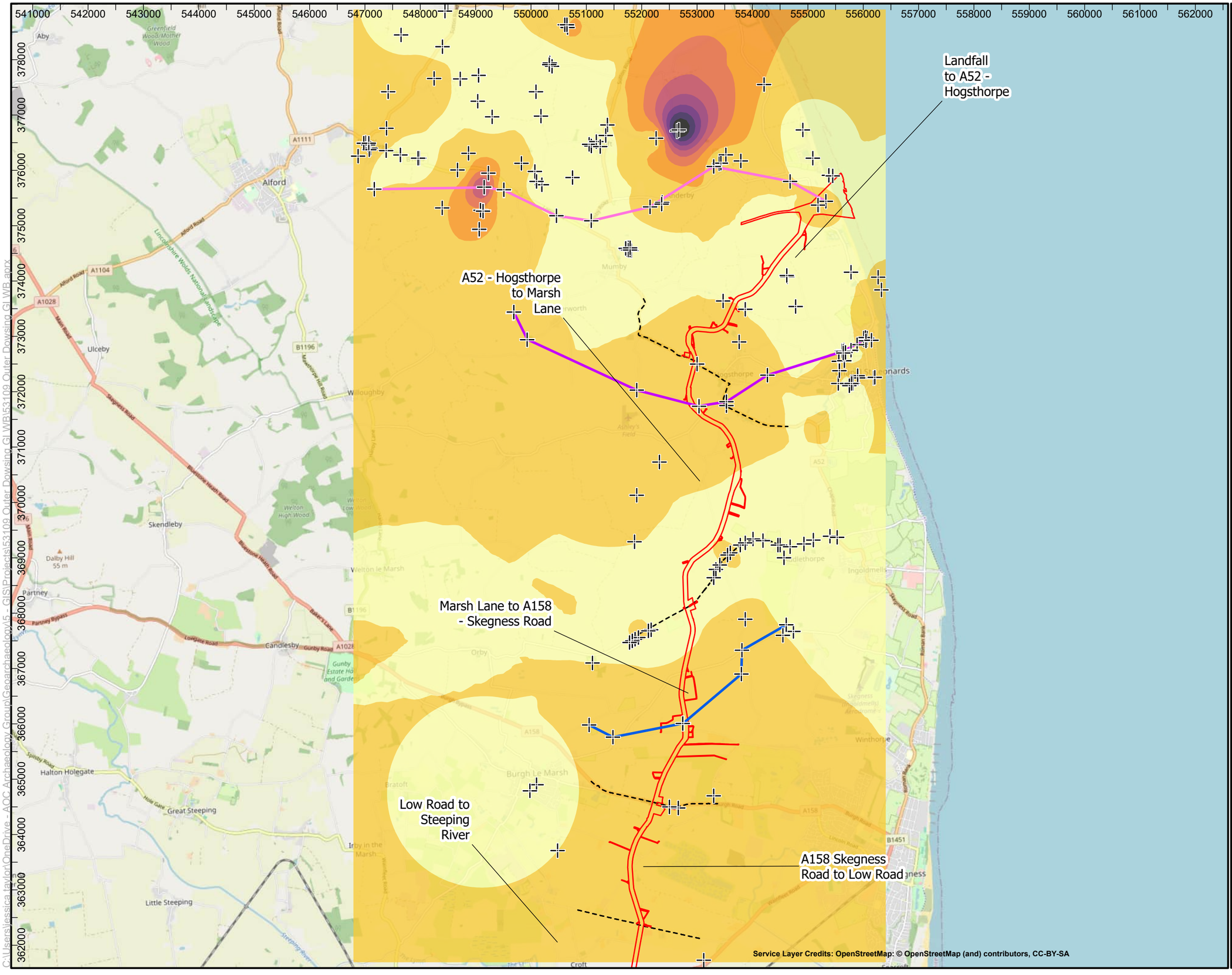

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Figure	26

Thickness plot of the topsoil and modern to Victorian made ground deposits (extrapolated from deposit records) - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits

Topsoil / Made Ground Thickness - Area 1

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000

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SYSTEM

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Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 3,000m

Figure	27

Topographic plot of the surface of the below ground solid bedrock geology (extrapolated from deposit records) - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Bedrock Surface - Area 2

m OD

- 2.500001 - 5.000000
- 0.000001 - 2.500000
- -2.499999 - 0.000000
- -4.999999 - -2.500000
- -7.499999 - -5.000000
- -9.999999 - -7.500000
- -12.499999 - -10.000000
- -14.999999 - -12.500000
- -17.499999 - -15.000000
- -18.500000 - -17.500000

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SCALE

1:80,000 @ A3

0 3,000m

Steeping River to Fodder Dike Bank

A158 Skegness Road to Low Road

Fodder Dike Bank to Broadgate

Low Road to Steeping River

Broadgate to Ings Drove

Ings Drove to Church End Lane

Church End Lane to The Haven

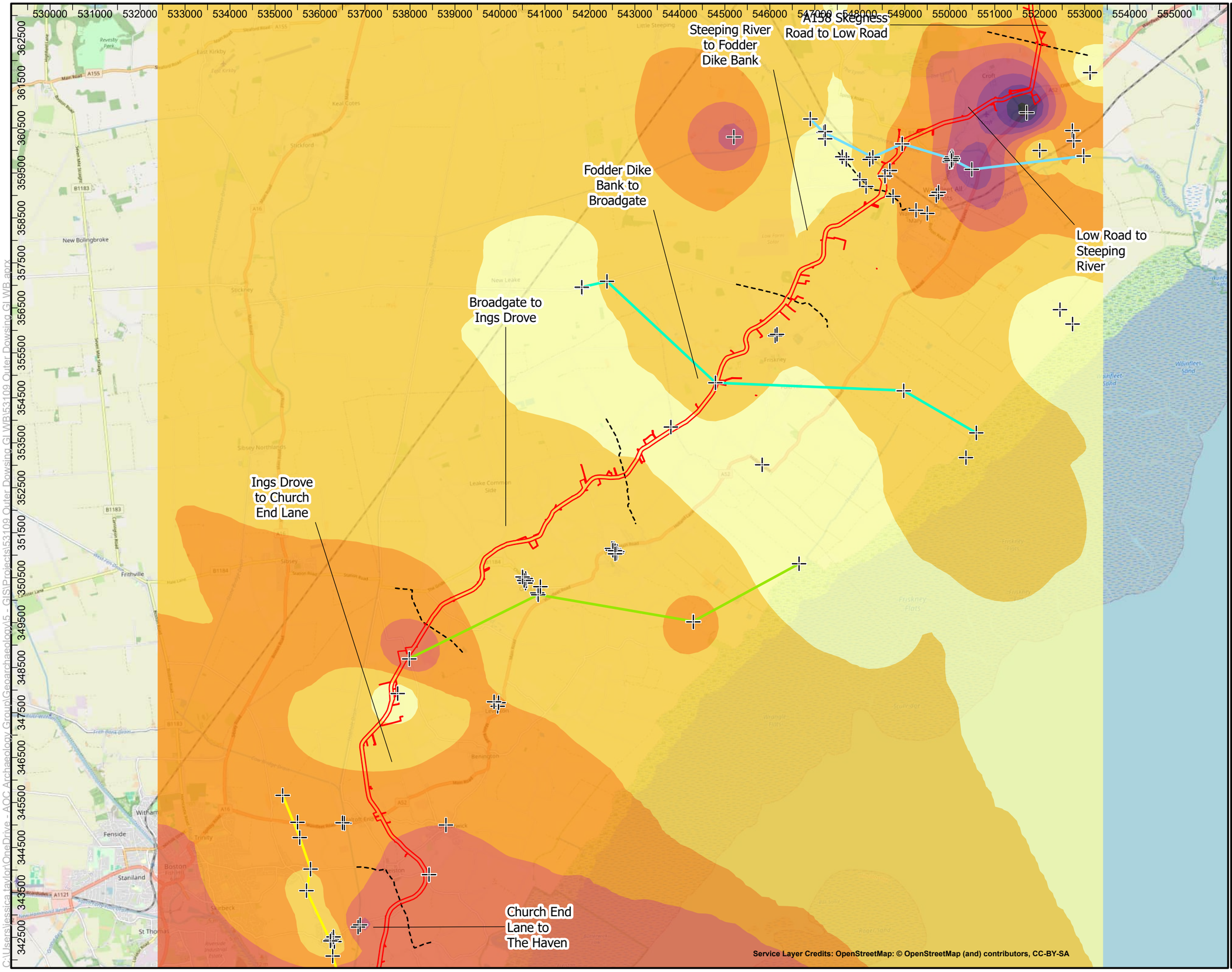

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Figure	28

Thickness plot of the below ground till (extrapolated from deposit records), representing deposit survival- Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Till Thickness - Area 2

m

- 0.000000 - 2.000000
- 2.000001 - 4.000000
- 4.000001 - 6.000000
- 6.000001 - 8.000000
- 8.000001 - 10.000000
- 10.000001 - 12.000000
- 12.000001 - 14.000000
- 14.000001 - 16.000000
- 16.000001 - 18.000000

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Datum: OSGB 1936

SCALE

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0 3,000m

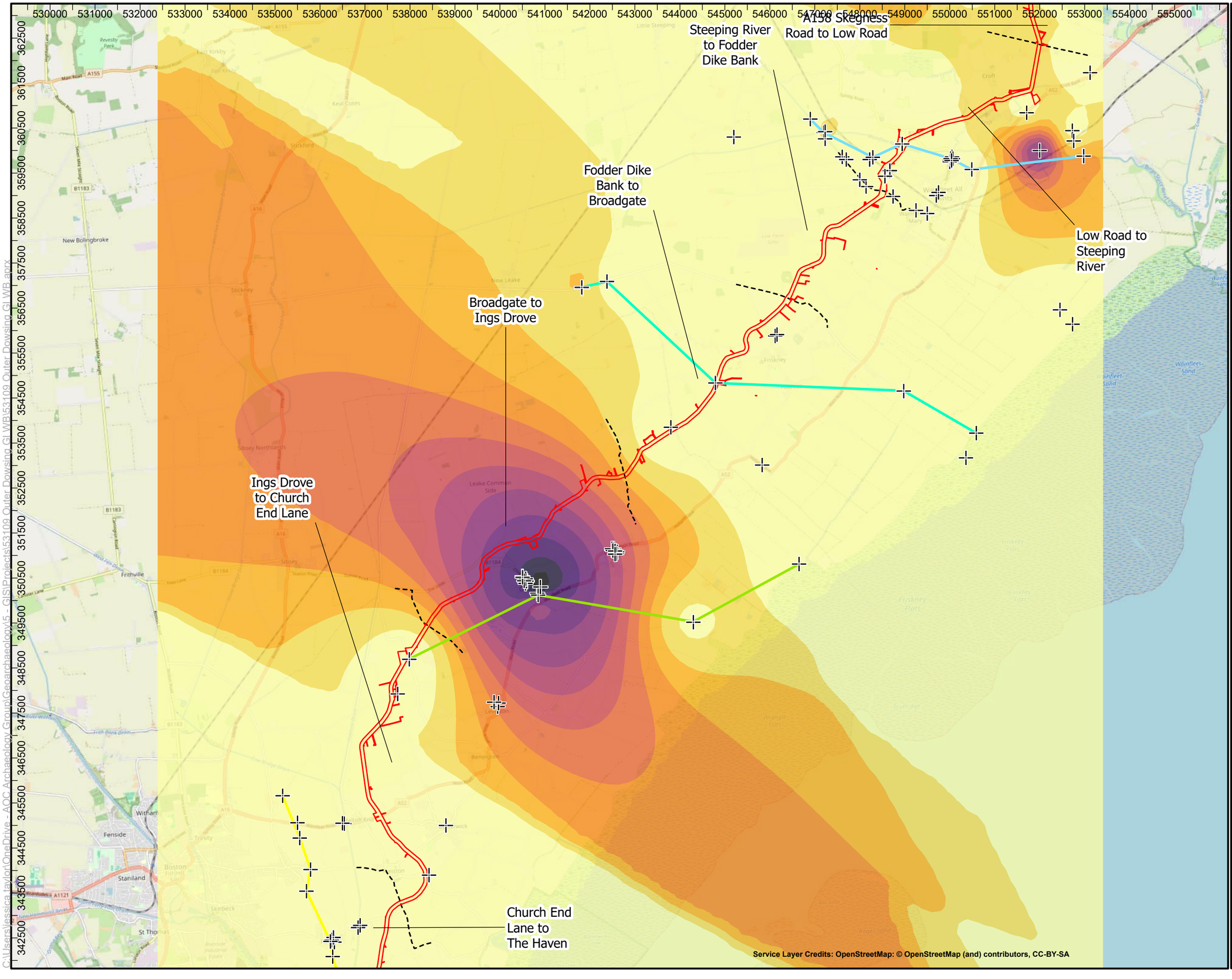

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Figure	29

Thickness plot of the below ground glaciofluvial deposits (extrapolated from deposit records), representing deposit survival- Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Glaciofluvial Thickness - Area 2

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000
- 4.500001 - 5.000000
- 5.000001 - 5.500000
- 5.500001 - 6.000000

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SYSTEM

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SCALE

1:80,000 @ A3

0 3,000m

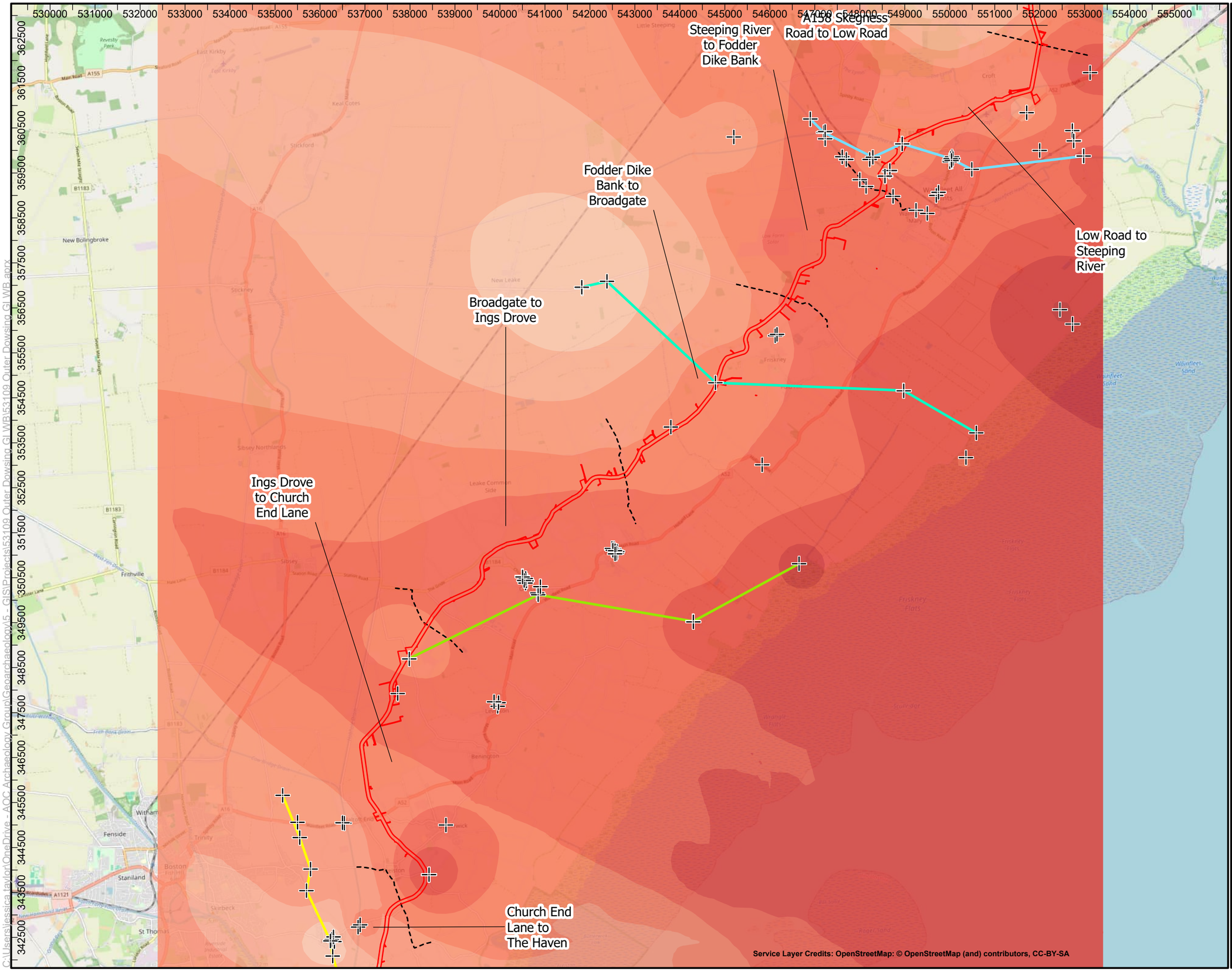

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Figure	30

Topographic plot of the surface of the below ground solid (Pleistocene or earlier) geology (extrapolated from deposit records), suggesting the form of the ancient land surface at c. 10,000 BC - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Pleistocene Surface - Area 2

m OD

- 10.000001 - 12.500000
- 7.500001 - 10.000000
- 5.000001 - 7.500000
- 2.500001 - 5.000000
- 0.000001 - 2.500000
- -2.499999 - 0.000000
- -4.999999 - -2.500000
- -7.499999 - -5.000000
- -9.999999 - -7.500000
- -12.499999 - -10.000000
- -14.999999 - -12.500000
- -17.499999 - -15.000000
- -18.500000 - -17.500000

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SCALE

1:80,000 @ A3

0 3,000m

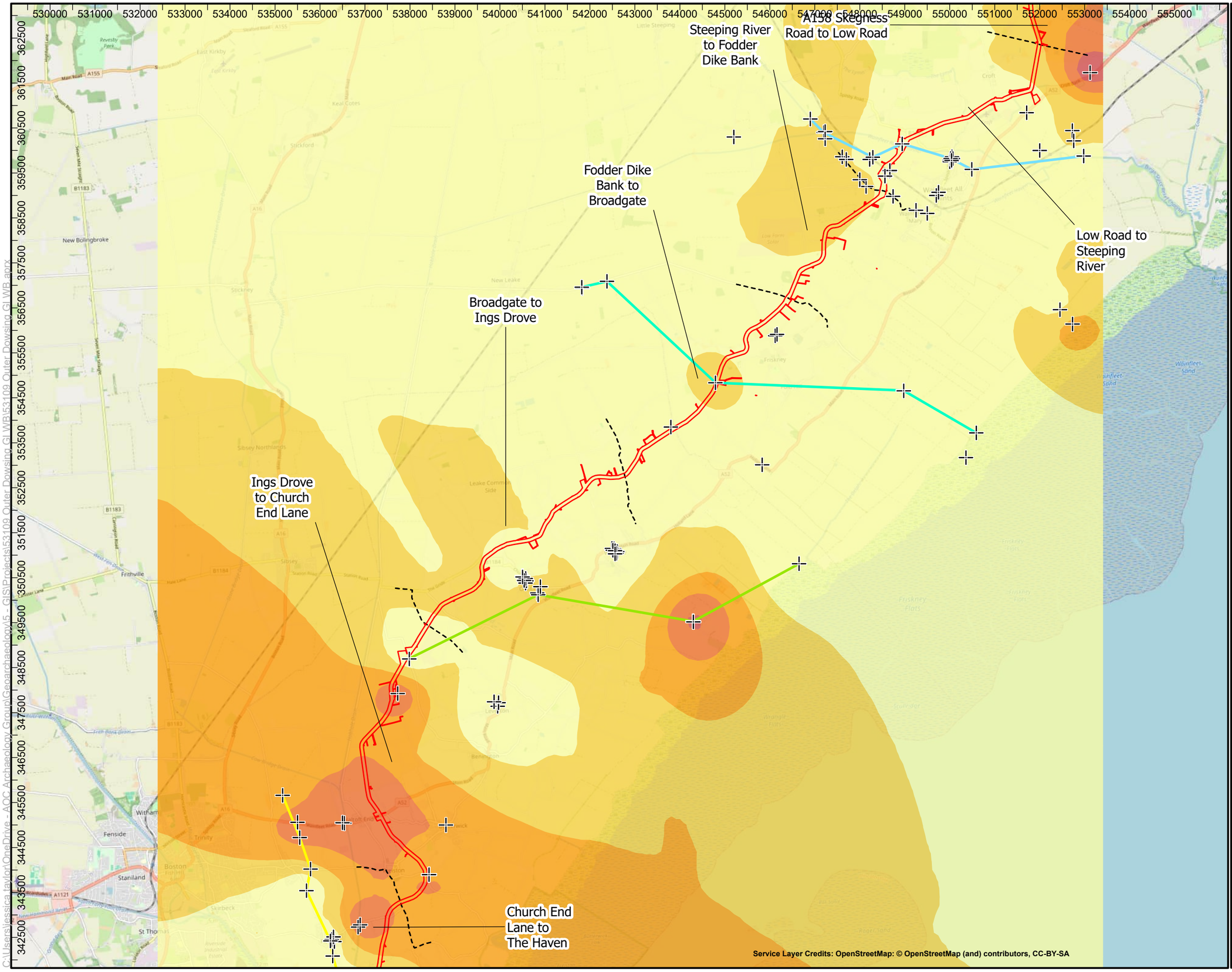

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Figure	31

Thickness plot of the below ground Holocene tidal mudflats (1) deposits (extrapolated from deposit records), representing deposit survival - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Tidal Mudflats 1 Thickness - Area 2

m

- 0.000000 - 2.500000
- 2.500001 - 5.000000
- 5.000001 - 7.500000
- 7.500001 - 10.000000
- 10.000001 - 12.500000
- 12.500001 - 15.000000
- 15.000001 - 17.500000
- 17.500001 - 20.000000
- 20.000001 - 22.500000
- 22.500001 - 25.000000

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SCALE

1:80,000 @ A3

0 3,000m

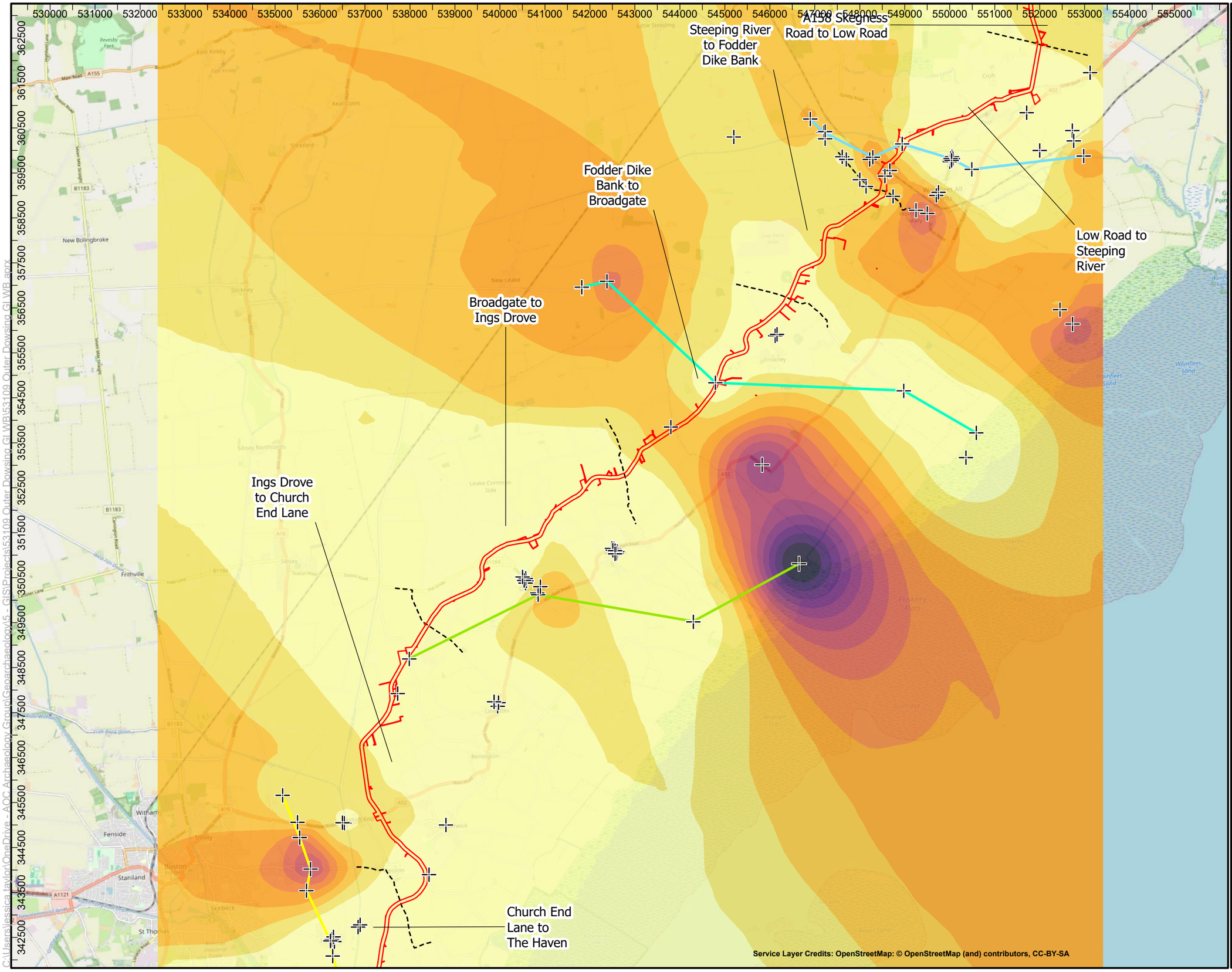

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Figure	32

Thickness plot of the below ground Holocene organic deposits (extrapolated from deposit records), representing deposit survival - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Organic Thickness - Area 2

m

- 0.000000 - 1.000000
- 1.000001 - 2.000000
- 2.000001 - 3.000000
- 3.000001 - 4.000000
- 4.000001 - 5.000000
- 5.000001 - 6.000000
- 6.000001 - 7.000000
- 7.000001 - 8.000000
- 8.000001 - 9.000000
- 9.000001 - 10.000000
- 10.000001 - 11.000000
- 11.000001 - 12.000000
- 12.000001 - 13.000000
- 13.000001 - 14.000000

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SCALE

1:80,000 @ A3

0 3,000m

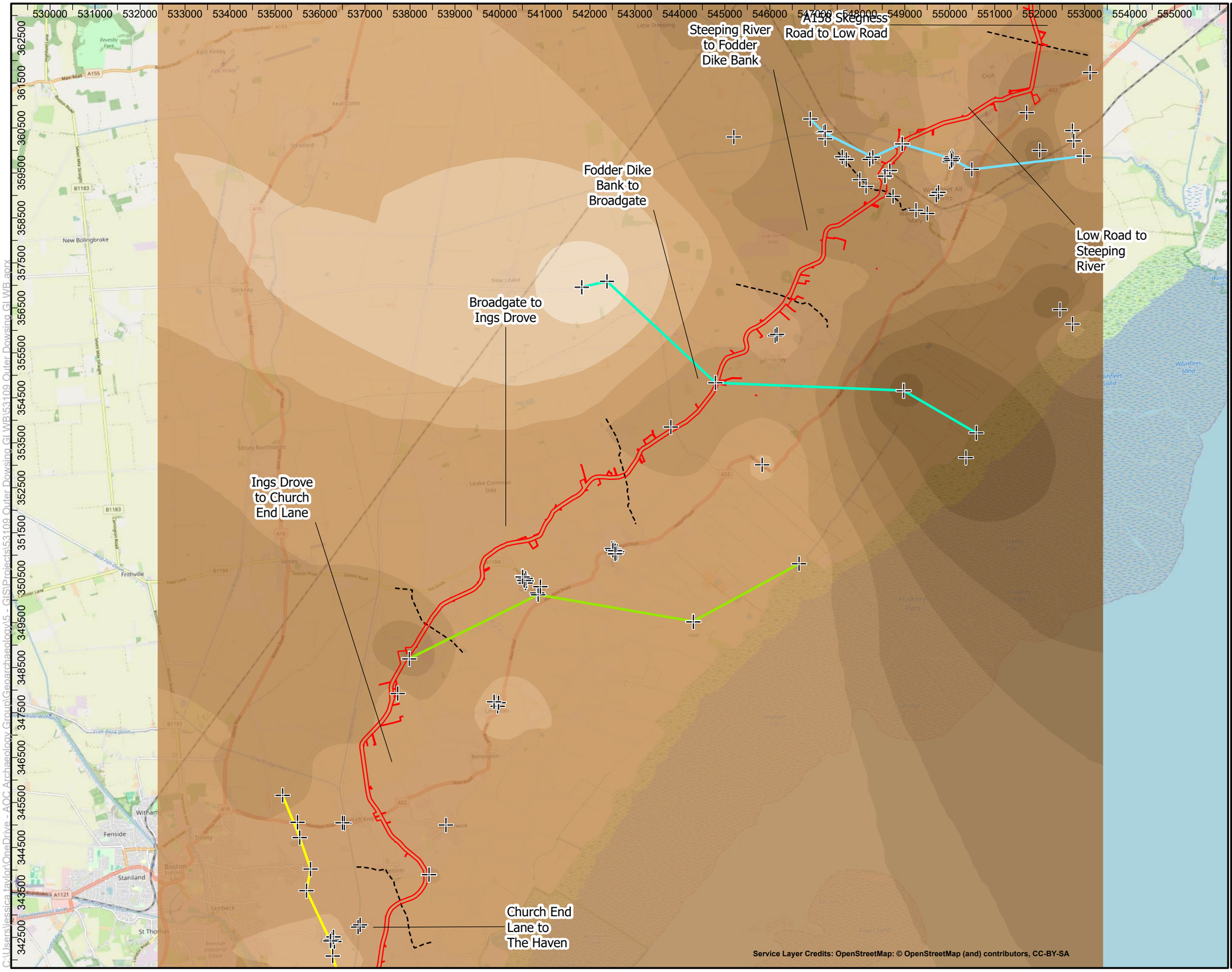

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Figure	33

Topographic plot of the surface of the below ground Holocene organic deposits (extrapolated from deposit records) - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Organic Surface - Area 2

m OD

- 10.000001 - 12.000000
- 8.000001 - 10.000000
- 6.000001 - 8.000000
- 4.000001 - 6.000000
- 2.000001 - 4.000000
- 0.000001 - 2.000000
- -1.999999 - 0.000000
- -3.999999 - -2.000000
- -5.999999 - -4.000000
- -7.999999 - -6.000000
- -8.500000 - -8.000000

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SCALE

1:80,000 @ A3

0 3,000m

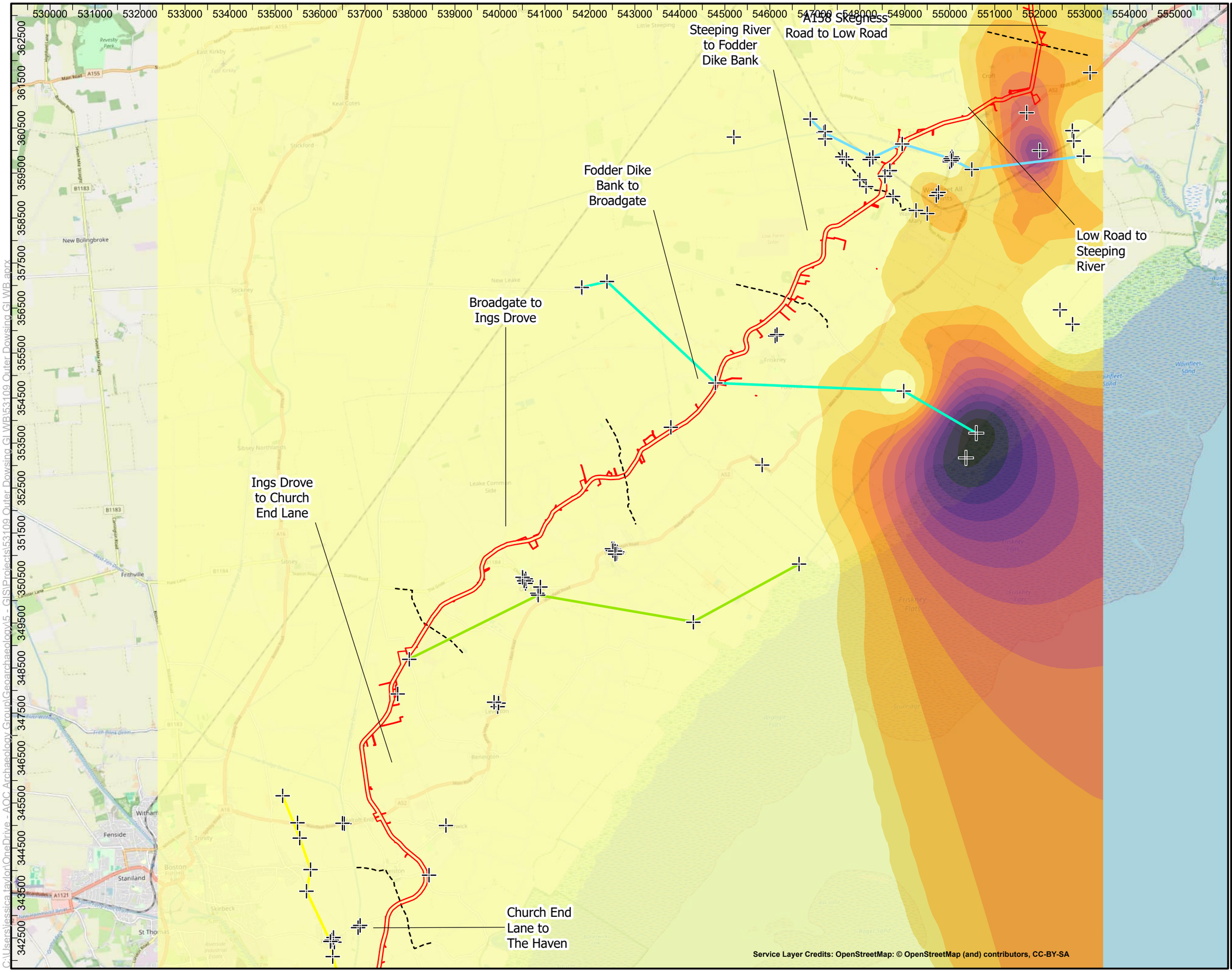

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Figure	34

Thickness plot of the below ground storm beach deposits (extrapolated from deposit records), representing deposit survival - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Storm Beach Thickness - Area 2

m

- 0.000000 - 1.000000
- 1.000001 - 2.000000
- 2.000001 - 3.000000
- 3.000001 - 4.000000
- 4.000001 - 5.000000
- 5.000001 - 6.000000
- 6.000001 - 7.000000
- 7.000001 - 8.000000
- 8.000001 - 9.000000
- 9.000001 - 10.000000
- 10.000001 - 11.000000
- 11.000001 - 12.000000
- 12.000001 - 13.000000

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Datum: OSGB 1936

SCALE

1:80,000 @ A3

0 3,000m

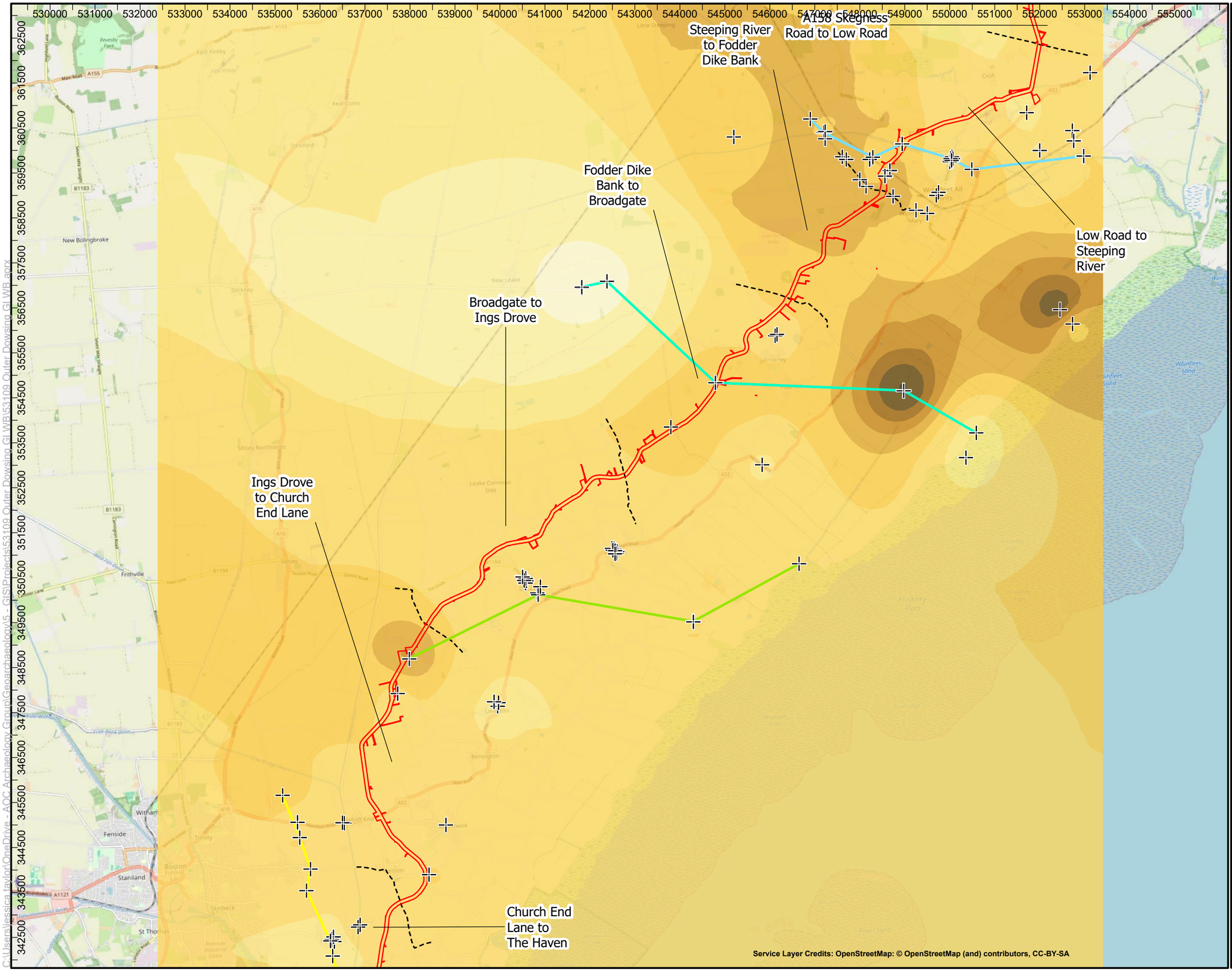

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Figure	35

Topographic plot of the surface of the below ground storm beach deposits (extrapolated from deposit records) - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Storm Beach Surface - Area 2

m OD

- -8.000000
- -7.999999 - -6.000000
- -5.999999 - -4.000000
- -3.999999 - -2.000000
- -1.999999 - 0.000000
- 0.000001 - 2.000000
- 2.000001 - 4.000000
- 4.000001 - 6.000000
- 6.000001 - 8.000000
- 8.000001 - 10.000000
- 10.000001 - 12.000000

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Datum: OSGB 1936

SCALE

1:80,000 @ A3

0 3,000m

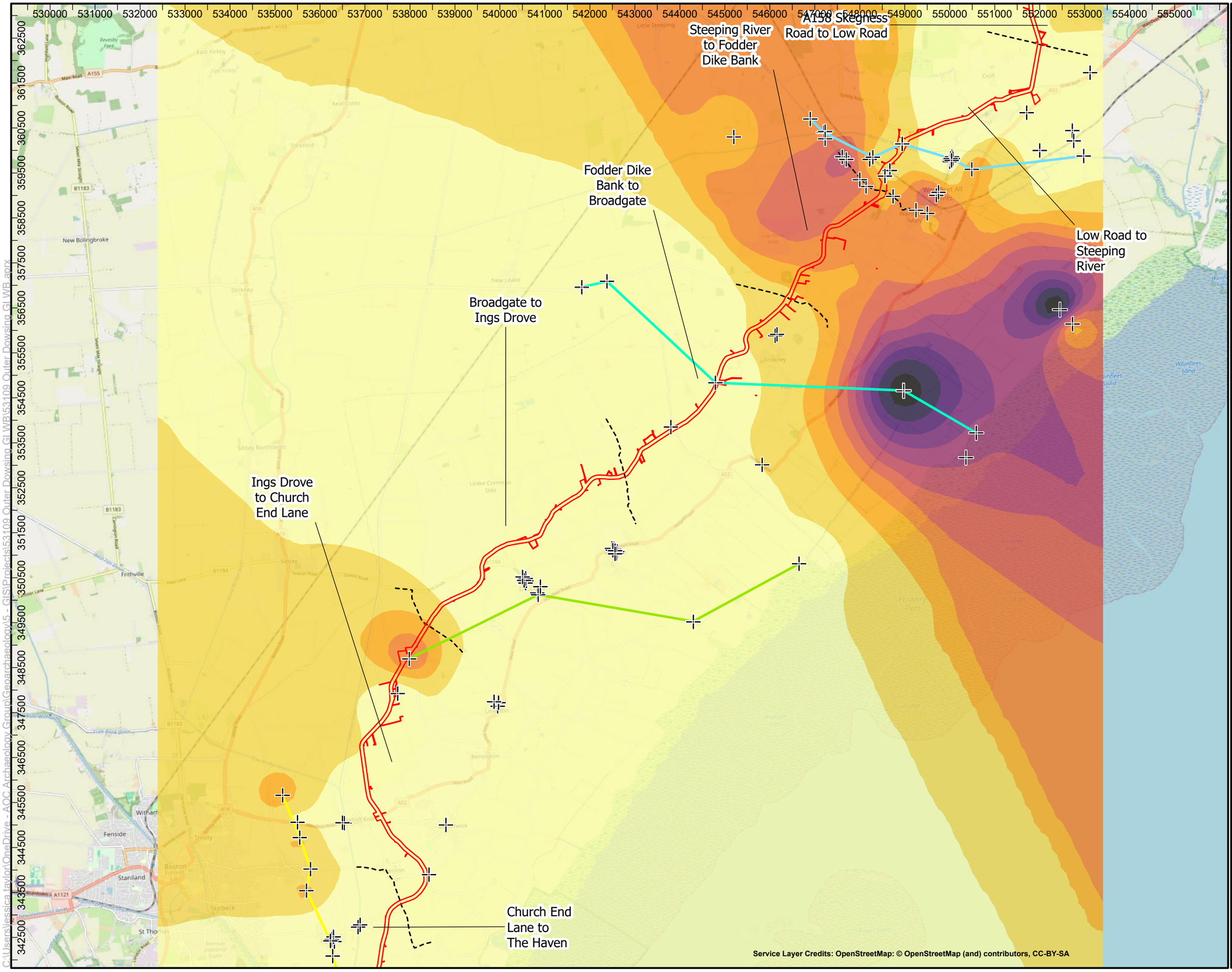

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Figure	36

Thickness plot of the below ground Holocene tidal mudflats (2) deposits (extrapolated from deposit records) representing deposit survival - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Tidal Mudflats 2 Thickness - Area 2

m

- 0.000000 - 1.000000
- 1.000001 - 2.000000
- 2.000001 - 3.000000
- 3.000001 - 4.000000
- 4.000001 - 5.000000
- 5.000001 - 6.000000
- 6.000001 - 7.000000
- 7.000001 - 8.000000
- 8.000001 - 9.000000
- 9.000001 - 10.000000
- 10.000001 - 11.000000

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SCALE

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0 3,000m

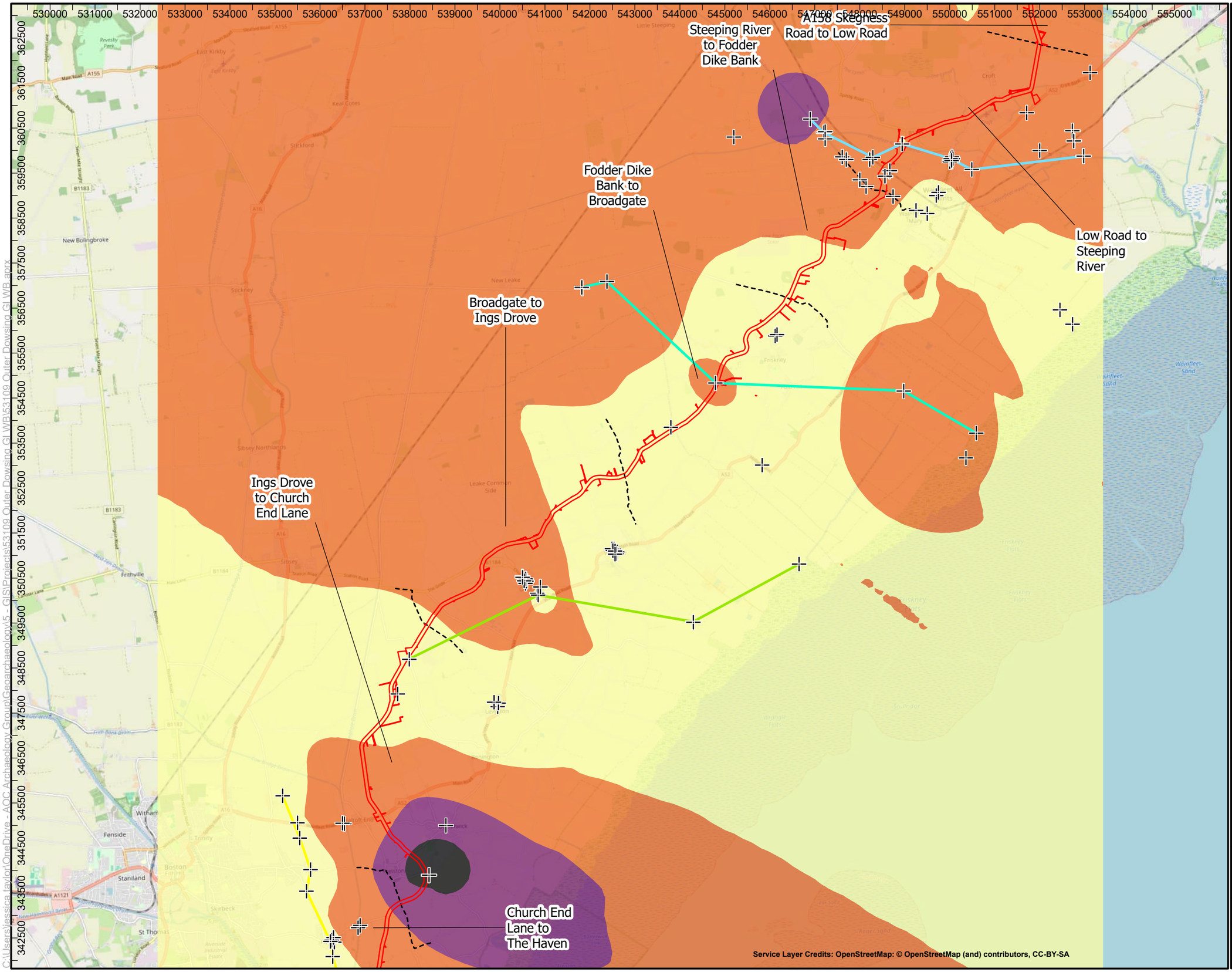

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Figure	37

Thickness plot of the topsoil and modern to Victorian made ground deposits (extrapolated from deposit records) - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Topsoil / Made Ground Thickness - Area 2

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000

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SCALE

1:80,000 @ A3

0 3,000m

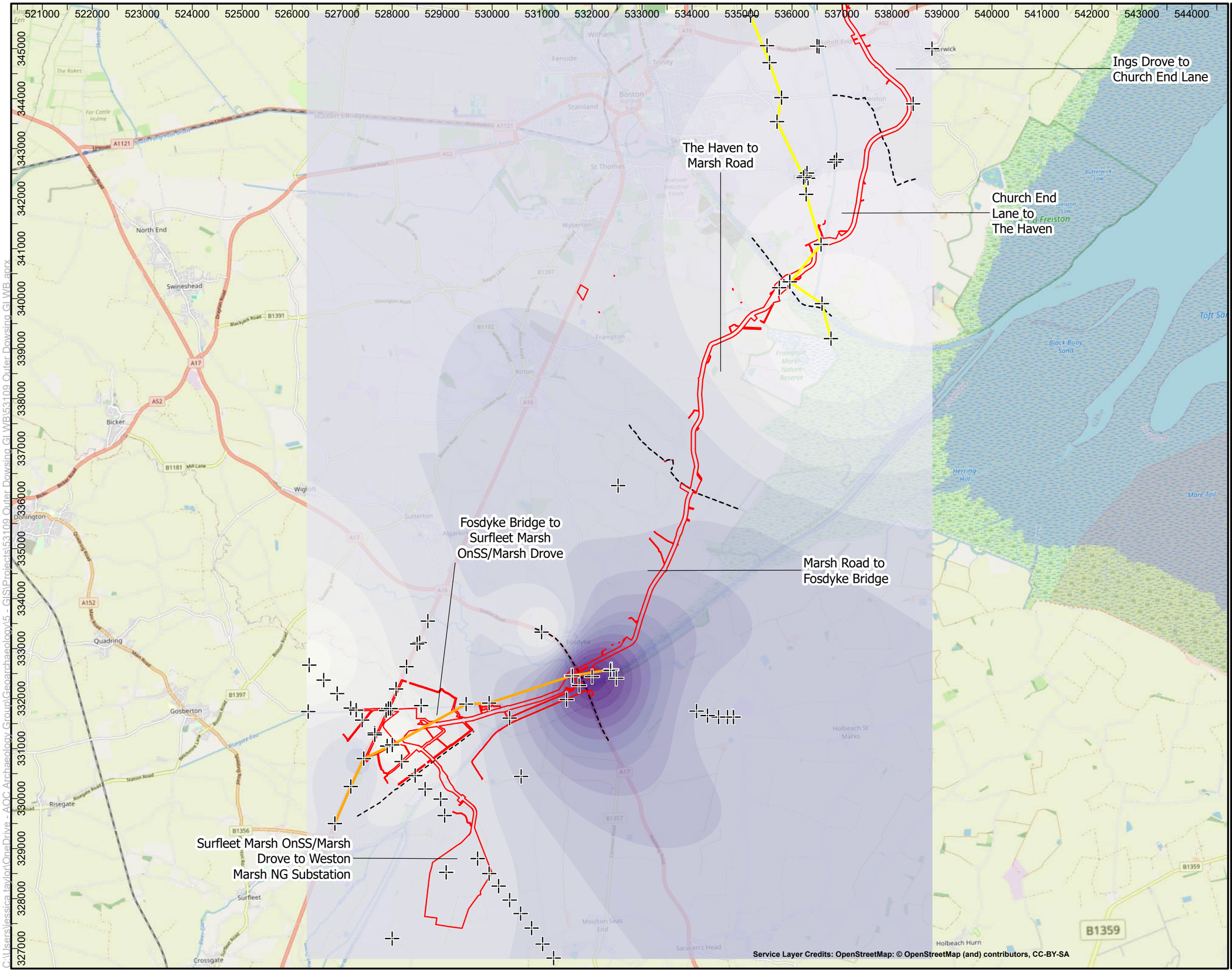

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Figure	38

Topographic plot of the surface of the below ground solid bedrock geology (extrapolated from deposit records) - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Bedrock Surface - Area 3

m OD

- -7.499999 - -5.000000
- -9.999999 - -7.500000
- -12.499999 - -10.000000
- -14.999999 - -12.500000
- -17.499999 - -15.000000
- -19.999999 - -17.500000
- -22.499999 - -20.000000
- -24.999999 - -22.500000
- -27.499999 - -25.000000
- -29.999999 - -27.500000
- -32.499999 - -30.000000
- -34.999999 - -32.500000
- -37.499999 - -35.000000
- -39.999999 - -37.500000
- -42.499999 - -40.000000
- -44.999999 - -42.500000
- -47.000000 - -45.000000

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SCALE

1:72,000 @ A3

0 3,000m

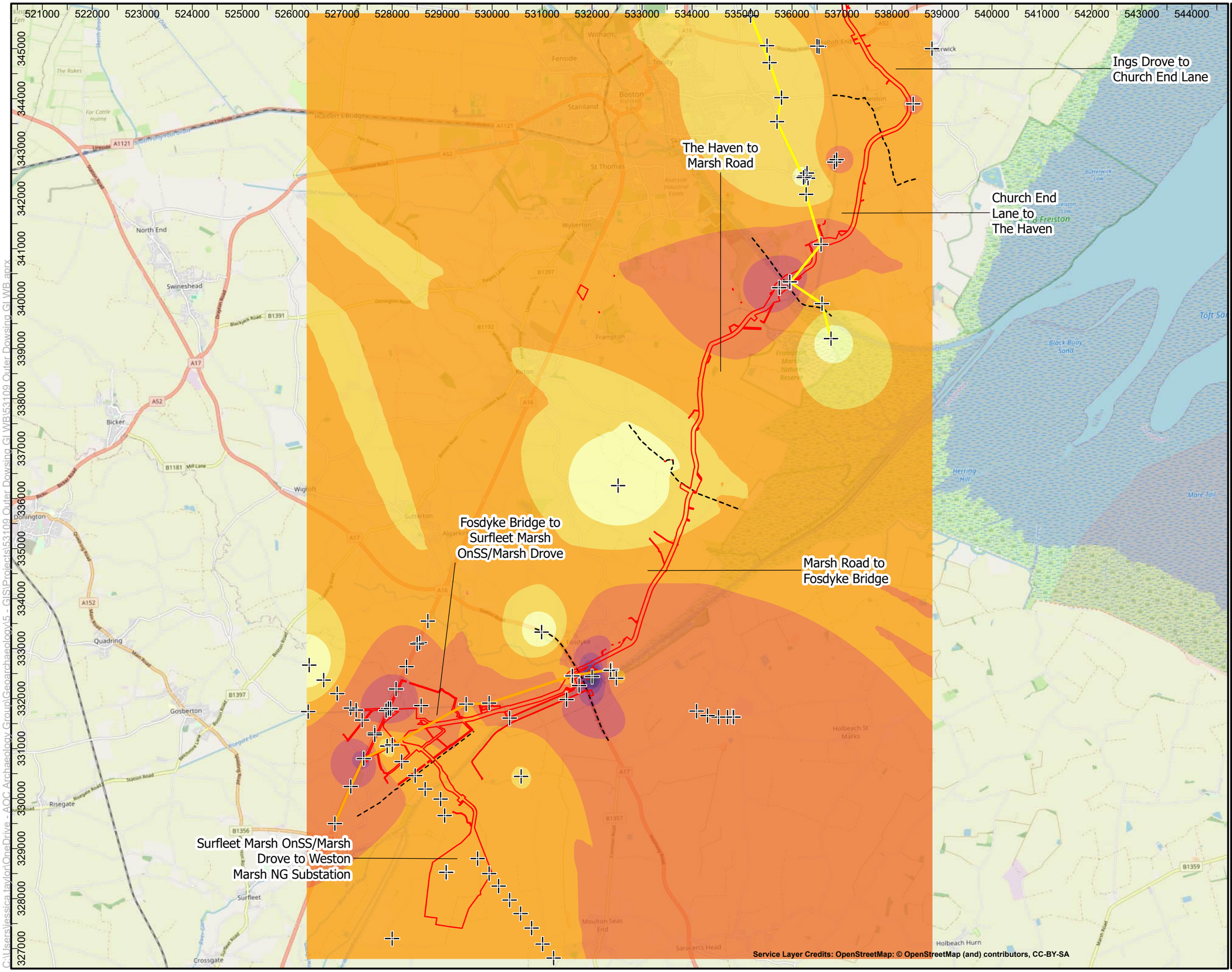

Figure	39

Thickness plot of the below ground till (extrapolated from deposit records), representing deposit survival- Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Till Thickness - Area 3

m

- 0.000000 - 2.500000
- 2.500001 - 5.000000
- 5.000001 - 7.500000
- 7.500001 - 10.000000
- 10.000001 - 12.500000
- 12.500001 - 15.000000
- 15.000001 - 17.500000
- 17.500001 - 20.000000
- 20.000001 - 22.500000
- 22.500001 - 25.000000

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SCALE

1:72,000 @ A3

0 3,000m

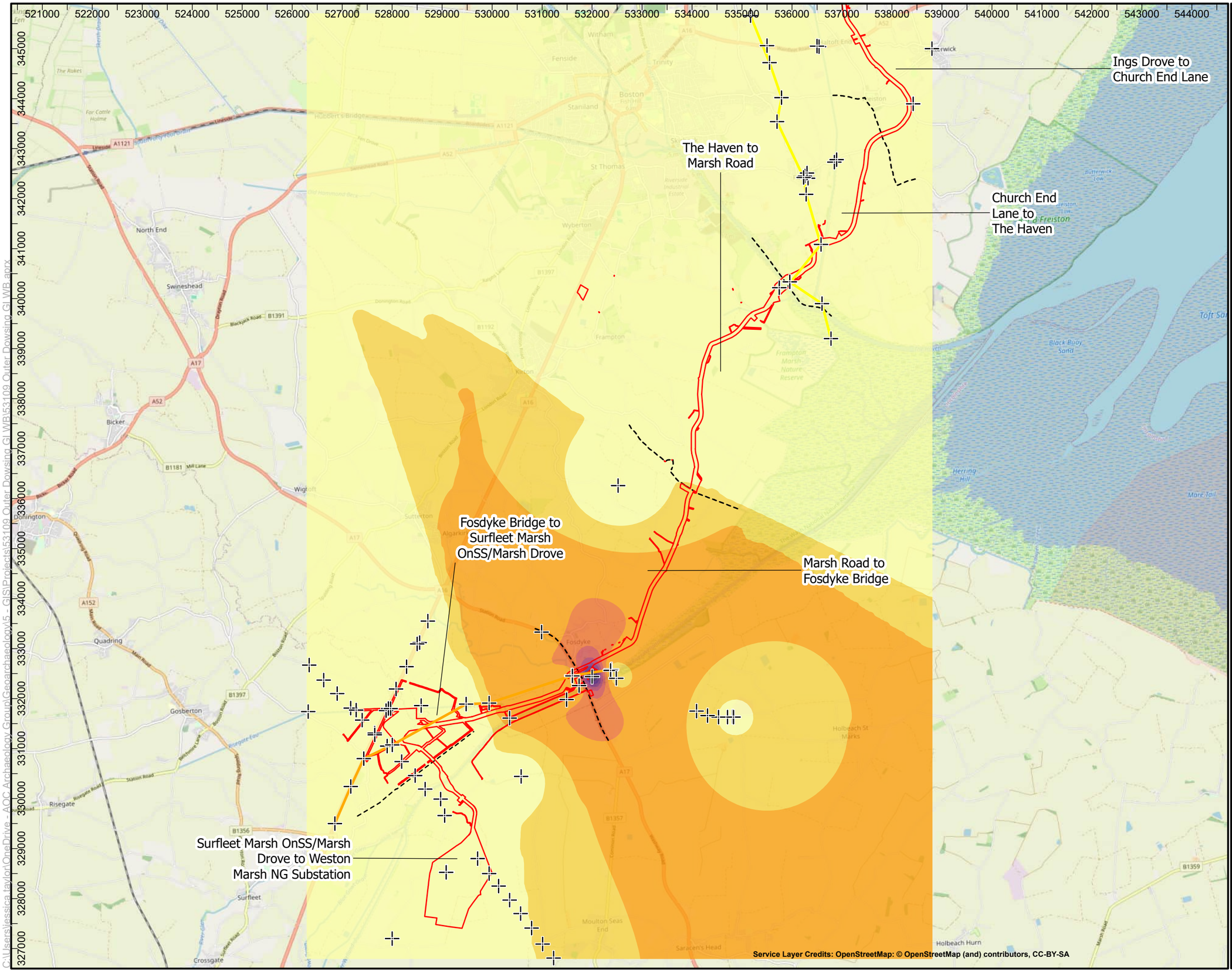

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Figure	40

Thickness plot of the below ground glaciofluvial deposits (extrapolated from deposit records), representing deposit survival- Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Glaciofluvial Thickness - Area 3

m

- 0.000000 - 2.000000
- 2.000001 - 4.000000
- 4.000001 - 6.000000
- 6.000001 - 8.000000
- 8.000001 - 10.000000
- 10.000001 - 12.000000
- 12.000001 - 14.000000
- 14.000001 - 16.000000
- 16.000001 - 18.000000
- 18.000001 - 20.000000

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SCALE

1:72,000 @ A3

0 3,000m

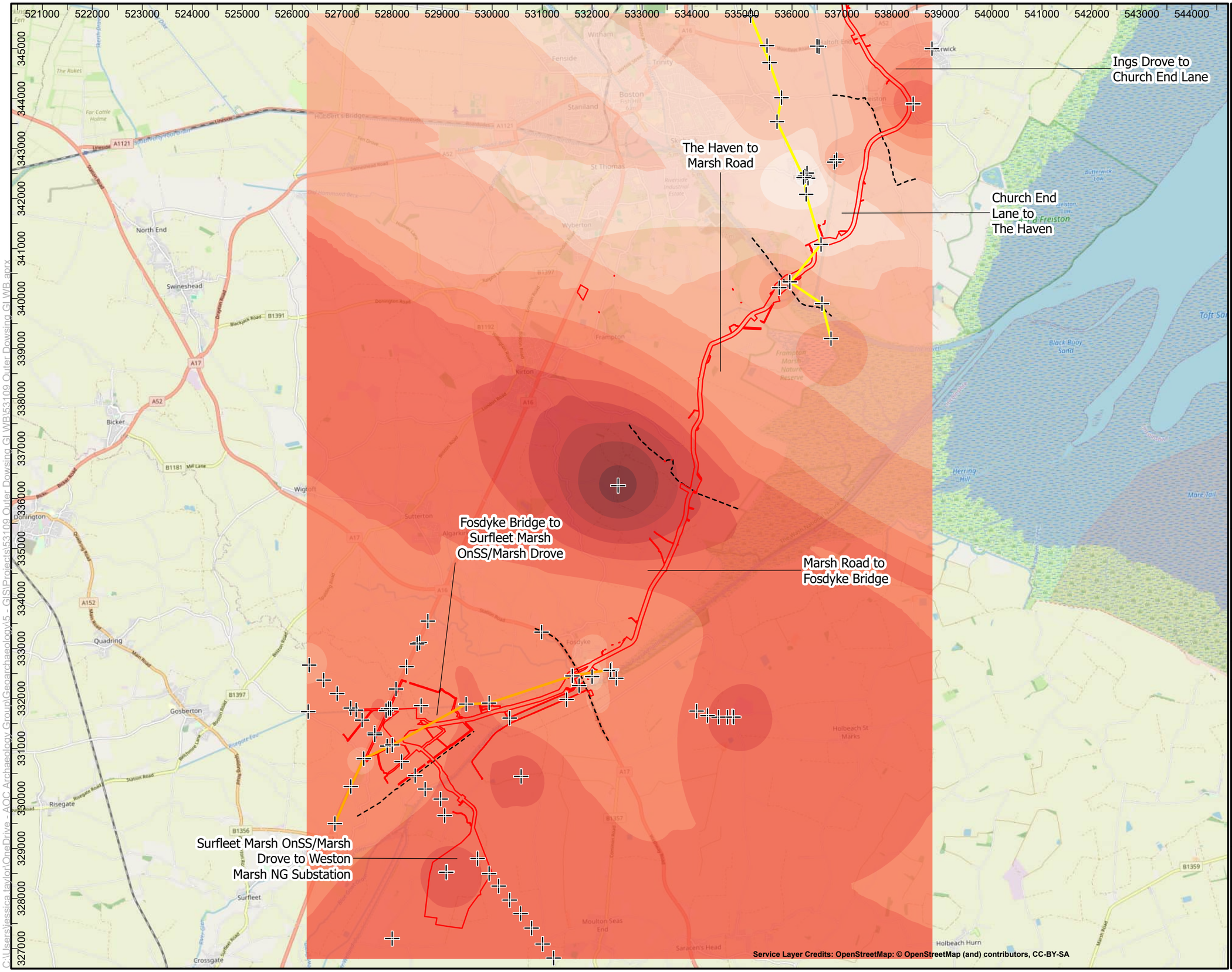

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Figure	41

Topographic plot of the surface of the below ground solid (Pleistocene or earlier) geology (extrapolated from deposit records), suggesting the form of the ancient land surface at c. 10,000 BC - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Pleistocene Surface - Area 3

m OD

- 4.000001 - 6.000000
- 2.000001 - 4.000000
- 0.000001 - 2.000000
- -1.999999 - 0.000000
- -3.999999 - -2.000000
- -5.999999 - -4.000000
- -7.999999 - -6.000000
- -9.999999 - -8.000000
- -11.999999 - -10.000000
- -13.999999 - -12.000000
- -15.999999 - -14.000000
- -17.999999 - -16.000000
- -18.500000 - -18.000000

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Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:72,000 @ A3

0 3,000m

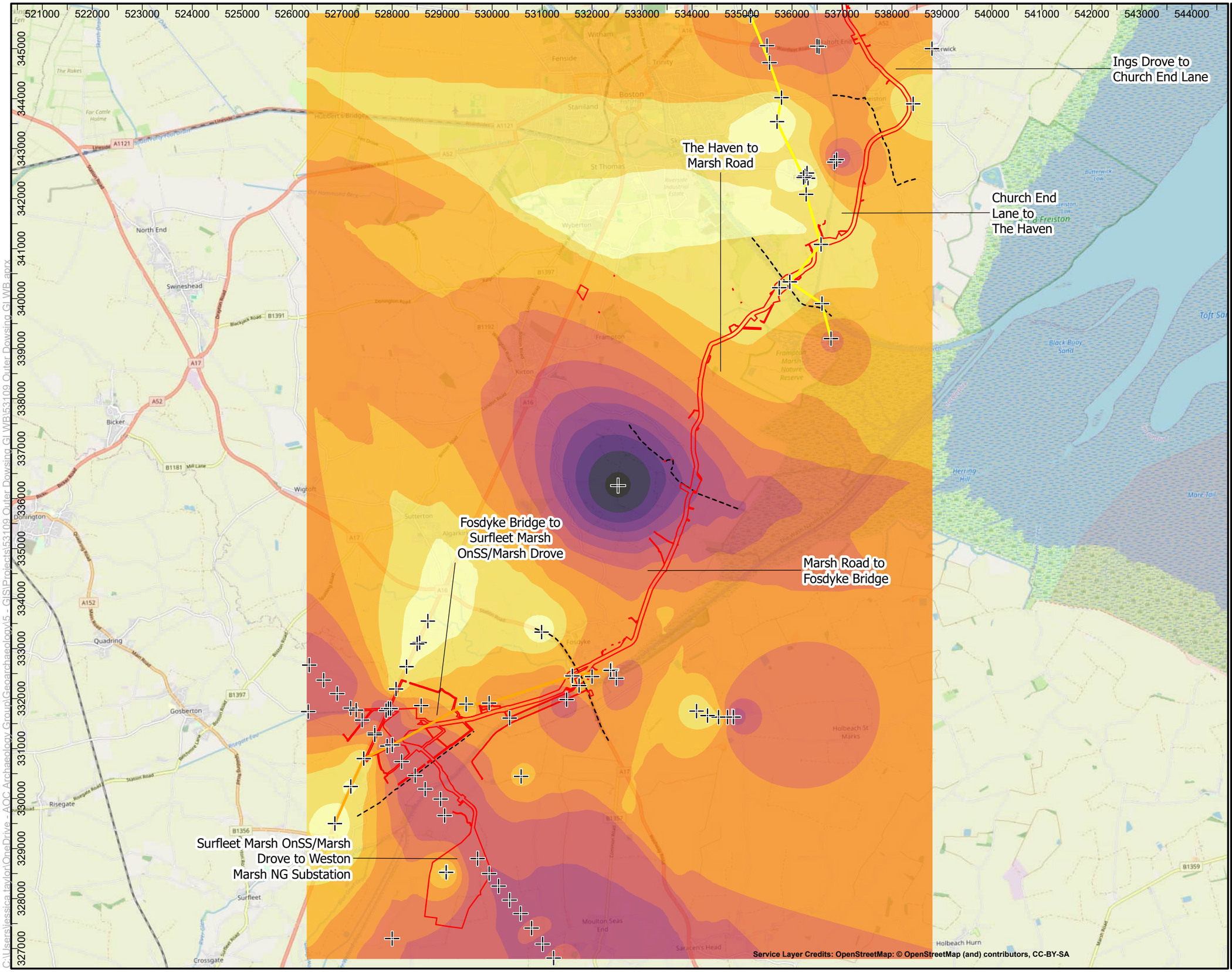

Figure	42

Thickness plot of the below ground Holocene tidal mudflats (1) deposits (extrapolated from deposit records), representing deposit survival - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Tidal Mudflats 1 Thickness - Area 3

m

- 0.000000 - 2.000000
- 2.000001 - 4.000000
- 4.000001 - 6.000000
- 6.000001 - 8.000000
- 8.000001 - 10.000000
- 10.000001 - 12.000000
- 12.000001 - 14.000000
- 14.000001 - 16.000000
- 16.000001 - 18.000000
- 18.000001 - 20.000000
- 20.000001 - 22.000000
- 22.000001 - 24.000000

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Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

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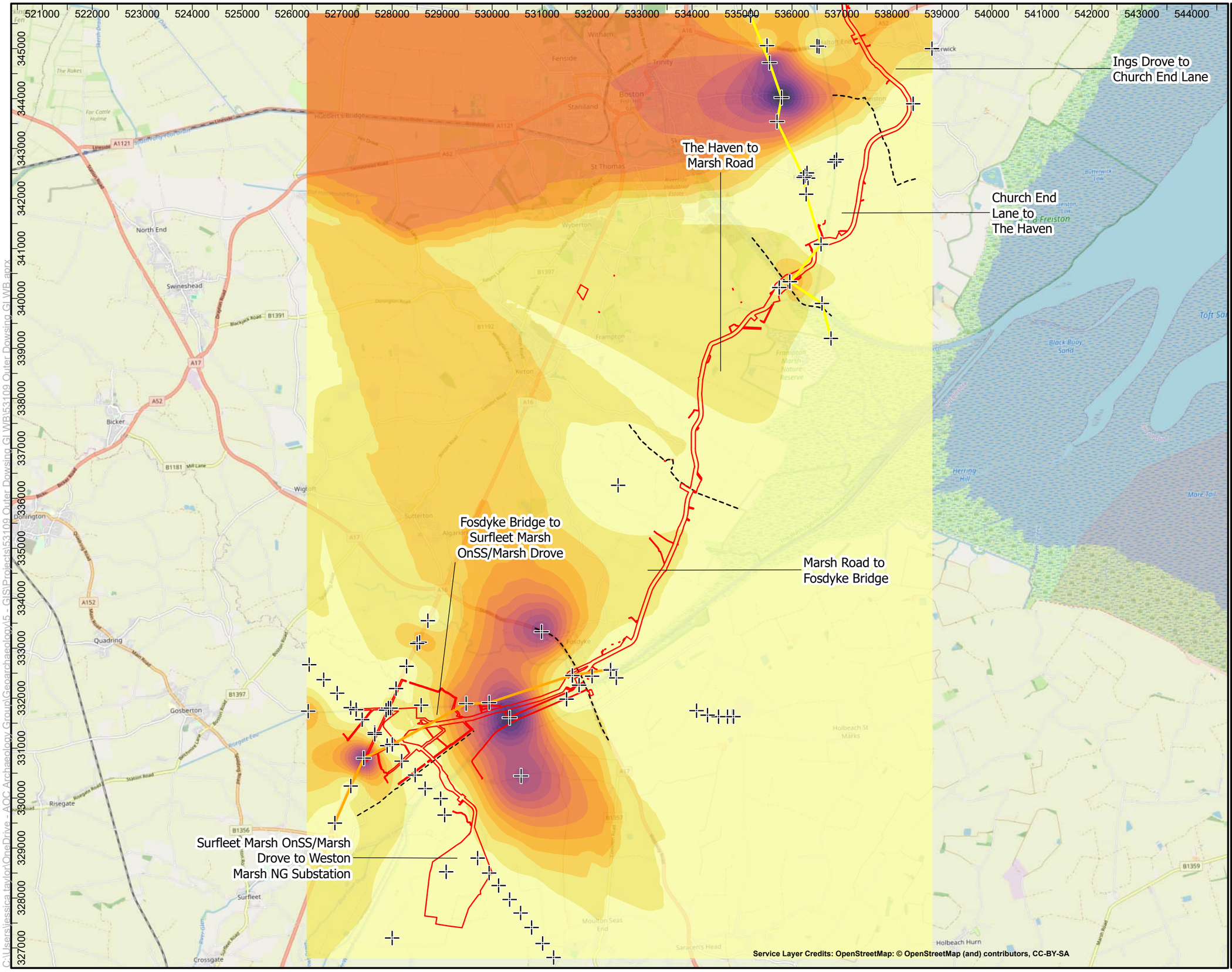

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Figure	43

Thickness plot of the below ground Holocene organic deposits (extrapolated from deposit records), representing deposit survival - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Organic Thickness - Area 3

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000
- 4.500001 - 5.000000
- 5.000001 - 5.500000
- 5.500001 - 6.000000
- 6.000001 - 6.500000
- 6.500001 - 7.000000
- 7.000001 - 7.500000
- 7.500001 - 8.000000
- 8.000001 - 8.500000

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SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:72,000 @ A3

0 3,000m

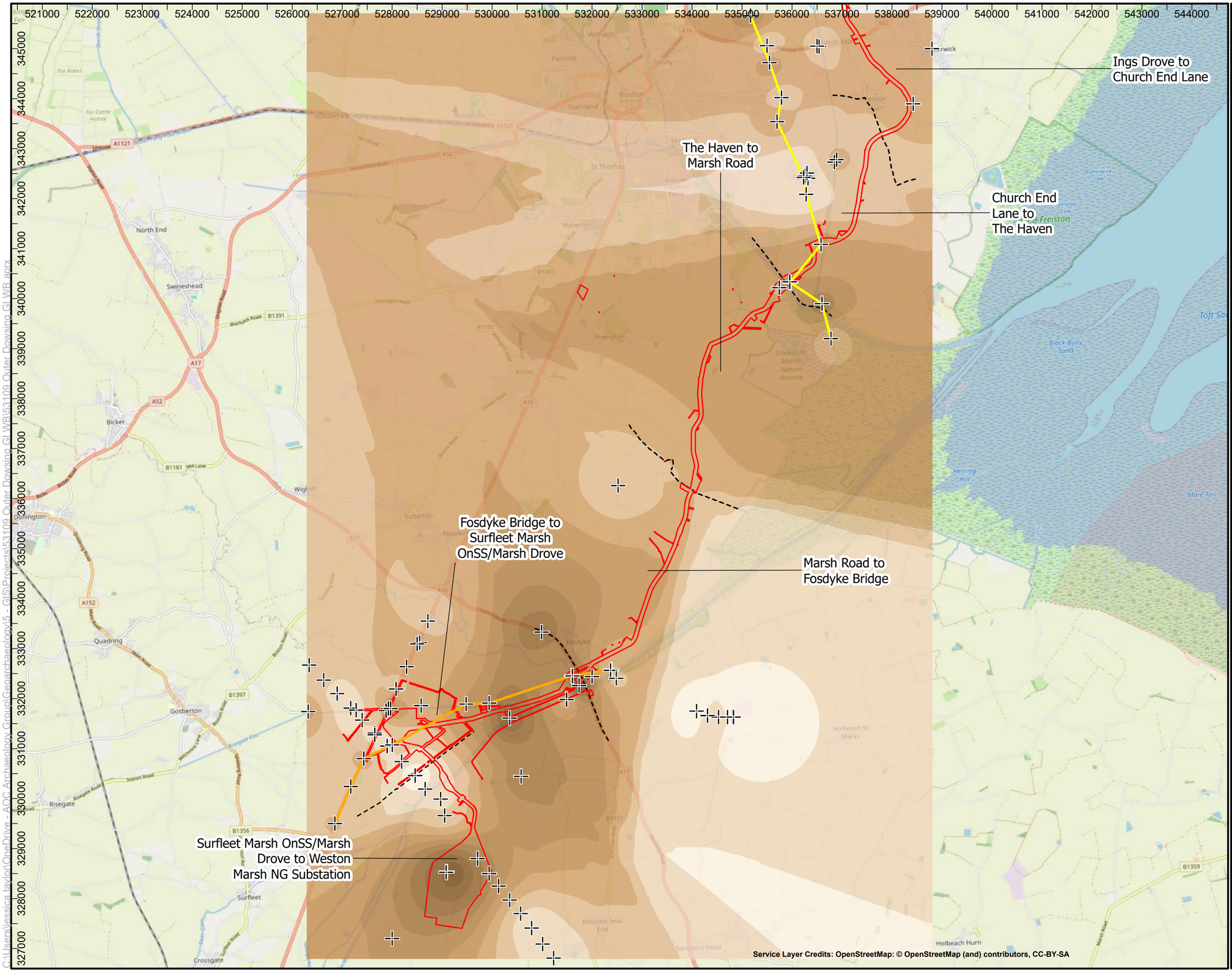

Figure 44

Topographic plot of the surface of the below ground Holocene organic deposits (extrapolated from deposit records) - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Organic Surface - Area 3

m OD

- 5.000001 - 6.000000
- 4.000001 - 5.000000
- 3.000001 - 4.000000
- 2.000001 - 3.000000
- 1.000001 - 2.000000
- 0.000001 - 1.000000
- -0.999999 - 0.000000
- -1.999999 - -1.000000
- -2.999999 - -2.000000
- -3.999999 - -3.000000
- -4.000000

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SCALE

1:72,000 @ A3

0 3,000m

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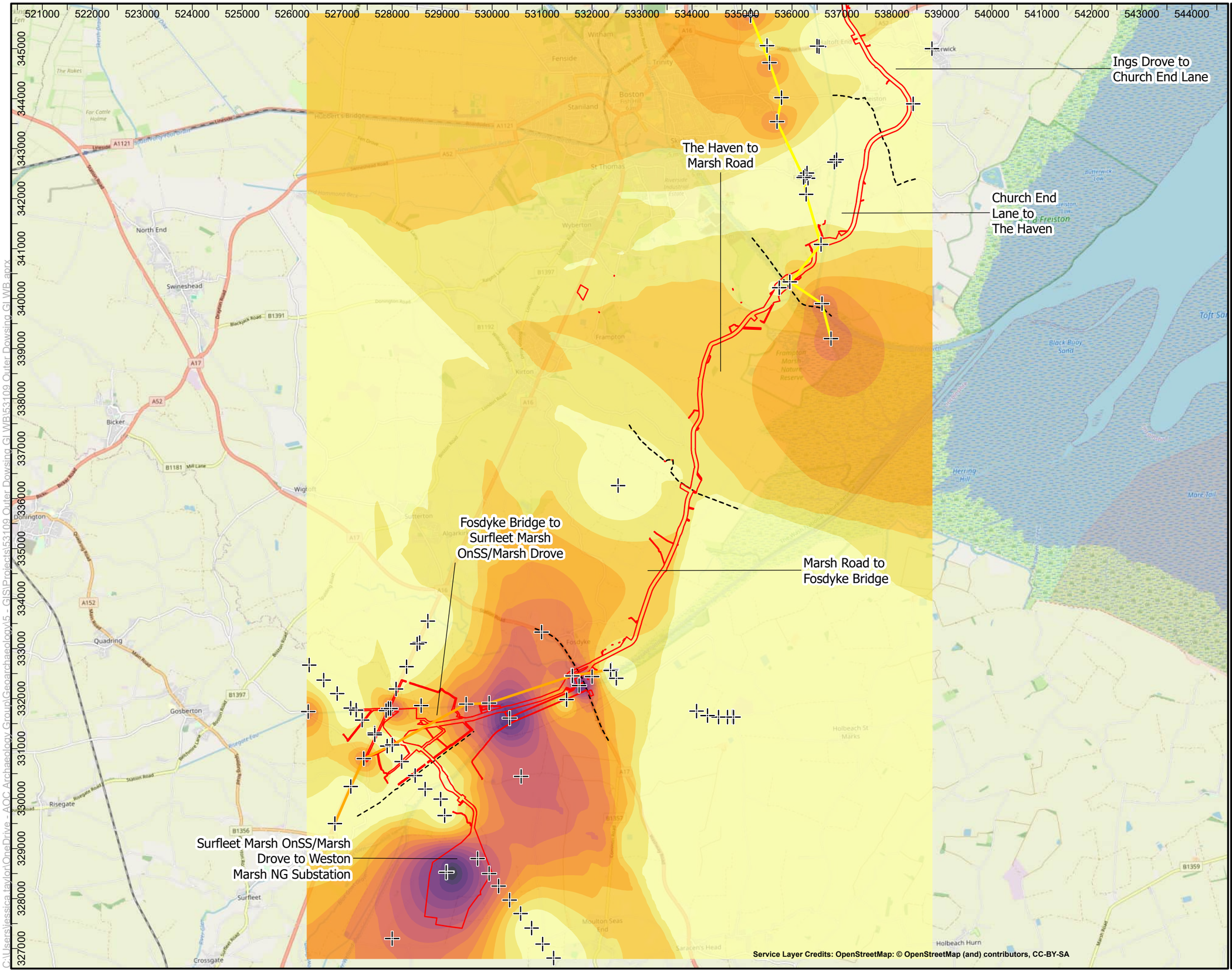

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Figure	45

Thickness plot of the below ground Holocene tidal mudflats (2) deposits (extrapolated from deposit records), representing deposit survival - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Tidal Mudflats 2 Thickness - Area 3

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000
- 4.500001 - 5.000000
- 5.000001 - 5.500000
- 5.500001 - 6.000000
- 6.000001 - 6.500000
- 6.500001 - 7.000000
- 7.000001 - 7.500000
- 7.500001 - 8.000000

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Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:72,000 @ A3

0 3,000m

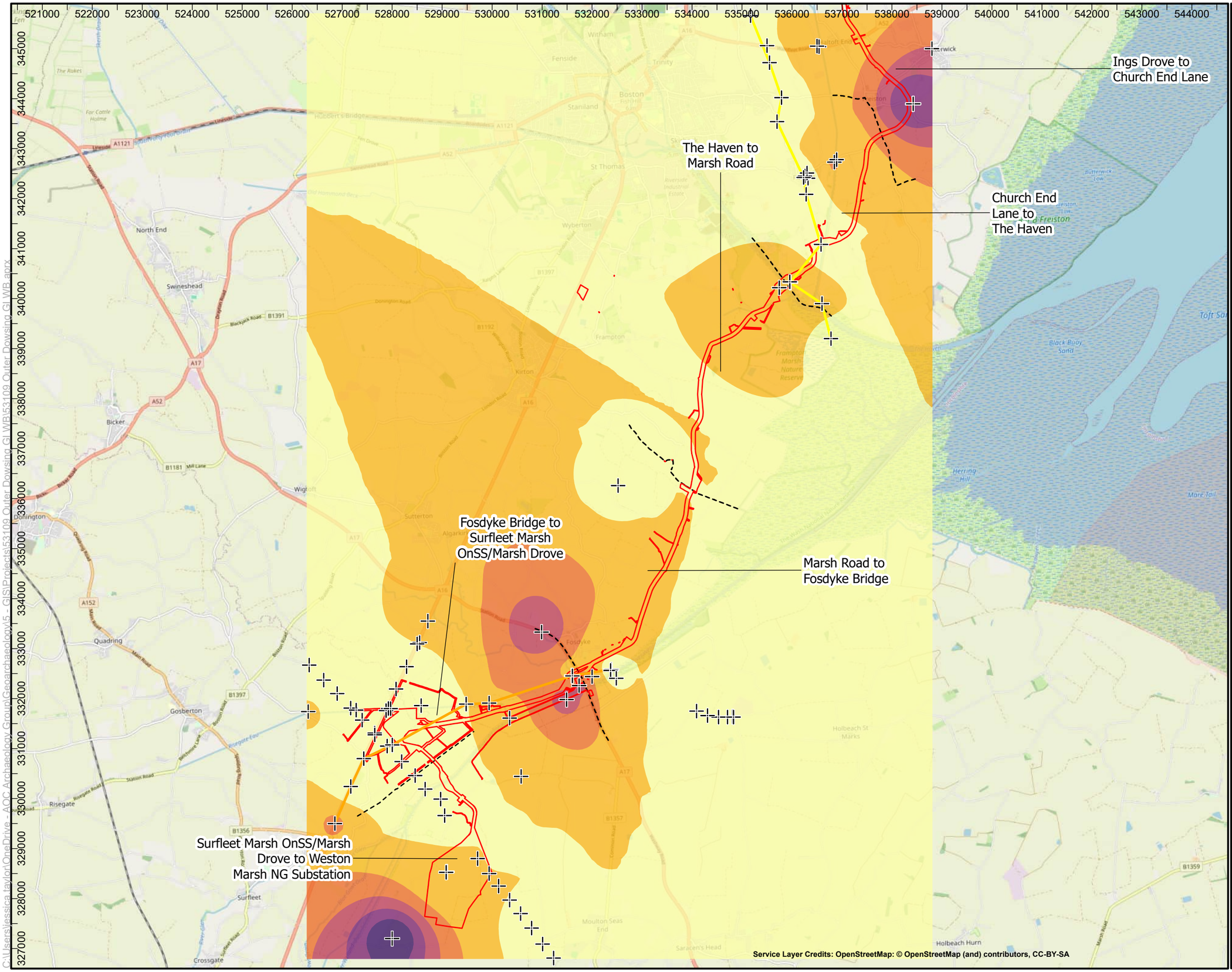

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Figure	46

Thickness plot of the topsoil and modern to Victorian made ground deposits (extrapolated from deposit records) - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Topsoil / Made Ground Thickness - Area 3

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000

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Datum: OSGB 1936

SCALE

1:72,000 @ A3

0 3,000m

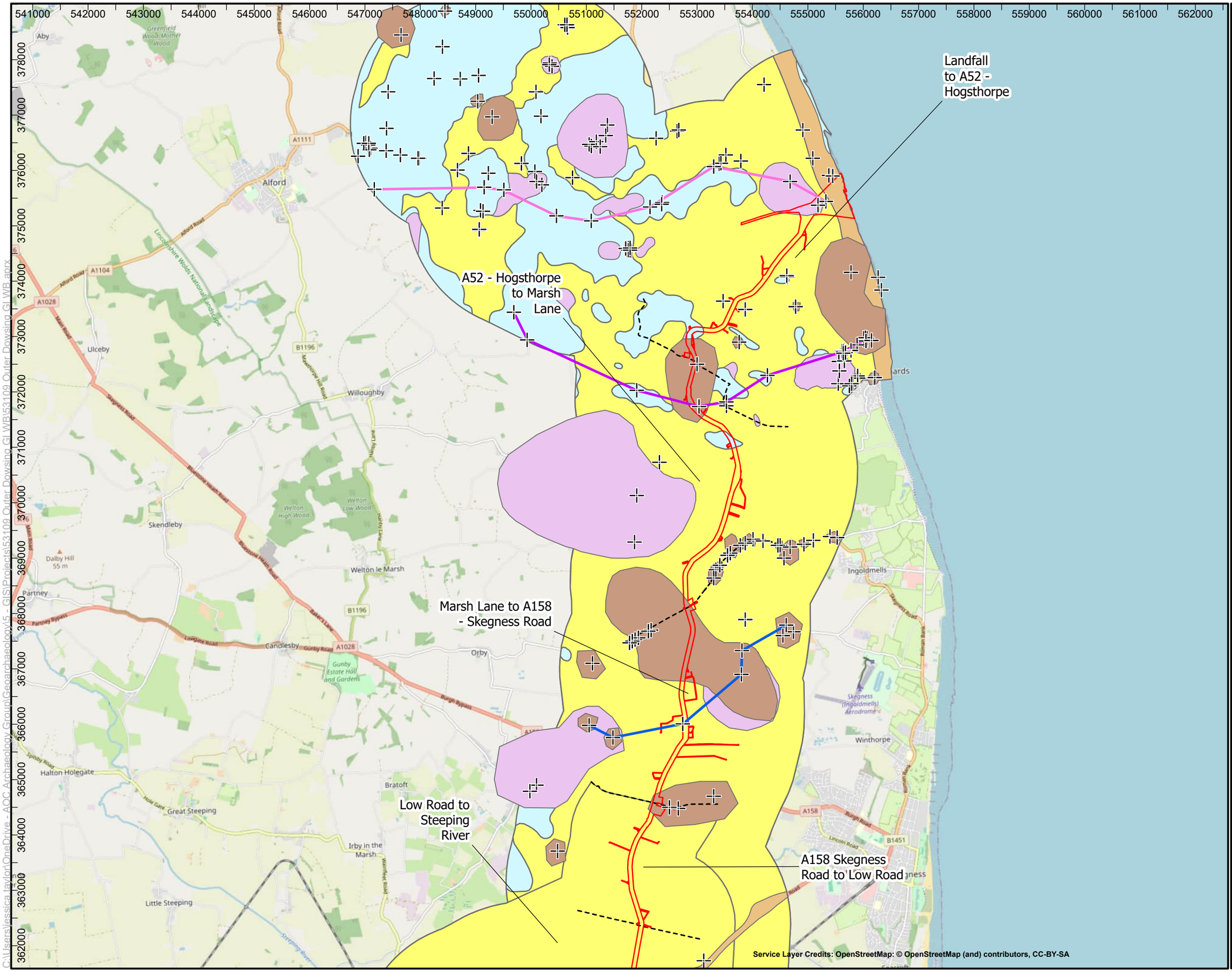

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Figure	47

Plan showing areas of archaeological potential (extrapolated from deposit records) - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks
- AoP B - Organic Deposits
- AoP C - Storm Beach
- AoP D - Glaciofluvial Deposits
- AoP A1 - Tidal Mudflats
- AoP A2 - Tidal Mudflats
- AoP E - Glacial Till

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Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 — 3,000m

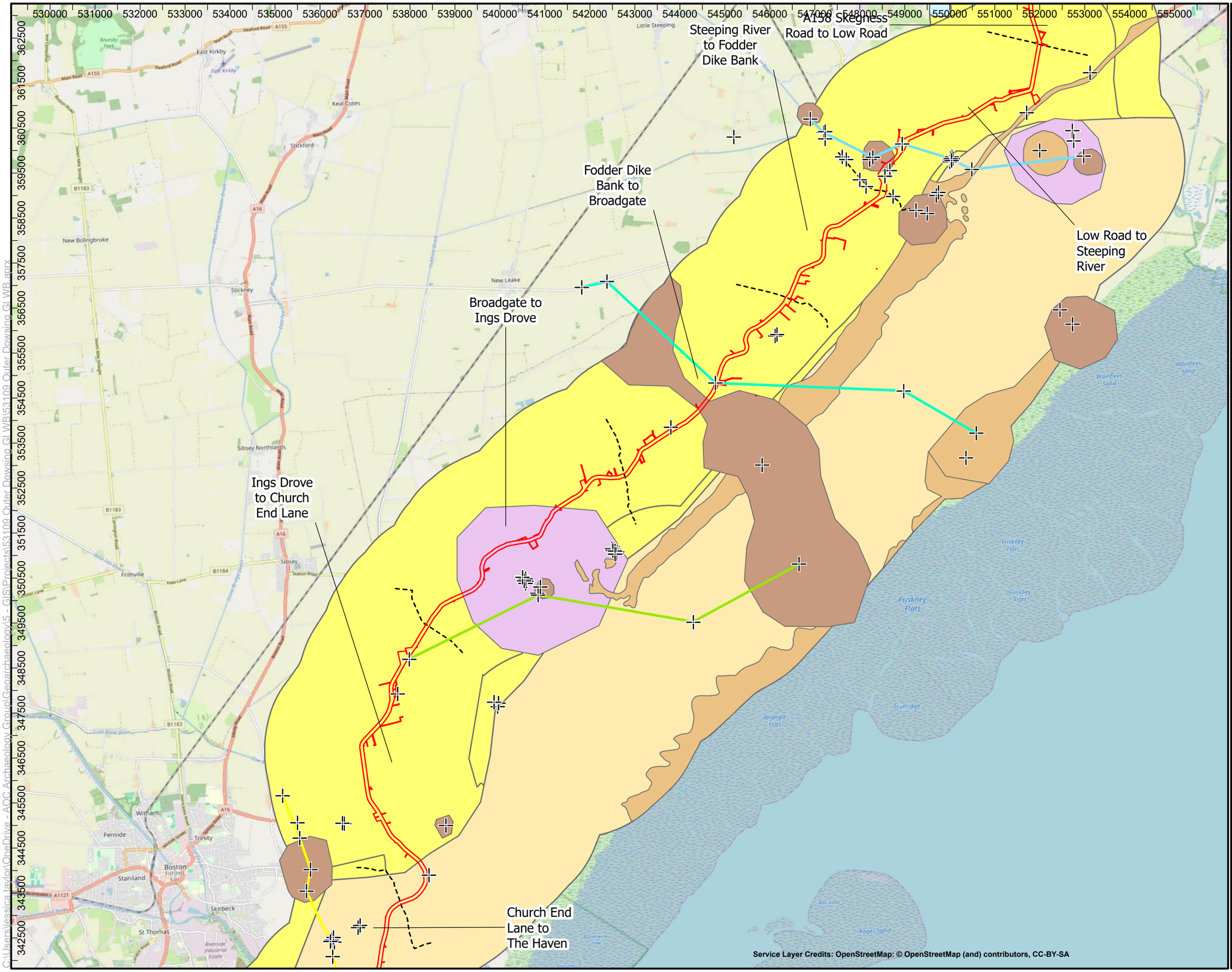

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Figure	48

Plan showing areas of archaeological potential (extrapolated from deposit records) - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks
- AoP B - Organic Deposits
- AoP C - Storm Beach
- AoP D - Glaciofluvial Deposits
- AoP A1 - Tidal Mudflats
- AoP A2 - Tidal Mudflats
- AoP E - Glacial Till

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Datum: OSGB 1936

SCALE

1:80,000 @ A3

0 3,000m

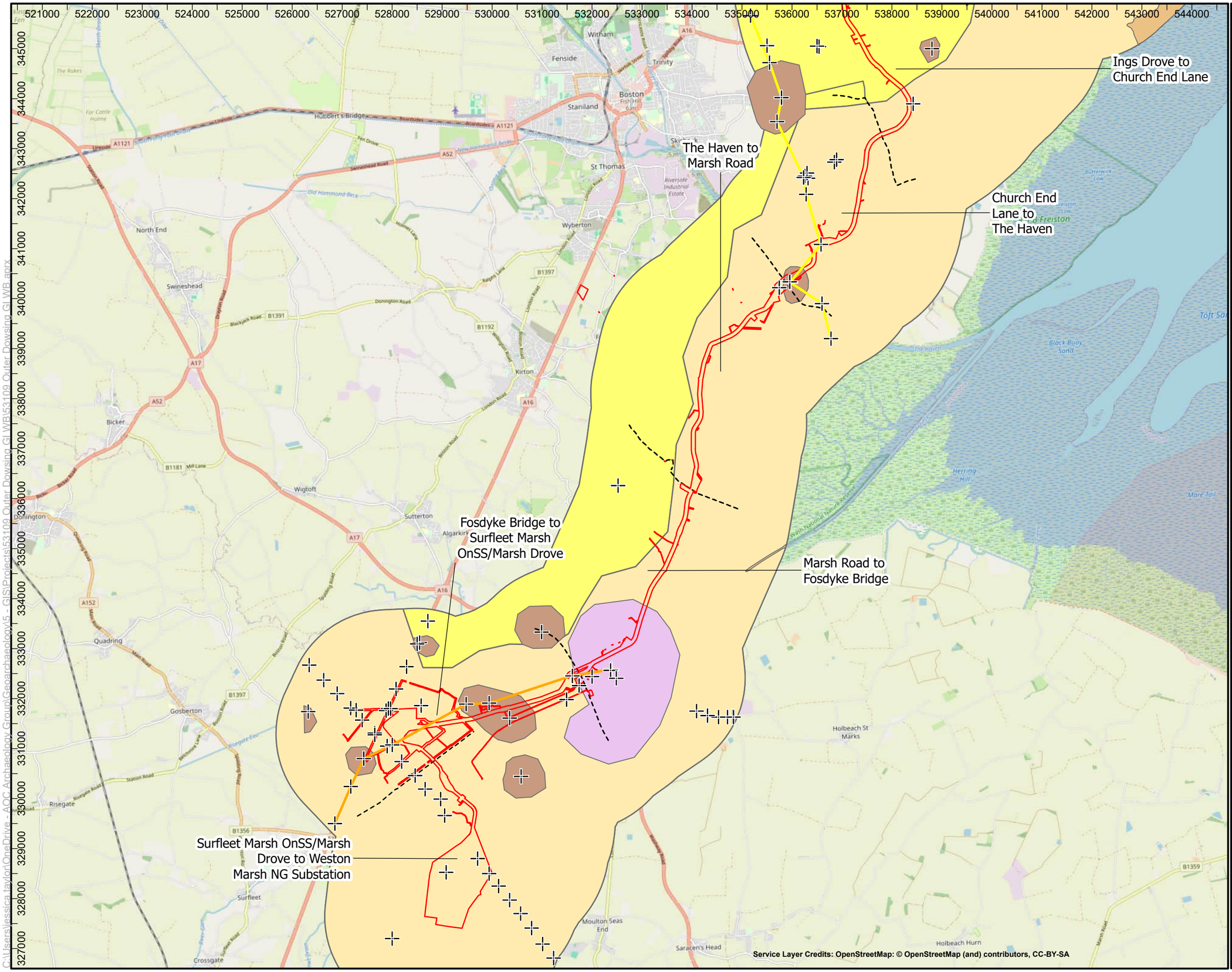

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Figure 49

Plan showing areas of archaeological potential (extrapolated from deposit records) - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks
- AoP B - Organic Deposits
- AoP C - Storm Beach
- AoP D - Glaciofluvial Deposits
- AoP A1 - Tidal Mudflats
- AoP A2 - Tidal Mudflats
- AoP E - Glacial Till

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Datum: OSGB 1936

SCALE

1:72,000 @ A3

0 3,000m

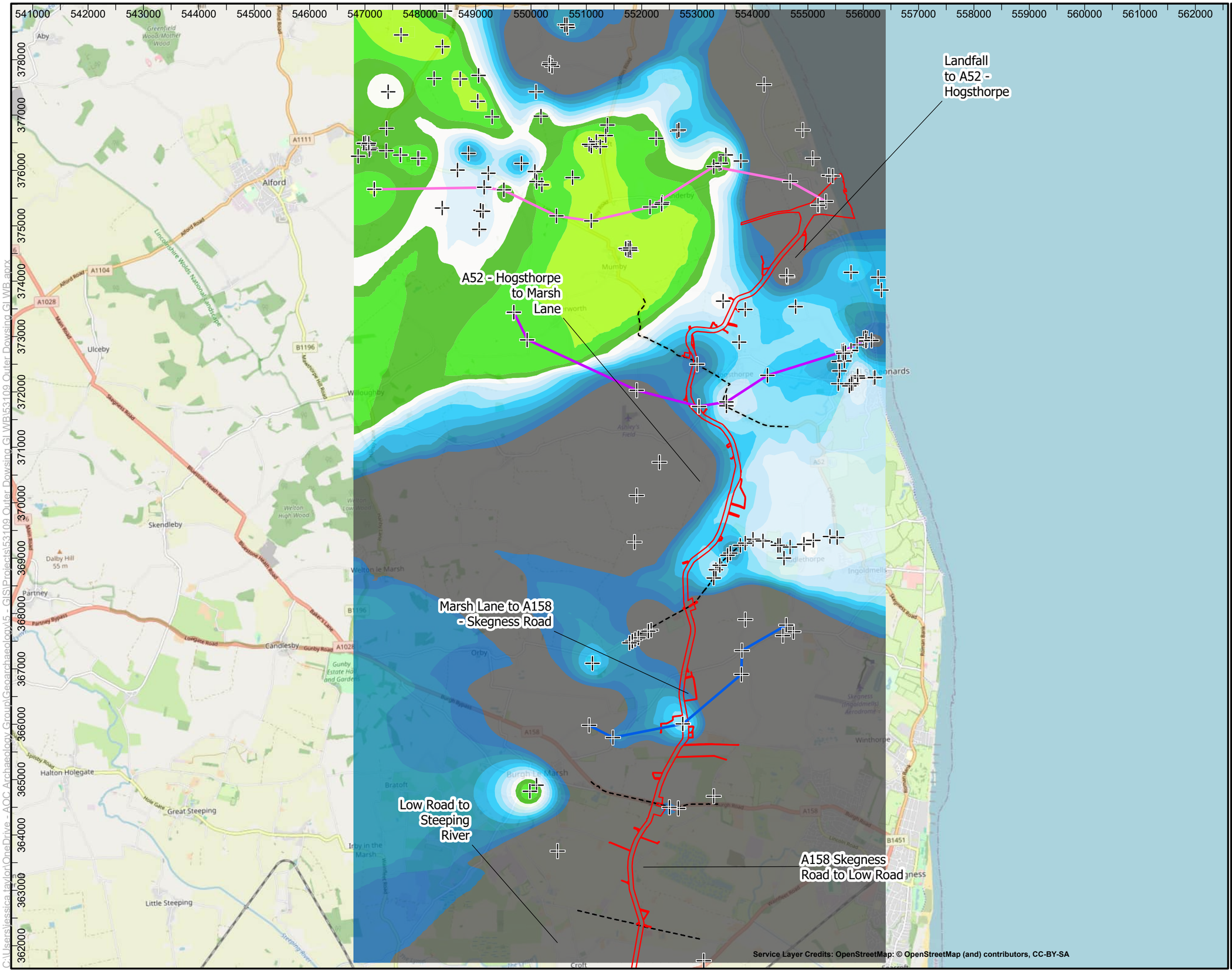

Figure	50

Plan showing the depth of the surface of the Pleistocene or earlier geology - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

Depth of Pleistocene Surface - Area 1

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000
- 4.500001 - 5.000000
- 5.000001 - 5.500000
- 5.500001 - 6.000000
- 6.000001 - 30.000000

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Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:65,000 @ A3

0 3,000m

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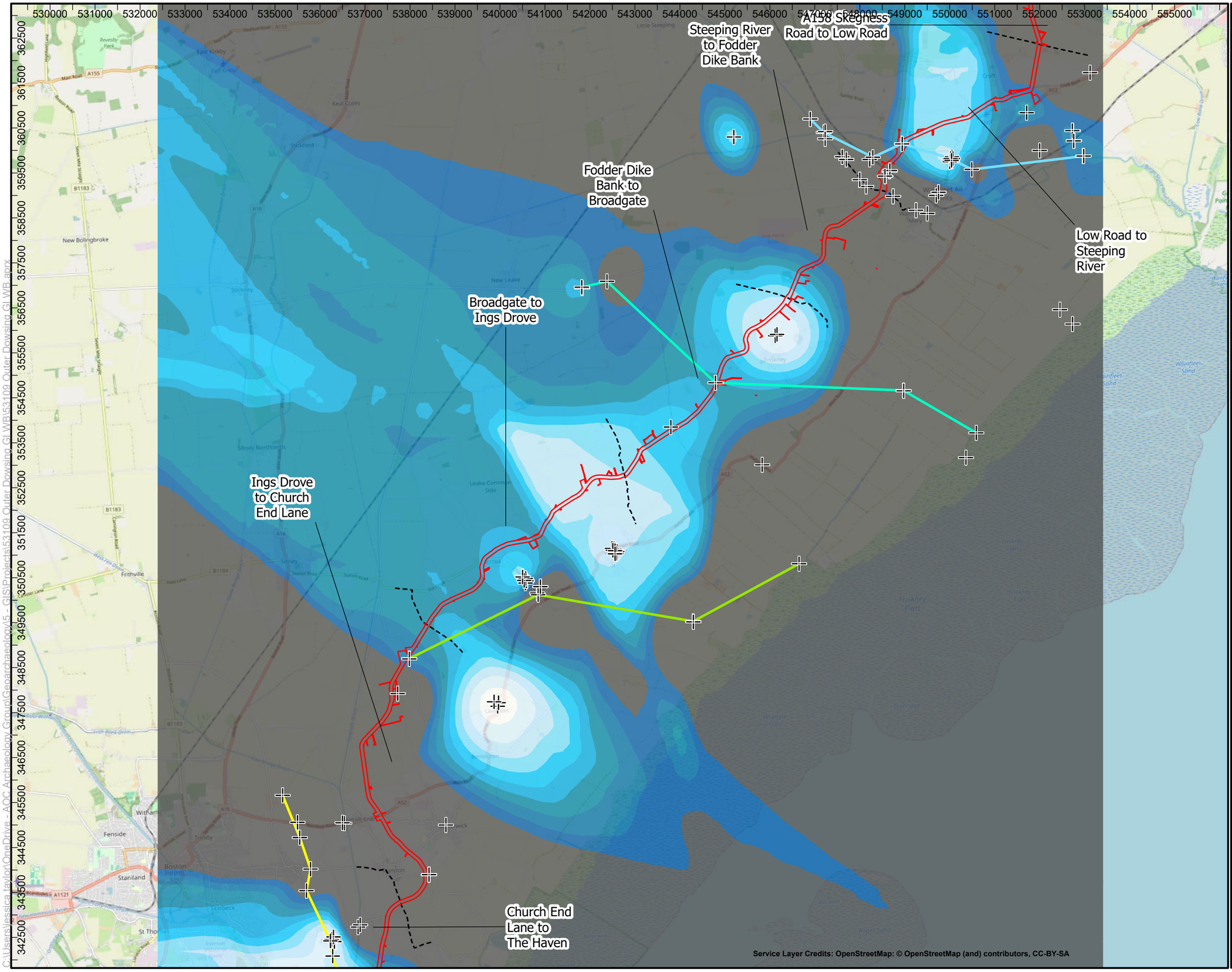

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Figure	51

Plan showing the depth of the surface of the Pleistocene or earlier geology - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Depth of Pleistocene Surface - Area 2

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000
- 4.500001 - 5.000000
- 5.000001 - 5.500000
- 5.500001 - 6.000000
- 6.000001 - 30.000000

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SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

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0 3,000m

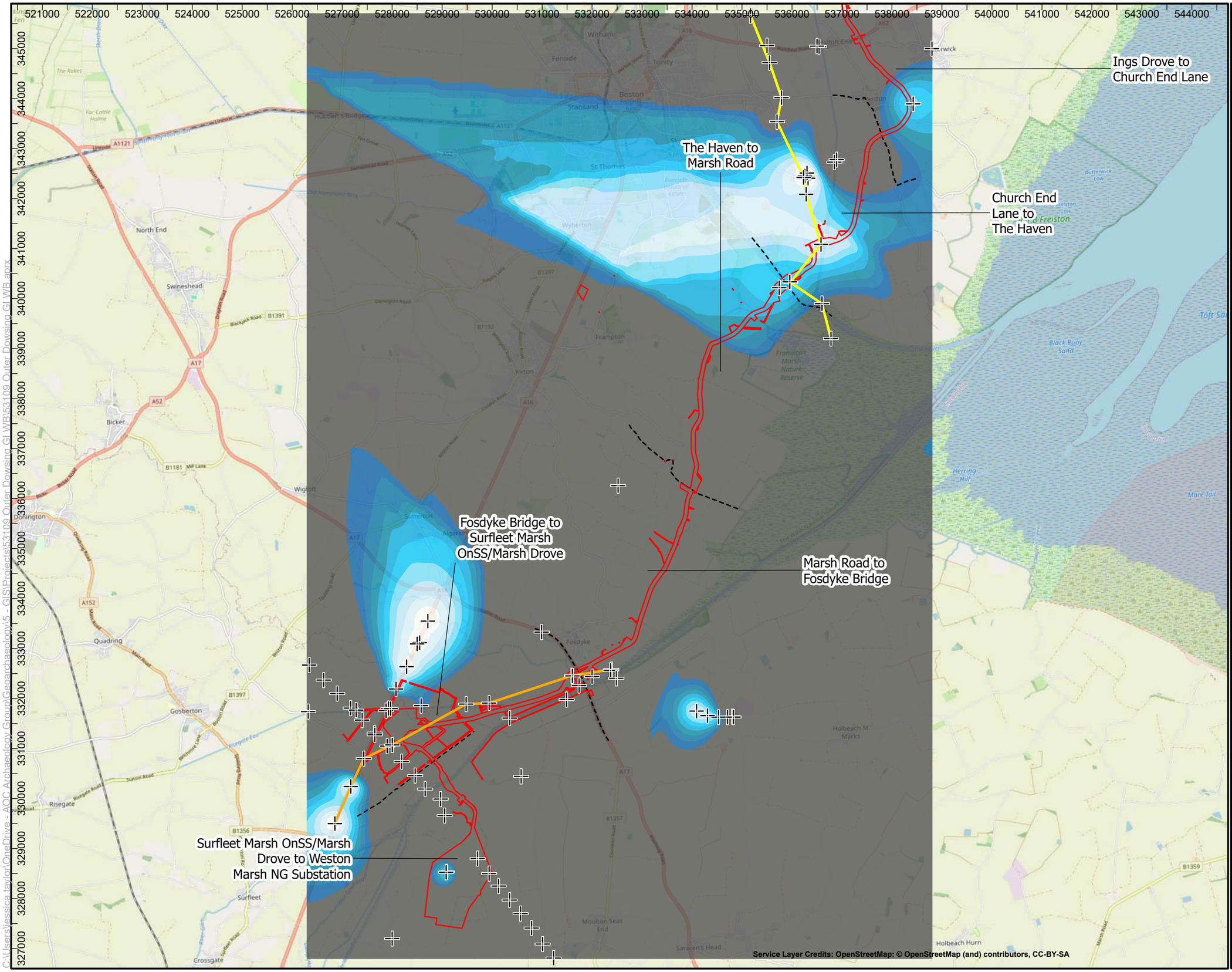

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Figure	52

Plan showing the depth of the surface of the Pleistocene or earlier geology - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Depth of Pleistocene Surface - Area 3

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000
- 4.500001 - 5.000000
- 5.000001 - 5.500000
- 5.500001 - 6.000000
- 6.000001 - 30.000000

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SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:72,000 @ A3

0 3,000m

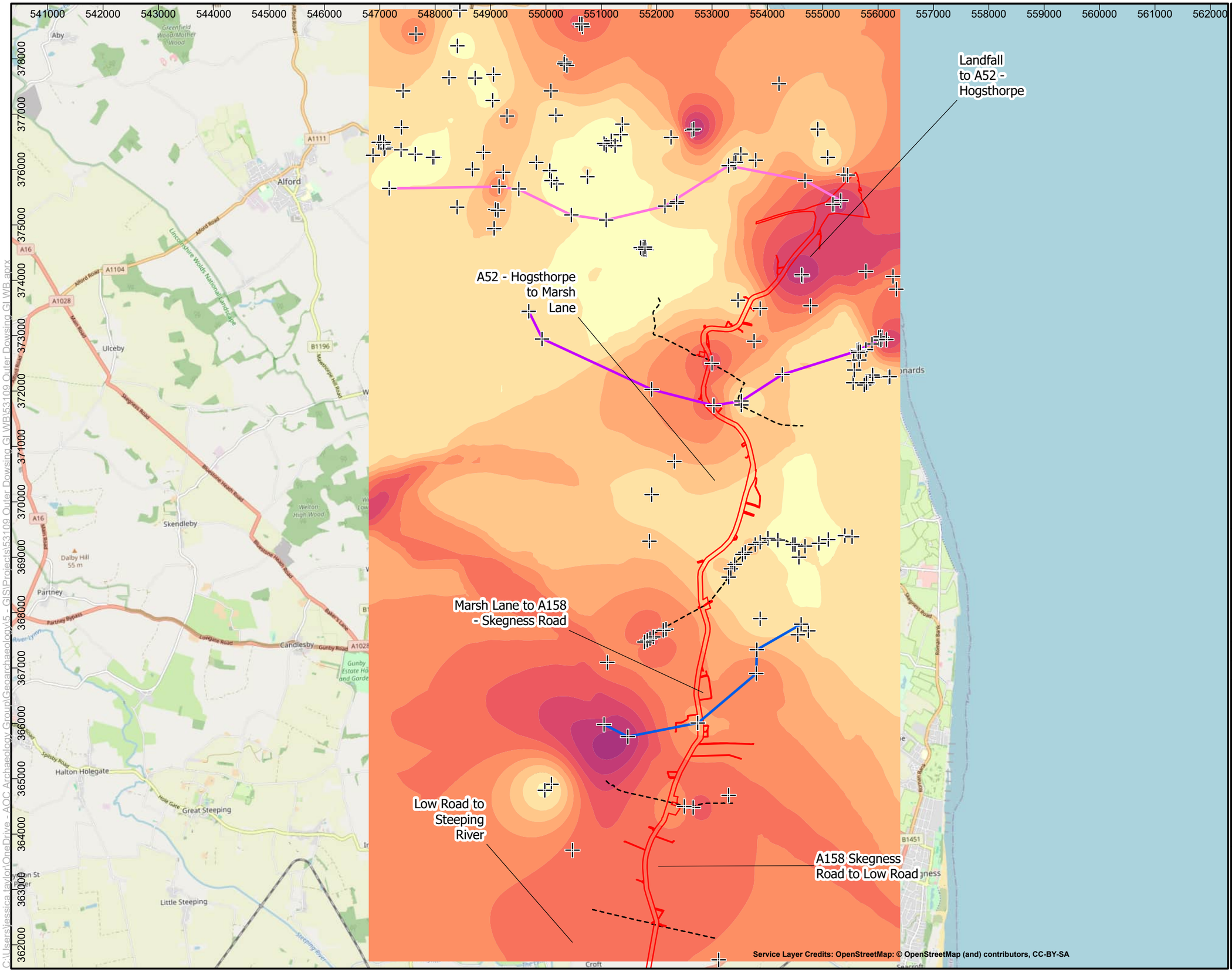

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Figure	53

Plan showing the depth below ground of the base of Tidal Mudflats 2 or surface of earlier geology - Area 1

Legend

- Data Points
- Transect A
- Transect B
- Transect C
- Order Limits
- Onshore Segment Breaks

Depth of Tidal Mudflats 2 Base - Area 1

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000
- 4.500001 - 5.000000
- 4.500001 - 5.000000

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Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

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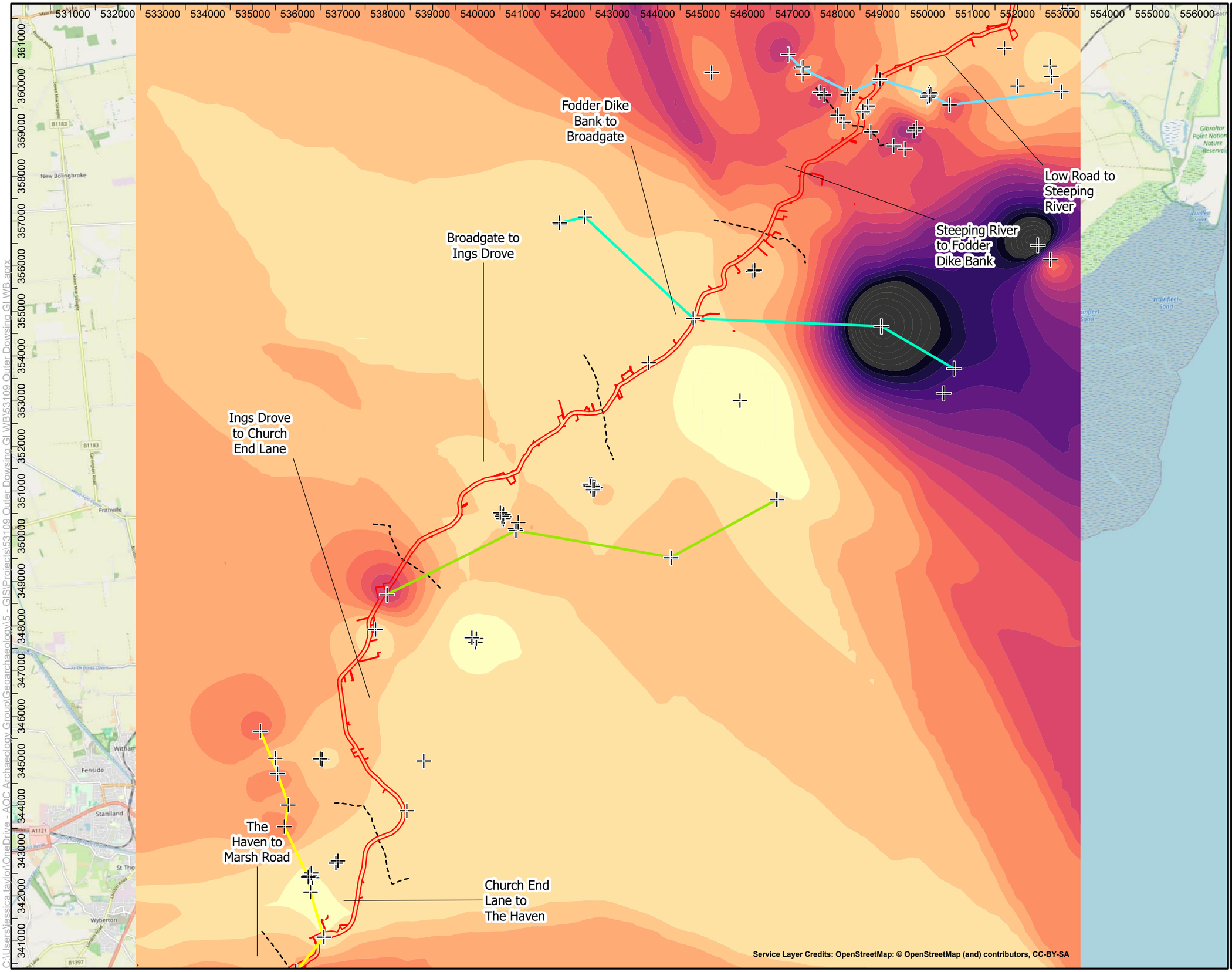

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Figure	54

Plan showing the depth below ground of the base of Tidal Mudflats 2 or surface of earlier geology - Area 2

Legend

- Data Points
- Transect D
- Transect E
- Transect F
- Transect G
- Order Limits
- Onshore Segment Breaks

Depth of Tidal Mudflats 2 Base - Area 2

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000
- 4.500001 - 5.000000
- 5.000001 - 5.500000
- 5.500001 - 6.000000
- 6.000001 - 6.500000
- 6.500001 - 7.000000
- 7.000001 - 7.500000
- 7.500001 - 8.000000
- 8.000001 - 8.500000
- 8.500001 - 11.500000

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SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:80,000 @ A3

0 3,000m

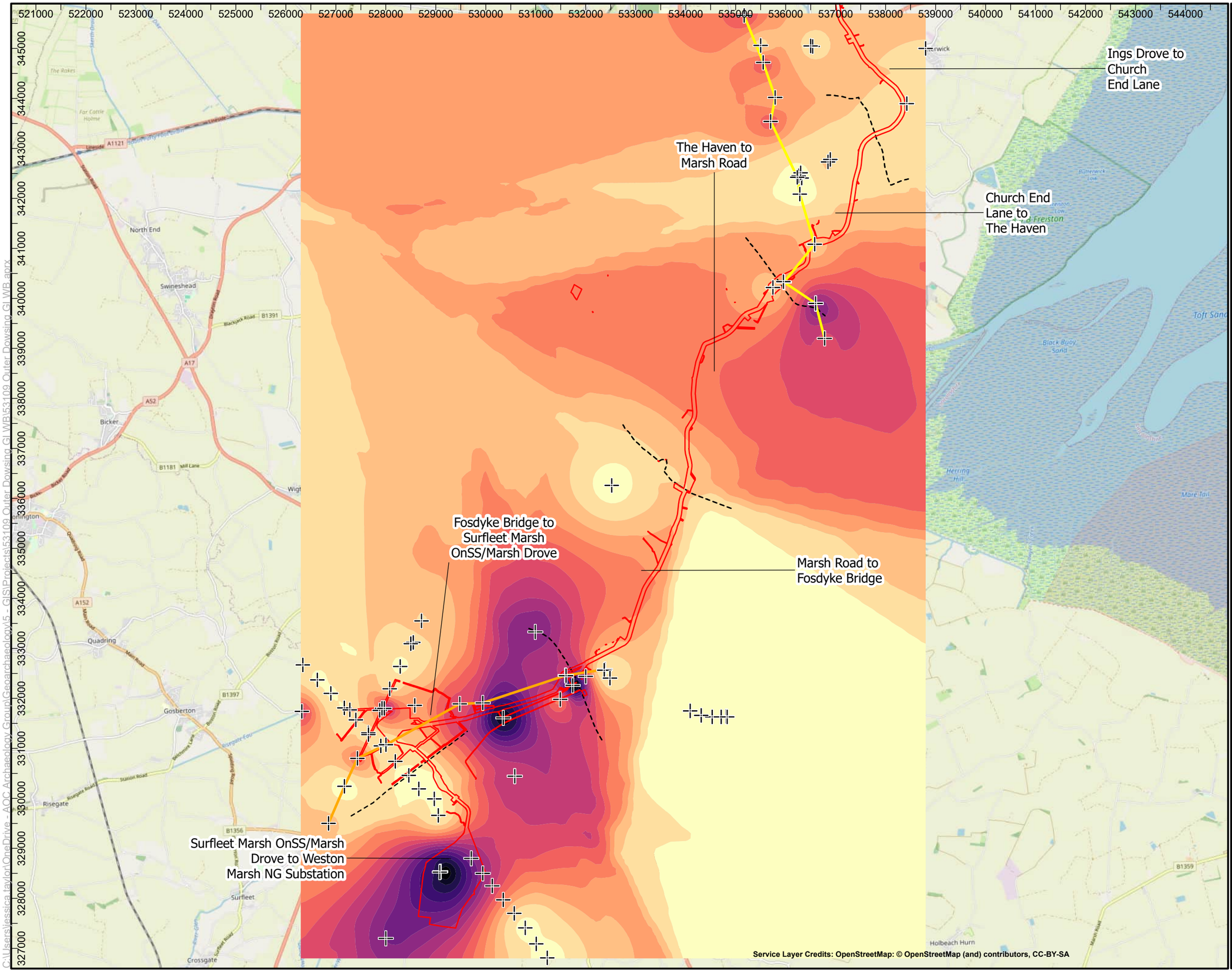

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Figure	55

Plan showing the depth below ground of the base of Tidal Mudflats 2 or surface of earlier geology - Area 3

Legend

- Data Points
- Transect G
- Transect H
- Order Limits
- Onshore Segment Breaks

Depth of Tidal Mudflats 2 Base - Area 3

m

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 2.500000
- 2.500001 - 3.000000
- 3.000001 - 3.500000
- 3.500001 - 4.000000
- 4.000001 - 4.500000
- 4.500001 - 5.000000
- 5.000001 - 5.500000
- 5.500001 - 6.000000
- 6.000001 - 6.500000
- 6.500001 - 7.000000
- 7.000001 - 7.500000
- 7.500001 - 8.000000
- 8.000001 - 8.500000

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Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:72,000 @ A3

0 3,000m

APPENDICES

14 APPENDIX A – DEPOSIT MODEL DATA REFERENCES

Non- monitored deposit data refernces

Deposit log	Easting	Northing	Elevation	Source
TF22NE10	529710	328800	4	BGS
TF22NE12	528970	329990	5	BGS
TF22NE13	529050	329660	4	BGS
TF22NE34	526854	329500	4	BGS
TF22NE73	528000	327200	5.4864	BGS
TF22NE9	529940	328500	5	BGS
TF23SE1	529940	331910	3.2	BGS
TF23SE10	528660	330190	5	BGS
TF23SE11	528460	330460	6	BGS
TF23SE12	528190	330740	5	BGS
TF23SE13	527900	331050	6	BGS
TF23SE14	527650	331310	5	BGS
TF23SE15	527400	331570	4	BGS
TF23SE16	527170	331810	5	BGS
TF23SE17	526900	332100	5	BGS
TF23SE18	526630	332370	4	BGS
TF23SE19	526340	332670	5	BGS
TF23SE2	529480	331890	4	BGS
TF23SE25	527432	330800	5	BGS
TF23SE26	527878	331760	4.4	BGS
TF23SE27	527924	331802	4.4	BGS
TF23SE29	527172	330242	4	BGS
TF23SE3	528580	331860	5	BGS
TF23SE30	527652	331276	5	BGS
TF23SE31	528288	332638	3	BGS
TF23SE32	528078	332192	4	BGS
TF23SE33	528500	333094	3	BGS
TF23SE34	528714	333550	5	BGS
TF23SE4	527970	331800	4	BGS
TF23SE5	527280	331770	5	BGS
TF23SE58	528550	333120	3	BGS
TF23SE6	526320	331740	5	BGS
TF32NW10	531230	326810	5	BGS
TF32NW11	531010	327090	5	BGS
TF32NW12	530350	327970	4	BGS
TF32NW13	530130	328250	5	BGS
TF32NW14	530570	327700	4	BGS
TF32NW6	530790	327410	5	BGS
TF33NE1	536600	339900	2.179	BGS
TF33NE2	536600	339900	2.1336	BGS
TF33NE3	536600	339900	3.3528	BGS
TF33NE4	536600	339900	3.465576	BGS
TF33NE5	536600	339900	3.4655	BGS

TF33NE6	536780	339200	5.986272	BGS
TF33NW52	532520	336260	4	BGS
TF33SW1	531740	332260	4.7244	BGS
TF33SW10	534310	331660	5	BGS
TF33SW11	534090	331750	6	BGS
TF33SW2	531490	331980	4.8768	BGS
TF33SW3	530350	331610	4.572	BGS
TF33SW4	532000	332440	3.3528	BGS
TF33SW5	530990	333330	3.35	BGS
TF33SW6	534830	331630	6	BGS
TF33SW7	534810	331640	6	BGS
TF33SW8	534710	331630	5	BGS
TF33SW9	534530	331630	5	BGS
TF34NE1	538800	345000	5	BGS
TF34NE6	539950	347640	5	BGS
TF34NE7	539970	347720	5	BGS
TF34NE8	539870	347740	4	BGS
TF34SE10	536300	342512	5	BGS
TF34SE11	536321	342408	5	BGS
TF34SE2	536847	342730	4	BGS
TF34SE3	536893	342780	3.17	BGS
TF34SE5	535790	344020	5	BGS
TF34SE6	535700	343540	5	BGS
TF34SE7	536283	342086	5	BGS
TF34SE8	536232	342423	6	BGS
TF34SE9	536258	342451	5	BGS
TF45NE14	549750	359070	6	BGS
TF45NE15	549750	359070	6	BGS
TF45NE16	549500	358600	4	BGS
TF45NE17	549700	359000	6	BGS
TF45SE4	546650	350810	3.25	BGS
TF45SE5	545830	353010	5.37	BGS
TF45SW10	542510	351110	4	BGS
TF45SW11	542530	351150	4	BGS
TF45SW12	542560	351100	4	BGS
TF45SW13	542590	351040	4	BGS
TF45SW22	542490	351130	4	BGS
TF45SW23	542560	351030	4	BGS
TF45SW24	542570	351100	4	BGS
TF45SW5	542500	351130	4	BGS
TF45SW6	542490	351150	4	BGS
TF45SW7	542500	351140	4	BGS
TF45SW8	542510	351140	4	BGS
TF45SW9	542610	351080	4	BGS
TF46SE19	549980	364790	12	BGS
TF46SE20	549980	364790	12	BGS
TF47NE1	548871	376308	2.389632	BGS

TF47NE101	546980	376490	6.096	BGS
TF47NE109	547100	376400	4.572	BGS
TF47NE110	546880	376260	7.62	BGS
TF47NE116	548250	377660	3.16	BGS
TF47NE12	547079	376373	4.572	BGS
TF47NE120	547650	376280	7.83	BGS
TF47NE122	547420	377420	3.96	BGS
TF47NE123	547390	376760	5.1816	BGS
TF47NE127	549230	375940	9.7536	BGS
TF47NE128	547960	376220	5.0292	BGS
TF47NE129	549060	377720	4.572	BGS
TF47NE132	548440	378880	6.096	BGS
TF47NE137	549090	375280	7.62	BGS
TF47NE138	549140	375270	7.62	BGS
TF47NE139	547170	375660	4.28	BGS
TF47NE14	546877	376257	4.2672	BGS
TF47NE140	549510	375640	9	BGS
TF47NE145	547060	376460	8	BGS
TF47NE146	547010	376500	8	BGS
TF47NE147	549160	375690	10	BGS
TF47NE15/A	549088	375279	8.2296	BGS
TF47NE15/B	549134	375263	7.62	BGS
TF47NE17	548446	378877	6.096	BGS
TF47NE2	548396	375321	2.542	BGS
TF47NE32	546980	376490	8	BGS
TF47NE4	548672	376007	2.734	BGS
TF47NE48	549053	377716	4.572	BGS
TF47NE49	547384	376356	5.18	BGS
TF47NE52	549230	375950	9.7536	BGS
TF47NE55	549154	375697	10	BGS
TF47NE56	547980	376220	5.0292	BGS
TF47NE57	547060	376470	8	BGS
TF47NE58	547070	376490	9	BGS
TF47NE62	547170	375670	4.4	BGS
TF47NE63	549510	375650	9	BGS
TF47NE70	547641	376278	7.83	BGS
TF47NE72	547415	377415	3.96	BGS
TF47NE85	547653	378447	3	BGS
TF47NE86	548401	378234	4	BGS
TF47NE87	548722	377652	4	BGS
TF47NE88	549038	377249	2	BGS
TF47NE89	549298	376967	2	BGS
TF47NE90	549827	376127	3	BGS
TF47SE1	549681	373425	3.048	BGS
TF47SE18	549936	372943	3.3528	BGS
TF47SE19	549065	374936	7.62	BGS
TF47SE27	549060	374920	4.57	BGS

TF47SE30	549690	373440	3.048	BGS
TF47SE32	549930	372940	3.3528	BGS
TF55NW1	550490	359580	2.4384	BGS
TF55NW10	550000	359750	4	BGS
TF55NW11	550020	359750	4	BGS
TF55NW12	550050	359820	4	BGS
TF55NW2	552450	356460	3.27	BGS
TF55NW3	552730	356140	3.35	BGS
TF55NW4	550050	359860	5	BGS
TF55NW5	550070	359820	4	BGS
TF55NW6	550050	359760	4	BGS
TF55NW7	550000	359780	4	BGS
TF55NW8	550020	359820	4	BGS
TF55NW9	550040	359780	4	BGS
TF55SW2	550360	353170	5	BGS
TF55SW3	550590	353720	5	BGS
TF56NE64	555100	369320	2	BGS
TF56NE65	555400	369390	2	BGS
TF56NE66	555530	369370	2	BGS
TF56NW1	551480	365760	2.4384	BGS
TF56NW10	554610	367790	2.4384	BGS
TF56NW11	554550	367600	2.13	BGS
TF56NW12	553870	367890	2.74	BGS
TF56NW13	553600	369090	2	BGS
TF56NW14	553800	366900	4	BGS
TF56NW15	552170	367700	4	BGS
TF56NW16	552120	367680	4	BGS
TF56NW17	551880	367530	2	BGS
TF56NW18	551110	367100	3	BGS
TF56NW19	551940	367560	2	BGS
TF56NW20	551830	367500	3	BGS
TF56NW21	551780	367470	4	BGS
TF56NW22	553780	369230	2	BGS
TF56NW23	554680	369200	2	BGS
TF56NW24	553300	368640	2	BGS
TF56NW25	553340	368790	2	BGS
TF56NW26	553410	368870	2	BGS
TF56NW27	553550	369050	2	BGS
TF56NW28	553870	369270	2	BGS
TF56NW29	554010	369340	3	BGS
TF56NW3	553810	367330	2.74	BGS
TF56NW30	554190	369310	2	BGS
TF56NW31	554500	369230	2	BGS
TF56NW32	554930	369250	2	BGS
TF56NW33	554460	369230	3	BGS
TF56NW4	554570	369000	2.7432	BGS
TF56NW7	551050	365980	2.74	BGS

TF56NW8	554740	367670	2.44	BGS
TF56NW9	551870	369290	2.4384	BGS
TF56SW1	550100	364900	9	BGS
TF56SW2	550480	363710	2.74	BGS
TF56SW3	553120	361730	3.048	BGS
TF56SW4	553300	364700	2.1336	BGS
TF56SW5	552000	360000	4.572	BGS
TF56SW6	551710	360840	4.8768	BGS
TF56SW7	552500	364500	4	BGS
TF56SW9	552660	364480	2.41	BGS
TF57NE1	555380	375910	0	BGS
TF57NE2	555450	375900	0	BGS
TF57NE3	555090	376220	7	BGS
TF57NW10	552370	375420	3.5052	BGS
TF57NW11/A	553400	376120	3.048	BGS
TF57NW11/B	553430	376130	3.048	BGS
TF57NW11/C	553790	376170	3.048	BGS
TF57NW11/D	553520	376280	3.048	BGS
TF57NW12	554680	375800	2.1336	BGS
TF57NW15	551180	376520	11.5824	BGS
TF57NW17	554210	377550	2.7432	BGS
TF57NW18	551350	376630	3.3528	BGS
TF57NW19	552150	375340	3.3528	BGS
TF57NW20	553300	376070	2.4384	BGS
TF57NW25	551380	376820	4.2672	BGS
TF57NW26/A	552670	376730	3.048	BGS
TF57NW26/B	552640	376710	3.048	BGS
TF57NW27	551250	376430	8.2296	BGS
TF57NW28	554910	376730	2.1336	BGS
TF57NW4	550650	378630	2.2372	BGS
TF57NW47	550100	375800	3	BGS
TF57NW48	550180	376980	3.5	BGS
TF57NW49	550460	375180	7	BGS
TF57NW5	550090	377420	2.3896	BGS
TF57NW50	552260	376580	2.64	BGS
TF57NW51	550070	375980	3	BGS
TF57NW52	550750	375870	3.32	BGS
TF57NW53	550100	375800	3	BGS
TF57NW6	550660	378580	2.69	BGS
TF57NW7	550610	378630	2.4506	BGS
TF57NW79	550330	377910	2.37	BGS
TF57NW8	550340	377940	1.4538	BGS
TF57NW80	550196	375740	4	BGS
TF57NW81	551088	375089	4	BGS
TF57NW82	552360	375390	7	BGS
TF57NW84	551050	376470	7	BGS
TF57NW85	551090	376440	8	BGS

TF57NW86	551090	376440	8	BGS
TF57NW9	550380	377880	3.26	BGS
TF57SE1	556050	372920	2.61	BGS
TF57SE11	555780	372750	2.072	BGS
TF57SE12	555570	372380	2.164	BGS
TF57SE13	555660	372560	2.34696	BGS
TF57SE14	555890	372850	2.9	BGS
TF57SE15	556070	372940	3.41	BGS
TF57SE16	556050	372940	3.39	BGS
TF57SE17	556070	372970	3.25	BGS
TF57SE18	556040	372980	3.54	BGS
TF57SE19	556010	372970	4.11	BGS
TF57SE2	556150	372930	5.087	BGS
TF57SE20	556010	372940	4.42	BGS
TF57SE28	555560	372550	2	BGS
TF57SE29	556270	374070	0	BGS
TF57SE30	556330	373840	1	BGS
TF57SE31	555780	374160	4	BGS
TF57SE35	555750	372110	3	BGS
TF57SE36	556190	372250	5	BGS
TF57SE37	556210	372260	5	BGS
TF57SE38	555910	372250	3	BGS
TF57SE39	555900	372290	3	BGS
TF57SE47	555790	372150	3	BGS
TF57SE48	555810	372150	3	BGS
TF57SE49	555620	372740	3	BGS
TF57SE5	555550	372150	2	BGS
TF57SE50	555650	372750	3	BGS
TF57SE51	555640	372730	3	BGS
TF57SE52	555640	372700	3	BGS
TF57SE53	555660	372700	2	BGS
TF57SE54	555680	372710	3	BGS
TF57SW10	553760	372900	2.7432	BGS
TF57SW11/A	553000	372500	3	BGS
TF57SW11/B	553000	372500	3	BGS
TF57SW13	553470	373640	4	BGS
TF57SW14	551810	374550	2.75	BGS
TF57SW17	554630	374080	4	BGS
TF57SW19	551730	374570	4	BGS
TF57SW2	554780	373540	2.7432	BGS
TF57SW20	551730	374590	4	BGS
TF57SW21	551730	374600	4	BGS
TF57SW22	551710	374590	4	BGS
TF57SW23	551760	374600	5	BGS
TF57SW24	551790	374600	5	BGS
TF57SW25	551790	374560	4	BGS
TF57SW26	551760	374560	4	BGS

TF57SW27	553530	371820	2	BGS
TF57SW28	553530	371750	3	BGS
TF57SW3	554620	374100	2.4384	BGS
TF57SW4	553870	373490	3.048	BGS
TF57SW5	551910	372030	2.1336	BGS
TF57SW6	554270	372300	5.54	BGS
TF57SW7	552320	370730	2.438	BGS
TF57SW8	551910	370130	2.1336	BGS
TF34NE2	535170	345660	3	BGS
TF34NE3	535500	345060	5	BGS
TF34NE4	536540	345040	4	BGS
TF34NE5	536500	345050	4	BGS
TF34NE9	537728	347923	3	BGS
TF34SE4	535550	344720	4	BGS
TF45NE1	549250	358670	4.328	BGS
TF45NE10	547700	359800	4.35	BGS
TF45NE11	548140	359200	4.41	BGS
TF45NE12	548140	359200	4.65	BGS
TF45NE18	548220	359800	3	BGS
TF45NE19	548290	359850	3	BGS
TF45NE2	549250	358670	3.148	BGS
TF45NE20	546120	355880	3	BGS
TF45NE21	546160	355910	4	BGS
TF45NE3	547610	359860	4.47	BGS
TF45NE4	547610	359860	1.54	BGS
TF45NE5	548740	358980	2.42	BGS
TF45NE6	548740	358980	2.42	BGS
TF45NE7	548000	359350	4.367	BGS
TF45NE8	548000	359350	1.95	BGS
TF45NE9	547700	359800	4.35	BGS
TF45NW3	541830	356940	10.1	BGS
TF45NW7	542380	357090	1	BGS
TF45SW1/A	540900	350300	2.2	BGS
TF45SW1/B	540900	350300	2.15	BGS
TF45SW1/C	540900	350300	2.1	BGS
TF45SW14	540500	350530	4	BGS
TF45SW15	540580	350470	4	BGS
TF45SW16	540550	350430	5	BGS
TF45SW17	540570	350380	5	BGS
TF45SW18	540590	350430	5	BGS
TF45SW19	540500	350530	5	BGS
TF45SW2	540830	350160	4	BGS
TF45SW20	540600	350430	5	BGS
TF45SW21	540580	350410	5	BGS
TF45SW25	540503	350516	4	BGS
TF45SW26	540573	350482	5	BGS
TF45SW27	540539	350438	5	BGS

TF45SW3	540850	350120	4	BGS
TF45SW4	543800	353850	0.94	BGS
TF46SE10	547200	360400	4.66	BGS
TF46SE11	547200	360400	4.68	BGS
TF46SE12	545200	360300	3	BGS
TF46SE17	547230	360420	1.59	BGS
TF46SE3	546900	360700	4.816	BGS
TF46SE4	546900	360700	5.105	BGS
TF46SE5	547230	360260	4.7	BGS
TF46SE6	547230	360260	4.7	BGS

15 APPENDIX B – DEPOSIT LOGS (EXTERNAL TO SITE BOUNDARY)

Monitored Borehole Logs

Table 33 Deposit log for AOC53109_CR-BH01

Bore		Easting	Northing	Elevation		
AOC53109_CR_BH01		530577.6	330445.6	3.35		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.35	1.55	0.00	1.80	1.80	Moist to wet. Firm. Mid orange brown. Silty SAND (fine). Very gradual lower boundary. Occasional oxidised patches.	Holocene - Tidal Mudflats 2
1.55	0.99	1.80	2.36	0.56	Same as above but mid grey brown and siltier. Occasional medium (c. 10-20mm). Dark grey patches. Grey patches increase in frequency with depth, and become more black.	
0.99	0.85	2.36	2.50	0.14	Void	
0.85	0.35	2.50	3.00	0.50	Mid brown silty SAND (fine) with mid grey patches and frequent lenses of dark grey to very dark grey silt, occasionally clayey.	
0.35	-0.59	3.00	3.94	0.94	Same as above but more mid grey than brown. Sharp lower boundary.	
-0.59	-1.91	3.94	5.26	1.32	Slightly clayey (from fine lenses) slightly sandy (very fine) SILT. Dark to very dark grey. Organic odour. Small (=<10mm) pockets of degraded organics. Becomes saturated @ 4mbgl, with poor recovery. Very sharp lower boundary.	Holocene - Organic Deposits
-1.91	-3.94	5.26	7.29	2.03	Mid brown slightly silty SAND (fine to medium). Wet. Firm. Occasional dark grey and black patches. Frequent grey patches between 5.5-5.77m. Large (5.84-5.87mbgl, 50mm across) black, laminated, organic clay patch. Occasional small black patches and speckles. Occasional small shell fragments below 5.88m. 6.20mbgl frequent medium marine shell fragments until 6.40mbgl. Shelly band 6.72-6.75 m bgl. Catcher 7.23-7.29mbgl. Gradual lower boundary, the beneath is speckled into it.	
-3.94	-4.03	7.29	7.38	0.09	Slightly clayey, slightly sandy (fine to medium) SILT. Organic odour. Frequent small to medium marine shell fragments. Sharp lower boundary. Dark grey? Patches.	
-4.03	-5.68	7.38	9.03	1.65	Mid grey brown. Wet. Firm. SAND (fine to medium). Fine (frequent) dark grey and light brown laminae 7.60-7.75m. Occasional black speckles and very fine laminae throughout. Gradual boundary.	

-5.68	-5.79	9.03	9.14	0.11	Same as above with frequent black clayey SILT laminae. Organic odour. Frequent shells. Sharp lower boundary.	
-5.79	-6.38	9.14	9.73	0.59	Mid brown SAND (fine to medium), silty. Frequent fine black speckles and black and light brown lenses / patches. Occasional to moderate marine shell fragments. Firm. Wet.	Holocene - Tidal Mudflats 1
-6.38	-9.65	9.73	13.00	3.27	Mid and light brown. Laminated. Moist. SAND (fine to coarse, mostly medium). Occasional dark grey and black patches. Occasional small stones (rounded to subrounded). Frequent marine shell, including whole ones.	
-9.65	-10.11	13.00	13.46	0.46	Void	
-10.11	-10.42	13.46	13.77	0.31	Wet. Firm/ Mid and light brown SAND (fine to coarse). Sharp lower boundary.	
-10.42	-10.48	13.77	13.83	0.06	Coarse shell and sand.	
-10.48	-10.53	13.83	13.88	0.05	Finely laminated grey and brown silt and SAND (fine to medium).	
-10.53	-11.00	13.88	14.35	0.47	SAND (fine to coarse). Mid to light brown and grey. Frequent very fine very dark grey laminae. Wet. Firm. Moderate marine shell fragments. Harp lower boundary.	
-11.00	-11.15	14.35	14.50	0.15	Very firm. Wet. Fine SAND. Mid brown. Dark grey laminae, with coarser sand. Not horizontal.	
-11.15	-11.62	14.50	14.97	0.47	Very gravelly (fine to coarse, angular to subrounded) SAND (fine to coarse). Mid to light grey brown. Very firm. Wet. Occasional dark grey patches.	Pleistocene - Glaciofluvial Deposits
-11.62	-11.74	14.97	15.09	0.12	Mid grey brown and dark grey silty, gravelly (fine) very shelly SAND (fine to coarse). Very dark grey sandy silt patches and laminae. Sharp upper and lower boundaries.	
-11.74	-11.90	15.09	15.25	0.16	Very gravelly (fine to coarse, angular to subrounded) SAND (fine to coarse). Mid to light grey brown. Very firm. Wet. Occasional dark grey patches. Very sharp lower boundary.	
-11.90	-16.65	15.25	20.00	4.75	Stiff. Moist to dry. Mid to dark blue grey. Gravelly (chalky, flinty) (fine to coarse) (subrounded to subangular) CLAY.	Pleistocene - Till

Table 34 Deposit log for AOC53109_RW01-BH01

Location		Easting	Northing	Elevation		
AOC53109_RW01_BH01		552734	360440	2.65		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.65	2.25	0.00	0.40	0.40	Very soft brown slightly gravelly silty CLAY with frequent rootlets (up to 30x1x1 mm). Angular gravel. Topsoil.	Topsoil / Made Ground (Victorian to Modern)
2.25	1.95	0.40	0.70	0.30	Very soft brown mottled orange-brown and blueish-grey slightly silty slightly dandy, becoming sandy SILT.	Holocene - Tidal Mudflats 2
1.95	0.80	0.70	1.85	1.15	Brown, mottled orange-brown, slightly clayey fine to medium silty SAND.	
0.80	-0.50	1.85	3.15	1.30	Dark grey and brownish grey slightly silty, locally silty, fine to coarse SAND.	
-0.50	-0.80	3.15	3.45	0.30	Loose light brownish-yellow/brown slightly sandy flint and quartzite GRAVEL. Rounded to angular.	Holocene - Storm Beach / Marine Sand
-0.80	-4.65	3.45	7.30	3.85	Very soft brown and brownish grey becoming dark grey SILT	Holocene - Tidal Mudflats 1
-4.65	-5.51	7.30	8.16	0.86	Moist. Very soft, mid to dark blueish-grey medium to coarse sandy SILT with occasional to frequent fine to coarse subrounded to subangular gravel.	
-5.51	-6.35	8.16	9.00	0.84	Firm, becoming stiff at 8.52 m CLAY with frequent fine to coarse, rounded to angular GRAVEL of chalk.	Pleistocene - Till
-6.35	-6.60	9.00	9.25	0.25	Mid to dark yellowish-brown, becoming greyish-brown with depth, slightly silty, very clayey medium to coarse SAND. Frequent patches of silty SAND. Frequent fine to medium subrounded to subangular gravel. Very soft. Moist.	
-6.60	-7.85	9.25	10.50	1.25	Very loose. Moist. Medium to coarse slightly clayey sandy fine to coarse GRAVEL.	
#REF!	-8.76	#REF!	11.41	#REF!	Soft mid yellow-brown, grey mottled silty clayey medium to coarse SAND with frequent fine GRAVEL.	

-8.76	-9.35	11.41	12.00	0.59	Compact/loose when disturbed, slightly clayey silty SAND. Rare to occasional medium to coarse subrounded GRAVEL.	
-9.35	-10.85	12.00	13.50	1.50	Firm mid blue-grey mottled orange-brown clayey SILT, becoming silty CLAY at 12.5 m. Rare amorphous peat speckling in upper portion (~12.5). Very firm at 13 m.	Tertiary bedrock - Tealby Fm
-10.85	-12.35	13.50	15.00	1.50	Loose mid brown-yellow fine to coarse SAND with frequent fine to medium subrounded to subangular flint gravel.	
-12.35	-15.65	15.00	18.30	3.30	Firm to stiff dark grey CLAY.	
-15.65	-16.85	18.30	19.50	1.20	Compact dark grey very clayey coarse yellow SAND with medium subrounded GRAVEL.	

Table 35 Deposit log for AOC53109_RW02-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_RW02_BH01		552764	360220	2.95		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.95	2.55	0.00	0.40	0.40	Very soft, friable mid orange-brown silty SANDY TOPSOIL with frequent rootlets, occasional roots, and rare moss/grass.	Topsoil / Made Ground (Victorian to Modern)
2.55	2.10	0.40	0.85	0.45	Loose, dry, mid brown clayey SAND with occasional rootlets.	Holocene - Tidal Mudflats 2
2.10	1.75	0.85	1.20	0.35	Soft to firm, moist, mid brown with orange-brown mottles fine sandy CLAY. Rare rootlets.	
1.75	1.40	1.20	1.55	0.35	Firm mid brown silty CLAY.	
1.40	1.07	1.55	1.88	0.33	Firm mid orange brown silty fine SAND.	
1.07	-0.13	1.88	3.08	1.20	Firm dark grey, locally brownish-grey, silty fine SAND. Organic odour.	
-0.13	-0.61	3.08	3.56	0.48	Void.	
-0.61	-1.05	3.56	4.00	0.44	Firm dark grey mottled greyish-brown silty fine SAND with frequent moderate sized (~2 mm) horizontal dark grey clayey SILT laminations.	
-1.05	-2.25	4.00	5.20	1.20	GRAVEL of various lithologies. Rare shell fragments.	Holocene - Storm Beach / Marine Sand

-2.25	-4.40	5.20	7.35	2.15	Soft dark blueish-grey, mottled orangish-brown, sandy silty CLAY with occasional to frequent fine to medium gravel of chalk and siltstone.	Holocene - Tidal Mudflats 1
#REF!	-5.45	#REF!	8.40	#REF!	Firm mid yellowish-brown, mottled mid blueish-grey, silty sandy CLAY with occasional to frequent fine to medium subrounded gravel. Rare organic (~2 mm) speckling.	Pleistocene - Till
-5.45	-8.05	8.40	11.00	2.60	Stiff light blueish-grey frequently mottled orangish-brown sandy CLAY with rare fine GRAVEL of flint.	
-8.05	-10.25	11.00	13.20	2.20	Stiff mid blueish-grey mottled yellowish-brown silty CLAY with rare shell fragments and occasional fine organic speckling from 12.4 m.	
-10.25	-14.05	13.20	17.00	3.80	Stiff light grey sandy CLAY with GRAVEL of chalk and frequent sandy pockets.	
-14.05	-17.05	17.00	20.00	3.00	Very stiff dark grey CLAY.	Tertiary bedrock - Tealby Fm

Table 36 Deposit log for AOC53109_RW03-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_RW03_BH01		552755.9	360213.1	2.85		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.85	2.40	0.00	0.45	0.45	TOPSOIL. Very soft greyish brown slightly gravelly slightly sandy silty CLAY with frequent rootlets.	Topsoil / Made Ground (Victorian to Modern)
2.40	1.00	0.45	1.85	1.40	Very soft greyish brown and orangish brown slightly silty locally silty fine to medium SAND.	Holocene - Tidal Mudflats 2
1.00	-2.45	1.85	5.30	3.45	Dark grey and brownish grey slightly silty locally silty fine and medium SAND.	
-2.45	-4.05	5.30	6.90	1.60	Very soft brown and brownish grey slightly silty locally sily fine to medium SAND.	
-4.05	-7.15	6.90	10.00	3.10	Very soft, brown and brownish grey, locally black organic SILT.	Holocene - organic deposits
-7.15	-9.65	10.00	12.50	2.50	Firm light grey, mottled orangish-brown, becoming brown slightly sandy SILT	Holocene - Tidal Mudflats 1

-9.65	-10.12	12.50	12.97	0.47	Firm dark yellowish brown/yellowish grey fine to coarse SAND. Moist.	
-10.12	-10.43	12.97	13.28	0.31	Stiff clayey fine to coarse SAND with occasional subrounded gravel.	
-10.43	-10.65	13.28	13.50	0.22	Firm dark grey slightly clayey silty SAND.	
-10.65	-11.15	13.50	14.00	0.50	Compact fine to coarse sandy fine to coarse, predominantly coarse, subangular to angular GRAVEL.	Pleistocene - Glaciofluvial
#REF!	-11.45	#REF!	14.30	#REF!	Void.	
-11.45	-12.00	14.30	14.85	0.55	Slightly silty fine to coarse SAND becoming frequent medium to coarse subangular GRAVEL	
-12.00	-12.65	14.85	15.50	0.65	Mid yellow brown fine to coarse sandy, fine to coarse, predominantly coarse subrounded to subangular GRAVEL	
-12.65	-17.15	15.50	20.00	4.50	Very stiff dark grey CLAY.	Tertiary bedrock - Tealby Fm

Table 37 Deposit log for AOC53109_RWC1-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_RWC1_BH01		548936	360151	2.05		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.05	1.65	0.00	0.40	0.40	Very soft brown slightly gravelly silty CLAY with abundant rootlets. Gravel is angular to subangular fine to medium of flint and brick.	Topsoil / Made Ground (Victorian to Modern)
1.65	0.85	0.40	1.20	0.80	Soft, becoming firm, light to mid grey, locally orangish-brown, slightly silty CLAY.	Holocene - Tidal Mudflats 2
0.85	0.30	1.20	1.75	0.55	Soft, becoming firm, mid orange-brown, mottled mid blueish-grey, silty CLAY with frequent fine (<1 mm) dark grey, potentially organic, speckling and occasional woody/rootlet remains.	

0.30	0.26	1.75	1.79	0.04	Dark grey, locally black and dark brown, pseudo-fibrous peat. Firm with occasionally woody remains.	Holocene - organic deposits
0.26	-0.45	1.79	2.50	0.71	VERY soft mid blueish-grey sIlty CLAY with frequent woody rootlets and organic speckling.	Holocene - Tidal Mudflats 1
-0.45	-0.95	2.50	3.00	0.50	Very soft mid brown frequently mottled dark blueish-grey silty CLAY with very frequent rooting.	
-0.95	-1.45	3.00	3.50	0.50	Void.	
-1.45	-2.95	3.50	5.00	1.50	Very soft mid blueish-grey occasionally mottled brown silty CLAY with occasional to frequent rootless and plant remains.	
-2.95	-3.35	5.00	5.40	0.40	Void.	
-3.35	-3.80	5.40	5.85	0.45	Very soft mid brownish-grey silty CLAY with frequent fine (~1 mm) organic speckling and rare shell fragments.	
-3.80	-8.95	5.85	11.00	5.15	Stiff mid orange-brown silty CLAY with frequent fine to coarse, predominantly coarse subrounded GRAVEL of chalk, sandstone and siltstone. Frequent rootless between 5.85-6.0 m. Occasional pockets (~5 cm) of oxidised fine SAND.	Pleistocene - Till
-8.95	-11.95	11.00	14.00	3.00	Loose yellowish brown medium to coarse SAND and fine to medium gravel of flint.	Tertiary bedrock - Spilsby Sandstone
-11.95	-13.45	14.00	15.50	1.50	Void.	
	-13.75	15.50	15.8	0.3	Calcareous SANDSTONE.	
	-17.95	15.8	20	4.2	Loose very dark grey silty SAND.	

Table 38 Deposit log for AOC53109_RWC2-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_RWC2_BH01		548661	359536	1.85		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
1.85	1.45	0.00	0.40	0.40	Very soft brown, locally orangish-brown, slightly gravelly CLAY with frequent rootlets. Gravel is fine to medium angular to subangular flint, brick and rare shell fragments.	Topsoil / Made Ground (Victorian to Modern)

1.45	0.65	0.40	1.20	0.80	Very soft brown, mottled orangish-brown and blueish-grey slightly silty slightly gravelly CLAY with rare rootlets and partially decomposed roots. Gravel is angular to subangular, fine to medium flint.	Holocene - Tidal Mudflats 2
0.65	0.45	1.20	1.40	0.20	Very soft mid brown silty CLAY with rare medium subangular flint gravel.	
0.45	0.35	1.40	1.50	0.10	Dark brown, locally black, amorphous, occasionally with woody fragments.	Holocene - organic deposits
0.35	-0.45	1.50	2.30	0.80	Very soft mid brown, locally mottled dark blueish-grey silty CLAY with frequent roots and plant remains.	
-0.45	-1.55	2.30	3.40	1.10	Very soft mid brownish-grey mottled dark blueish-grey silty CLAY with rare to occasional plant remains.	
-1.55	-2.15	3.40	4.00	0.60	Very soft mid yellowish-brown, locally mottled mid blueish-grey silty CLAY with slightly organic (<2 mm) patches.	
-2.15	-3.64	4.00	5.49	1.49	Very soft, moist, mid brownish-grey very silty CLAY.	
-3.64	-3.85	5.49	5.70	0.21	Very soft, moist, dark grey clayey SILT with rare organic speckles (<1 mm).	
-3.85	-4.00	5.70	5.85	0.15	V soft, moist, dark grey slightly peaty CLAY.	
-4.00	-4.65	5.85	6.50	0.65	Very soft dark grey very silty CLAY with frequent black organic speckling.	
-4.65	-5.08	6.50	6.93	0.43	Very soft, moist, dark blueish-grey clayey SILT with frequent medium gravel-sized organic speckling throughout.	
-5.08	-5.16	6.93	7.01	0.08	Very soft very dark brown/black amorphous PEAT.	
-5.16	-5.35	7.01	7.2	0.19	Very soft, moist, dark blueish-grey clayey SILT with frequent medium gravel-sized organic speckling throughout.	

-5.35	-8.05	7.2	9.9	2.7	Stiff mid orange-brown, mottled dark blueish-grey, silty CLAY with frequent fine to coarse rounded to angular GRAVEL of chalk, quartzite, flint and sandstone. Between 8.60-8.90 m, occasional light blueish-grey staining around rootlets.	Pleistocene - Till
-8.05	-9.15	9.9	11	1.1	Firm mid greyish-brown CLAY.	
-9.15	-10.65	11	12.5	1.50	Dense, mid greyish-brown fine SAND and fine to coarse GRAVEL.	
-10.65	-13.65	12.5	15.5	3.00	Hard dark grey SANDSTONE.	Tertiary bedrock - Spilsby Sandstone
-13.65	-16.65	15.5	18.5	3.00	Hard dark grey CLAY.	Tertiary Bedrock - Kimmeridge Clay

Table 39 Deposit log for AOC53109_RWC3-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_RWC3_BH01		552966.3	359875.6	3.4		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.40	2.80	0.00	0.60	0.60	Vegetation over very soft brown slightly sandy silty CLAY with abundant rootlets.	Topsoil / Made Ground (Victorian to Modern)
2.80	2.20	0.60	1.20	0.60	Very soft brown, mottled light grey, silty CLAY with frequent becoming rare rootlets.	Holocene - Tidal Mudflats 2
2.20	1.93	1.20	1.47	0.27	Soft, dry, mid blueish-grey, mottled orangish-brown, silty CLAY with occasional rootlets, organic speckling and orange oxidised silty patches.	
1.93	1.83	1.47	1.57	0.10	Very soft mid blueish-grey occasionally mottled orangish-brown and dark grey silty CLAY. Frequent organic speckling.	
1.83	1.56	1.57	1.84	0.27	Firm fibrous PEAT with frequent woody and plant remains.	Holocene - organic deposits
1.56	0.55	1.84	2.85	1.01	Very soft mid blueish-grey occasionally mottled orangish-brown and dark grey silty CLAY. Frequent organic speckling and pockets of PEAT until 2.0 m.	

0.55	-0.20	2.85	3.60	0.75	Very soft light grey mottled mid orangish-brown/light yellowish-brown silty CLAY with frequent rootlets/plant remains from 2.85-3.00 m. From 3.00 m occasional (~2 cm) pockets of black firm/fibrous PEAT. Frequent organic speckling, plant/rootlet remains.	
-0.20	-1.17	3.60	4.57	0.97	Very soft light grey mottled mid orangish-brown/light yellowish-brown silty CLAY with frequent rootlets, plant remains, and decomposed root tracks.	
-1.17	-3.54	4.57	6.94	2.37	Very soft silty CLAY with frequent medium gravel-sized pockets of PEAT, woody fragments and organic speckling (<1 mm).	
-3.54	-3.97	6.94	7.37	0.43	Very soft silty CLAY with occasional to frequent rootlet remains.	Holocene - Tidal Mudflats 1
-3.97	-4.90	7.37	8.30	0.93	Firm to stiff mid orangish-brown, mottled light and dark blueish-grey slightly sandy silty CLAY with frequent fine to medium subrounded to subangular GRAVEL of chalk and occasional flint. Rare to occasional woody rootlets.	Pleistocene - Till

Table 40 Deposit log for AOC53109_RWC3-BH01A

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_RWC3_BH01A		548559.2	359429.7	1.55		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
1.55	1.20	0.00	0.35	0.35	Soft brown slightly sandy silty CLAY.	Holocene - Tidal Mudflats 2
1.20	0.35	0.35	1.20	0.85	Firm, light brown, locally mottled orangish-brown slightly sandy silty CLAY.	
0.35	0.02	1.20	1.53	0.33	Soft mid brown mottled blueish-grey and light yellowish-brown silty CLAY with occasional rootlets.	
0.02	-0.21	1.53	1.76	0.23	Very soft silty CLAY with occasional to frequent orangish-brown fine sandy pockets and rare shell fragments.	
-0.21	-0.64	1.76	2.19	0.43	Firm black/dark brown amorphous PEAT with frequent woody fragments and rootlets.	Holocene - organic deposits

-0.64	-2.45	2.19	4.00	1.81	Very soft silty CLAY with frequent pockets of peat and rare wood fragments.	
-2.45	-3.95	4.00	5.50	1.50	Very soft silty CLAY with frequent fine dark grey silty laminations and frequent pockets of peat. Rare wood fragments.	
-3.95	-5.05	5.50	6.60	1.10	Very soft silty CLAY with frequent organic peaty material, plant rootlets and plant trackways.	
-5.05	-5.15	6.60	6.70	0.10	Fir black/dark brown pseudo-fibrous PEAT with frequent woody fragments and rootlets.	
-5.15	-5.38	6.70	6.93	0.23	Soft mid blueish-grey, mottled yellowish-brown and grey, silty CLAY with frequent peaty inclusions.	Holocene - Tidal Mudflats 1
-5.38	-8.45	6.93	10.00	3.07	Firm, mid yellowish-brown mottled light and dark blueish-grey silty CLAY with frequent fine to medium rounded to subrounded GRAVEL of chalk and siltstone. Frequent plant rootlets.	Pleistocene - Till
-8.45	-9.95	10.00	11.50	1.50	Firm mid brown CLAY becoming sandier and gravellier from 11.40 m.	
-9.95	-11.13	11.50	12.68	1.18	Light brown and black SAND (weathered sandstone)..	Tertiary bedrock - Spilsby Sandstone
-11.13	-11.75	12.68	13.3	0.62	Hard black calcareous SANDSTONE.	
-11.75	-18.45	13.3	20	6.7	Hard, dark grey highly calcareous CLAY.	Tertiary Bedrock - Kimmeridge Clay

Table 41 Deposit log for AOC53109_SD/SF-BH01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_RWC3_BH01A		548559.2	359429.7	1.55		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
1.55	1.20	0.00	0.35	0.35	Soft brown slightly sandy silty CLAY.	Holocene - Tidal Mudflats 2
1.20	0.35	0.35	1.20	0.85	Firm, light brown, locally mottled orangish-brown slightly sandy silty CLAY.	
0.35	0.02	1.20	1.53	0.33	Soft mid brown mottled blueish-grey and light yellowish-brown silty CLAY with occasional rootlets.	

0.02	-0.21	1.53	1.76	0.23	Very soft silty CLAY with occasional to frequent orangish-brown fine sandy pockets and rare shell fragments.	
-0.21	-0.64	1.76	2.19	0.43	Firm black/dark brown amorphous PEAT with frequent woody fragments and rootlets.	Holocene - organic deposits
-0.64	-2.45	2.19	4.00	1.81	Very soft silty CLAY with frequent pockets of peat and rare wood fragments.	
-2.45	-3.95	4.00	5.50	1.50	Very soft silty CLAY with frequent fine dark grey silty laminations and frequent pockets of peat. Rare wood fragments.	
-3.95	-5.05	5.50	6.60	1.10	Very soft silty CLAY with frequent organic peaty material, plant rootlets and plant trackways.	
-5.05	-5.15	6.60	6.70	0.10	Fir black/dark brown pseudo-fibrous PEAT with frequent woody fragments and rootlets.	
-5.15	-5.38	6.70	6.93	0.23	Soft mid blueish-grey, mottled yellowish-brown and grey, silty CLAY with frequent peaty inclusions.	Holocene - Tidal Mudflats 1
-5.38	-8.45	6.93	10.00	3.07	Firm, mid yellowish-brown mottled light and dark blueish-grey silty CLAY with frequent fine to medium rounded to subrounded GRAVEL of chalk and siltstone. Frequent plant rootlets.	Pleistocene - Till
-8.45	-9.95	10.00	11.50	1.50	Firm mid brown CLAY becoming sandier and gravellier from 11.40 m.	
-9.95	-11.13	11.50	12.68	1.18	Light brown and black SAND (weathered sandstone)..	Tertiary bedrock - Spilsby Sandstone
-11.13	-11.75	12.68	13.3	0.62	Hard black calcareous SANDSTONE.	
-11.75	-18.45	13.3	20	6.7	Hard, dark grey highly calcareous CLAY.	Tertiary Bedrock - Kimmeridge Clay

Table 42 Deposit log for AOC53109_SL-BH01

Location		Easting	Northing	Elevation		
AOC53109_SD/SF_BH01		544296	349528	3.3		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.30	2.90	0.00	0.40	0.40	Vegetation over soft mid orangish-brown, mottled blueish-grey silty sandy CLAY.	Topsoil / Made Ground (Victorian to Modern)
2.90	2.40	0.40	0.90	0.50	Soft, mid greyish-brown, mottled orangish-brown silty clayey fine to medium sandy CLAY.	Holocene - Tidal Mudflats 1
2.40	2.10	0.90	1.20	0.30	Soft, friable mid orangish-brown very clayey silty fine to medium SAND.	
2.10	1.10	1.20	2.20	1.00	Firm, mid brown slightly silty fine to medium micaceous SAND. Frequent laminations of blueish-grey silty CLAY.	
1.10	0.70	2.20	2.60	0.40	Compact, friable mid brown, frequently mottled blueish-grey SAND.	
0.70	0.10	2.60	3.20	0.60	Compact, friable mid blueish-grey SAND with frequent silty CLAY laminations.	
0.10	-1.30	3.20	4.60	1.40	Compact, friable grey silty fine SAND with frequent silty CLAY laminations.	
-1.30	-1.90	4.60	5.20	0.60	Very soft, mistimed brown/grey silty CLAY with frequent bivalve shells.	
-1.90	-2.59	5.20	5.89	0.69	Firm, mid blueish-grey slightly silty sandy CLAY.	
-2.59	-3.10	5.89	6.40	0.51	Compact, friable mid brown slightly silty clayey SAND with frequent fine dark grey horizontal laminations (<2 mm).	
-3.10	-5.00	6.40	8.30	1.90	Compact, friable mid brown slightly silty clayey SAND with frequent fine dark grey horizontal laminations (<2 mm).	
-5.00	-6.03	8.30	9.33	1.03	Homogenous light yellowish-brown SAND.	
-6.03	-7.82	9.33	11.12	1.79	Loose, light yellowish-brown slightly silty fine to coarse SAND with thin (~2 mm) dark grey silty sand laminations. Bedding structures present.	

-7.82	-8.14	11.12	11.44	0.32	Dark grey brown. Moist. Slightly clayey fine to coarse micaceous SAND and medium to coarse angular GRAVEL with frequent SHELLS.	Pleistocene - Glaciofluvial
-8.14	-10.2	11.44	13.5	1.91	Firm to stiff mid orangish-brown, mottled blueish-grey, sandy CLAY with occasional fine to medium subangular GRAVEL of flint and sandstone. Becoming sandier from 12.76 m.	Pleistocene - Till
-10.2	-12.6	13.5	15.9	2.40	Compact mid brownish-yellow medium to coarse SAND.	
-12.6	-16.7	15.9	20	4.10	Stiff dark grey CLAY with frequent shells.	Tertiary Bedrock - Kimmeridge Clay

Trial Pit Logs

Table 43 Deposit log for AOC53109_CR-TP01

Bore		Easting	Northing	Elevation		
AOC53109_CR_TP01		530577.6	330445.6	3.35		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.35	2.85	0.00	0.50	0.50	Topsoil. Soft, friable mid greyish-brown silty SAND with occasional small rounded stones.	Topsoil / Made Ground (Victorian to Modern)
2.85	2.45	0.50	0.90	0.40	Firm, friable dull yellow coarse SAND. Sterile.	Holocene - Tidal Mudflats 1
2.45	1.35	0.90	2.00	1.10	Firm, friable dull yellow with veins of mid silvery grey SAND. Low clay content.	
1.35	0.15	2.00	3.20	1.20	Soft, compact, friable mid blackish-blue, wet, coarse SAND. Salty and organic odour.	

Table 44 Deposit log for AOC53109_RW01-TP01

Location		Easting	Northing	Elevation		
AOC53109_RW01_TP01		552724.7	360442.1	2.6		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.60	2.20	0.00	0.40	0.40	TOPSOIL. Firm, friable, mid brown silty CLAY with occasional small rounded stones and frequent rooting.	Topsoil / Made Ground (Victorian to Modern)
2.20	2.00	0.40	0.60	0.20	SUBSOIL. Firm, malleable, dark brown silty CLAY with occasional small stones and frequent rooting.	

2.00	0.60	0.60	2.00	1.40	Soft, friable mid brownish grey fine silty SAND with some iron staining, some rooting and a low clay content. Homogenous deposit.	Holocene - Tidal Mudflats 1
0.60	-0.30	2.00	2.90	0.90	Soft, damp, dark blue-black fine silty SAND with a degraded organic smell. Flooding/degraded organic layer.	
-0.30	-0.50	2.90	3.10	0.20	Gravel and shells. Fine gravel and medium river pebbles. Smells slightly salty. Coarse SAND and some clay content.	Pleistocene - Glaciofluvial

Table 45 Deposit log for AOC53109_RW02-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_RW02_TP01		552966	359876	3.4		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.40	2.50	0.00	0.90	0.90	TOPSOIL. Soft, friable mid greyish brown silty SAND with occasional small rounded stones and organics.	Topsoil / Made Ground (Victorian to Modern)
2.50	1.40	0.90	2.00	1.10	Soft, friable, mid grey with iron staining laminated silty CLAY with some small inclusions of manganese.	Holocene - Tidal Mudflats 1
1.40	-0.10	2.00	3.50	1.50	Soft, friable, mid blackish grey silty fine SAND with some shells towards the base. Damp and salty smelling. Homogenous.	

Table 46 Deposit log for AOC53109_RW03-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_RW03_TP01		552977.9	359876.4	2.95		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
2.95	2.05	0.00	0.90	0.90	TOPSOIL. Firm/friable mid greyish brown sandy SILT with some clay content. Occasional small stones.	Topsoil / Made Ground (Victorian to Modern)
2.05	0.95	0.90	2.00	1.10	Soft, friable mid grey with iron staining laminated silty CLAY with small specks of manganese.	Holocene - Tidal Mudflats 1
0.95	-0.55	2.00	3.50	1.50	Soft, friable mid blackish grey, damp, silty fine SAND with rare shell inclusions. Organic and salty smelling. Homogenous.	

Table 47 Deposit log for AOC53109_RWC1-TP01

Location		Easting	Northing	Elevation		
AOC53109_RWC1_TP01		548942.9	360145.6	1.65		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
1.65	1.25	0.00	0.40	0.40	Topsoil. Firm, friable dark greyish brown silty CLAY with some small rounded stones and modern debris.	Topsoil / Made Ground (Victorian to Modern)
1.25	0.45	0.40	1.20	0.80	Firm, friable silty CLAY with occasional small rounded stones. Dark blueish-grey with some iron staining.	Holocene - Tidal Mudflats 2
0.45	-0.25	1.20	1.90	0.70	Firm, friable dull mid blueish grey slick silty CLAY with occasional small rounded stones.	
-0.25	-0.45	1.90	2.10	0.20	Dark brownish-black, damp PEAT with occasional medium clumps of mixed vegetation.	Holocene - organic deposits
-0.45	-2.05	2.10	3.70	1.60	Soft, malleable, damp, dull greyish-blue CLAY with occasional small pockets of dull yellow fine sand.	Holocene - Tidal Mudflats 1

Table 48 Deposit log for AOC53109_RWC2-TP01

Location		Easting	Northing	Elevation		
AOC53109_RWC2_TP01		548668.6	359555	1.1		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
1.10	0.70	0.00	0.40	0.40	Topsoil. Loose, mid to dark brownish grey sandy/silty CLAY with frequent small rounded stones. Arable soil.	Topsoil / Made Ground (Victorian to Modern)
0.70	0.20	0.40	0.90	0.50	Subsoil. Very firm, mid blackish grey with some blue mottling slick silty CLAY.	
0.20	-0.40	0.90	1.50	0.60	Malleable, mid blueish-grey slick CLAY with some blue veins throughout.	Holocene - Tidal Mudflats 2
-0.40	-1.00	1.50	2.10	0.60	Very firm, slick light grey CAY with some sandy content. Malleable.	
-1.00	-1.30	2.10	2.40	0.30	Dark black, very organic PEAT with some small twigs and leaves.	Holocene - organic deposits
-1.30	-1.35	2.40	2.45	0.05	Thin band of pale red/pinkish fine SAND.	

-1.35	-2.50	2.45	3.60	1.15	Soft, malleable, very slick, damp, bright pale blue 'silvery' CLAY with occasional organic material.	

Table 49 Deposit log for AOC53109_RWC3-TP01

Location		**Easting**	**Northing**	**Elevation**		
AOC53109_RWC3_TP01		548569	359426	1.8		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
1.80	1.40	0.00	0.40	0.40	Topsoil. Firm, friable dark greyish brown silty CLAY with occasional small rounded stones.	Topsoil / Made Ground (Victorian to Modern)
1.40	1.00	0.40	0.80	0.40	Subsoil. Firm, malleable dark grey fine sandy CLAY with some rooting.	
1.00	0.50	0.80	1.30	0.50	Firm, malleable, mid grey laminated silty CLAY with occasional rooting and some blue veins.	Holocene - Tidal Mudflats 2
0.50	0.30	1.30	1.50	0.20	Water borne deposit. Soft, malleable, dull blueish-grey slick CLAY with some dull yellow sandy pockets.	
0.30	0.00	1.50	1.80	0.30	Dark black PEAT with some small clumps of wood and vegetation.	Holocene - organic deposits
0.00	-1.90	1.80	3.70	1.90	Soft, malleable blue with some grey mottling CLAY with occasional pockets of degraded organics.	

Table 50 Deposit log for AOC53109_SD/SF-TP01

Location		Easting	Northing	Elevation		
AOC53109_SD/SF_TP01		544300.5	349517.2	3.2		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.20	3.00	0.00	0.20	0.20	Topsoil. Firm, friable dark greyish-brown silty SAND with occasional small rounded stones and frequent rooting.	Topsoil / Made Ground (Victorian to Modern)
3.00	2.70	0.20	0.50	0.30	Subsoil. Firm, malleable mid greyish-brown silty CLAY with some rooting and small rounded stones.	Holocene - Tidal Mudflats 2
2.70	2.10	0.50	1.10	0.60	Compact, friable, laminated dull white and pale brown silty SAND.	
2.10	1.20	1.10	2.00	0.90	Soft, friable, damp, dull silvery grey SAND with some CLAY laminations.	
1.20	0.40	2.00	2.80	0.80	Soft, wet dark blue black SAND with highly degraded organics. Smells salty.	Holocene - organic deposits

Table 51 Deposit log for AOC53109_SL-TP01

Location		Easting	Northing	Elevation		
AOC53109_SL_TP01		548976.8	354654.7	3		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.00	2.60	0.00	0.40	0.40	Topsoil. Loose, friable mid brownish grey silty coarse SAND with frequent small rounded rocks.	Topsoil / Made Ground (Victorian to Modern)
2.60	1.90	0.40	1.10	0.70	Firm, friable mid to dark grey with lenses of dark grey silver laminated fine SAND with sandy CLAY. Frequent iron staining.	Holocene - Tidal Mudflats 1
1.90	1.30	1.10	1.70	0.60	Soft, friable dull silvery grey fine SAND. Damp. Occasional iron staining.	
1.30	0.70	1.70	2.30	0.60	Soft, friable, damp mid to dark blueish-grey fine SAND with occasional shell fragments.	

Geotechnical Investigation Logs

Table 52 Deposit log for AOC53109_CR-BH01

Location		Easting	Northing	Elevation		
AOC53109_WMS_BH01		532484.4	332405.8	3.95		
Top elevation (m OD)	**Base elevation (m OD)**	**Top depth (m bgl)**	**Base depth (m bgl)**	**Thickness (m)**	**Description**	**Interpretation**
3.95	3.45	0.00	0.50	0.50	Light brown slightly gravelly sandy SILT with frequent rootlets. Gravel is angular and subangular fine to coarse flint.	Topsoil / Made Ground - Victorian to Modern
3.45	1.45	0.50	2.50	2.00	Orangish brown and brown silty fine SAND with rare lenses (up to 2x50mm) of black silt. 1.20-2.50m: Loose.	Holocene Tidal Mudflats (1)
1.45	-1.45	2.50	5.40	2.90	Loose brownish grey silty fine and medium SAND with rare extremely closely spaced thin laminae of black silt, rare shell fragments and lignite (up to 10mm).	
-1.45	-2.55	5.40	6.50	1.10	Light brownish grey silty fine SAND with rare extremely closely spaced thin laminae of black silt.	
-2.55	-4.55	6.50	8.50	2.00	Very loose becoming loose grey silty fine SAND with extremely closely spaced thin laminae of black silt locally with abundant shell fragments (up to 20mm).	
-4.55	-8.35	8.50	12.30	3.80	Light brownish grey fine silty SAND with rare extremely closely spaced thin laminae of black silt and rare shell fragments (up to 10mm). 11.00m: Dense.	
-8.35	-10.25	12.30	14.20	1.90	Very dense brown silty very gravelly fine and medium SAND. Gravel is subangular and subrounded fine to coarse flint and quartzite.	Pleistocene - Glaciofluvial Deposits
-10.25	-16.36	14.20	20.31	6.11	Stiff becoming very stiff grey slightly sandy slightly gravelly silty CLAY. Gravel is subrounded and rounded fine to coarse flint, chalk and siltstone.	Pleistocene - Till

16 APPENDIX C – OASIS FORM

OASIS Summary for aocarcha1-519627

OASIS ID (UID)	aocarcha1-519627
Project Name	Outer Dowsing Offshore Wind – Wolla Bank to Weston Marsh: Geotechnical Investigation Monitoring and Deposit Model Report
Sitename	Outer Dowsing Offshore Wind – Wolla Bank to Weston Marsh
Sitecode	AOC DOW23
Project Identifier(s)	AOC DOW23
Activity type	Watching Brief
Planning Id	
Reason For Investigation	Planning: Pre application
Organisation Responsible for work	AOC Archaeology Group
Project Dates	07-Jun-2023 - 01-Aug-2023
Location	Outer Dowsing Offshore Wind – Wolla Bank to Weston Marsh NGR : TF 46300 53900 LL : 53.062322325714206, 0.181765950017592 12 Fig : 546300,353900
Administrative Areas	Country : England County/Local Authority : Lincolnshire Local Authority District : East Lindsey Parish : Friskney
Project Methodology	The archaeological monitoring of geotechnical investigation comprised the monitoring of 24 geotechnical boreholes to a maximum depth of c. 40.1 m BGL and 24 trial pits to a maximum depth of 3.90 m BGL, and a deposit model update. Geoarchaeological and geotechnical deposit data can be used to identify areas of archaeological potential by characterising the probable nature and depth of sub-surface deposits.
Project Results	Based on distribution and character of the deposit sequence, areas of potential for archaeological and palaeoenvironmental remains have been mapped for the site. These include area of potential A1 – tidal mudflats with saltern deposits, area of potential A2 – tidal mudflats, area of potential B – organic deposits, area of potential C – Storm Beach deposits, area of potential D – glaciofluvial deposits, and area of potential E – glacial till. It is recommended that the impact on deposits of interest may be mitigated by a mixed programme of monitoring of site/ground investigation, purposive geoarchaeological boreholes and test pits, geophysics, evaluation trenching.
Keywords	
Funder	Private or public corporation
HER	Lincolnshire HER - unRev - STANDARD
Person Responsible for work	Virgil Yendell
HER Identifiers	
Archives	

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