Historic England

Rapid Coastal Zone Assessment Survey Yorkshire and Lincolnshire: Phase 3

Project Overview

Thematic Discussion of Selected Aspects

T. Brigham, Humber Archaeology

Discovery, Innovation and Science in the Historic Environment

Research Report Series no. 99-2015

Rapid Coastal Zone Assessment Survey

Yorkshire and Lincolnshire: Phase 3

Project Overview

Thematic Discussion of Selected Aspects

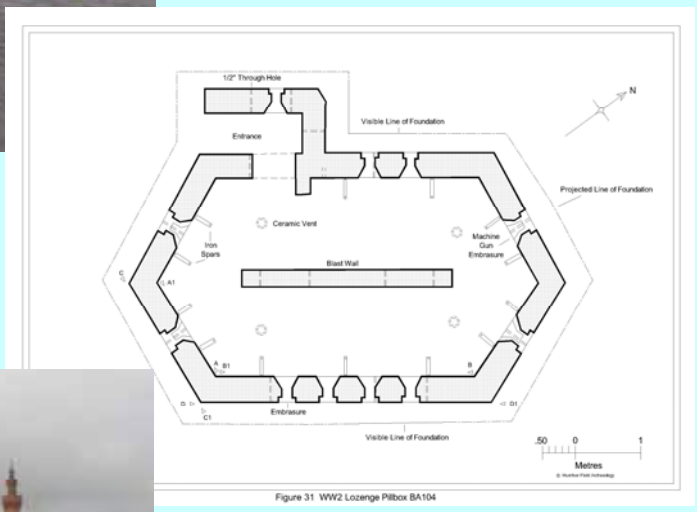


Figure 31 WW2 Lozenge Pillbox BA104

ENGLISH HERITAGE

Humber Field Archaeology
Archaeological Consultants and Contractors

RAPID COASTAL ZONE ASSESSMENT

YORKSHIRE AND LINCOLNSHIRE

Project Overview

Thematic Discussion of Selected Aspects

English Heritage Project 3729

PHASE 3

T. Brigham
HUMBER FIELD ARCHAEOLOGY, The Old School, Northumberland Avenue, KINGSTON UPON HULL, HU2 0LN.

September 2014

Humber Archaeology Report No.422

© Humber Field Archaeology & English Heritage 2014

Contents

List of Figures 3
List of Plates 3
1 SUMMARY 12
2 INTRODUCTION 13
2.1 Background 13
2.2 Definition of the study area 13
2.3 Objectives 13
2.4 Sources 13
3 EARLY EXPLOITATION, SETTLEMENT AND LAND USE 15
4 INDUSTRY 50
5 FISHING 71
6 PORTS, HARBOURS AND SHIPBUILDING 100
7 MILITARY INSTALLATIONS 132
8 TOURISM 167
ACKNOWLEDGEMENTS 208
SELECT BIBLIOGRAPHY 208

List of Figures

(Located at rear of report)

Figure 1 Location plan, showing the main study areas
Figure 2 Location plan showing parish boundaries, North Yorkshire and East Riding of Yorkshire
Figure 3 Location plan showing parish boundaries, North East Lincolnshire and Lincolnshire
Figure 4 Location plan of recorded industrial sites, North Yorkshire
Figure 5 Location plan of recorded industrial sites, East Riding of Yorkshire
Figure 6 Location plan of recorded industrial sites, North East Lincolnshire and Lincolnshire
Figure 7 Location plan of principal fishing centres and known minor fishing stations
Figure 8 Location plan of principal medieval/early post-medieval ports & known minor havens
Figure 9 Historical development of Whitby harbour
Figure 10 Historical development of Scarborough harbour
Figure 11 Reconstructed plan of medieval Flamborough harbour
Figure 12 Historical development of Historical development of Bridlington harbour
Figure 13 Historical development of Grimsby harbour
Figure 14 Location plan of principal resorts and minor former resorts

List of Plates

Plate 1 Typical high cliffs and headland at Peak, Staintondale 15
Plate 2 High cliffs and headland at North Bay, Scarborough, with areas of old rotational failures and undercliffs in the foreground 15
Plate 3 Hilda's Howe barrow, Hawsker 17
Plate 4 Part of prehistoric stone enclosure, Cloughton 17
Plate 5 Typical Iron Age bank and ditch, Speeton 18
Plate 6 Church Ravine, Filey is characteristic of ravines on the North Yorkshire coastline; the road covers a culverted stream which was formerly the North Sea outfall of the Derwent system 20
Plate 7 Well-preserved ridge-and-furrow and hollow-way, Cloughton Wyke 23
Plate 8 Eroding seaward edge of Barmston Mere 25
Plate 9 Remains of Withow Mere western outflow channel, Withow Gap, Skipsea 25
Plate 10 South Landing, Flamborough, focus of Neolithic flint industry and occupation 27
Plate 11 The prominent and well-preserved Danes Dyke monument, Flamborough 27
Plate 12 Typical area of eroding Neolithic surface, Kilnsea Warren, Easington 28
Plate 13 Remains of plough damaged barrow under rape crop, Bempton 29
Plate 14 Site of excavated Bronze Age round barrow marked by darker circle of vegetation in front of sea bank, Easington 30

Plate 15 Detail of two posts of Bronze Age circular structure on Spurn foreshore, Kilnsea Warren (British Geological Society) 30
Plate 16 Buckton Dyke visible as infilled ditch and banks on cliff edge, Bempton 31
Plate 17 Possible north bank of Roman enclosure, Sewerby golf course, Bridlington 33
Plate 18 Exposed Romano-British ditches in low cliff edge, Barmston 33
Plate 19 Medieval land drainage, Earl's Dike, Barmston 37
Plate 20 Medieval village earthworks north-west of Rolston, near Mappleton 37
Plate 21 Ditch of medieval enclosure exposed on cliff edge, Mappleton 38
Plate 22 Moat of medieval manor house at Moat Farm, Grimston, near East Garton 38
Plate 23 Partly exposed ridge-and-furrow on eroding upper beach, Easington 39
Plate 24 Post-medieval Humber outfall of Easington Clough, passing through the sea defences by means of a sluice 40
Plate 25 Exposed clay beds of early land surface, Cleethorpes 42
Plate 26 Neolithic forest floor, Cleethorpes, with tree stump (left) and worked timbers from late Neolithic structure (right foreground) 42
Plate 27 Modern lane following a possible Roman road from the Stixwould area to the coast at Saltfleetby 44
Plate 28 Medieval flood bank, the Eastseadyke, Tetney 45
Plate 29 Typical view of modern seabank and saltmarsh, North Somercotes 46
Plate 30 Medieval house platforms, Theddlethorpe All Saints 46
Plate 31 Surviving ridge-and-furrow near lost medieval settlement, Theddlethorpe All Saints 47
Plate 32 Medieval seabank near Roads Farm, Frampton, incorporated into the landscape as a hedgerow 47
Plate 33 Early 19th-century Hobhole Drain near Hobhole Sluice, Fishtoft 48
Plate 34 View of Witham Navigation, Wyberton, rebuilt 1884 49
Plate 35 Early 19th-century training walls at entrance to the River Nene channel, Sutton Bridge 49
Plate 36 Lighthouse which formerly marked the entrance to the trained Nene channel, Sutton Bridge 49
Plate 37 Remains of alum house at Saltwick Bay 50
Plate 38 Remains of alum house, Saltwick Bay 50
Plate 39 Walls and burnt shale raft within harbour, Saltwick Bay 51
Plate 40 General view of Saltwick Nab alum quarries showing degree of modification of the natural features 51
Plate 41 Regular pattern of square postholes marking possible jetty or foreshore platform, Saltwick Bay 51
Plate 42 Stone culvert supplying Stoupe Brow alum house, Fylingdates 51
Plate 43 Remains of workers' houses, Peak Alum Works 51
Plate 44 View along New Dock cut to load and unload vessels below Peak Alum Works 52
Plate 45 Rutways heading towards New Dock, Peak Alum Works 52
Plate 46 Alumworks platform with jet mines cut in cliff below alum quarry, south end Saltwick Bay 52
Plate 47 Spoil mounds on floor of stone or jet quarry, Nigh Jetticks, Fylingdales 53
Plate 48 Small stone quarry pit, Cloughton 54
Plate 49 Line of wedge-pits for rock splitting, north side of Filey Brigg 55
Plate 50 Quarried area, east end of Filey Brigg 55
Plate 51 Quarry for stone setts, south side of Filey Brigg 55
Plate 52 Pillar and stall quarrying, south side of Filey Brigg 55
Plate 53 Remains of limekiln, Bottom House Farm, Hawsker 56
Plate 54 Remains of limekiln, Cloughton 56
Plate 55 Whitakers & Sons brick kiln in former alum quarry, Peak Alum Works, built to produce bricks for Ravenscar, Scarborough and district 57
Plate 56 Remains of flue or chimney attached to Whitakers brick kiln 57
Plate 57 Former watermill, Boggle Hole, Robin Hood's Bay, now a Youth Hostel 59
Plate 58 Victoria Mill, Scarborough 59
Plate 59 Earthworks of possible medieval and later watermill, one of three built on the lower section of Scalby Beck 59
Plate 60 Scarborough Water Works, site of former medieval to early modern Cayton Cliff Mill 60

Plate 61 Infilled Beacon Hill quarry, Flamborough 60
Plate 62 Former clay pit, Withernsea 62
Plate 63 Brick retaining wall of the lower mill pond of the medieval to early modern Spring Mill, the middle site of three located on the Gypsey Race, Bridlington 63
Plate 64 Clough Bridge Mill, Bridlington, later Victoria Saw Mill, with mill pond below car park and mill channel entering building to left, the lowest of three medieval to early modern watermills 63
Plate 65 Victorian turbine house attached to west end of former Victoria Mill, Bridlington, overlying culverted section of Gypsey Race 64
Plate 66 Site of ploughed out medieval salterns Tetney 66
Plate 67 Area of red soil (rear) on site of one of many late medieval/early post-medieval salterns in, Wrangle and neighbouring parishes 68
Plate 68 Area of former clay pits, Skegness 69
Plate 69 Disused windmill, Freiston 70
Plate 70 Earliest known accurate drawing of small coble being manoeuvred on a wheeled trolley, probably at Whitby, R & D Havell for 'Costumes of Yorkshire', 1814 72
Plate 71 Drawing of coble made during Yarmouth fishing fair, William Cooke, for 'Fifty Plates of Shipping and Craft', 1828 72
Plate 72 Drawing of cobles and other vessels, including a possible herring coble (bottom right) and a lugger (top left), William Cooke, for 'Fifty Plates of Shipping and Craft', 1828 72
Plate 73 Scarborough herring coble 'Dora Ann', Ernest Dade, c 1900 74
Plate 74 Science Museum postcard of early 19th-century Staithes lugger model 75
Plate 75 Filey yawl 'Amity', Ernest Dade, 1893 76
Plate 76 Hull smack 'Rising Sun', subsequently wrecked near Easington, 1883, Hull Museums 78
Plate 77 Line fishing for cod from the deck of a Grimsby smack, 1883 ('Illustrated London News') 78
Plate 78 Wreck of a probable 19th-century double-ended carvel-built yawl or lugger with a central 'wet' hold, viewed from the stern, Mablethorpe, 1997 80
Plate 79 Coble-like boat beached at Mablethorpe in front of beached vessel possibly awaiting dismantling, c 1907 81
Plate 80 Coble-like boat with bowsprit and mast mounted being used for passengers, with the larger vessel possibly the same as in the other image, Mablethorpe, c 1907 81
Plate 81 1994 wreck of modern trawler 'Saab-J', Ness Point, Fylingdales 82
Plate 82 Whitby Lower Harbour, east side, general view of north side of late 18th-century Fish Pier, and site of post-medieval Fish Market 83
Plate 83 Whitby Lower Harbour, west side, general view of 20th-century Fish Quay and modern Fish Market 84
Plate 84 Coble and several mules moored below lobster pots on eastern side of Upper Harbour, Whitby 85
Plate 85 Painting of Robin Hood's Bay, showing luggers beached in front of the village and smaller cobles at the Landing Scar, Edward Finden, 1842 86
Plate 86 Example of rock-cut hully for keeping wet catches or bait on the Landing Scar, Robin Hood's Bay 86
Plate 87 Line of three postholes for possible navigation markers ,south side of Landing Scar, Robin Hood's Bay 86
Plate 88 Motorised mule moored in outer harbour, Scarborough 88
Plate 89 Array of small modern stern trawlers moored at North Wharf, Scarborough 88
Plate 90 West Pier, Scarborough, 1990 fish market (left), inter-war and late 19th-century fish seller's offices, and a group of fishing boats, including a coble 89
Plate 91 Cobles parked at Coble Landing, Filey, with wheeled cradles for further boats in the distance 89
Plate 92 Detail of posthole of possible hully or landing marker on south side of Filey Brigg close to the Spittal Rocks landing place 90
Plate 93 Cobles with lifeboat station and engine house for winding returning boats up slipway, North Landing, Flamborough 91
Plate 94 Small double-ended mule, Bridlington 92
Plate 95 Modern fish dock and fish market, South Pier, Bridlington 92
Plate 96 Fish market derrick and modern trawlers, South Pier, Bridlington 92

Plate 97 Crab and lobster pots with moored fishing boats along Chicken Run Jetty and South Pier, Bridlington 93
Plate 98 Fishermen's Steps, Bridlington, former landing stage for fishing cobles and boats carrying passengers 93
Plate 99 Blocked 19th-century lock entrance to No 1 Fish Dock, Grimsby 95
Plate 100 Present entrance lock entrance to No 2 Fish Dock, Grimsby 96
Plate 101 No 2 Fish Dock, Grimsby, now partly a marina 96
Plate 102 Group of fish curing houses, Riby Street, Grimsby 96
Plate 103 Cleared area of rock foreshore platform in post-medieval harbour at Cloughton Wyke 100
Plate 104 The Spittals, extending from Filey Brigg 100
Plate 105 Johnny Flinton's Harbour, Cayton Bay, Osgodby 101
Plate 106 Possible landing place, Flat Scar, Burniston 101
Plate 107 Late 17th-/18th-century Tate Hill Pier, Whitby and contemporary adjacent section of waterfront 102
Plate 108 Entrance to Lower Harbour, Whitby, 18th-/19th-century East and West Piers, with early 20th-century extensions in background 102
Plate 109 Capstan of late 18th-/19th-century type East Pier, Whitby 103
Plate 110 Cable guide pulleys within 18th-century gun embrasure forming part of 19th-century shiphandling system, West Pier, Whitby 103
Plate 111 Slipway at south end of former Abraham's Quay shipyards, Whitby 104
Plate 112 Late 19th-century section of patent slipway, former Whitehall shipyard, Whitby 104
Plate 113 Former sail loft, Whitehall shipyard, Whitby 104
Plate 114 Blocked dry dock entrance at former Boghall shipbuilding yard, Upper Harbour, Whitby 105
Plate 115 Use of Upper Harbour, Whitby, as a marina 107
Plate 116 Overall view of Scarborough harbour from Castle Headland 108
Plate 117 Vincent's Pier, Scarborough, general view of 1830s Lighthouse Pier with temporary footbridge in place 109
Plate 118 Vincent's Pier, Scarborough, 19th-century water house at south end of 'Old Pier' section 109
Plate 119 19th-century West Pier and Inner Harbour, Scarborough 109
Plate 120 20th-century North Wharf, Scarborough, former cargo handling area for North Sea and Baltic trading vessels 110
Plate 121 North side of Scarborough harbour from North Wharf to the West Pier slipway, location of many early shipbuilding firms 110
Plate 122 Vincent's Pier, Scarborough, detail of decorative compass rose on cap of bollard 111
Plate 123 Modern rock armour laid against east face of East Pier, Scarborough 112
Plate 124 Former drinking well used by visiting vessels, Church Ravine, Filey 113
Plate 125 Proposed harbour, Filey, extending north of Church Ravine ('The Engineer', Nov 19th, 1880) 114
Plate 126 Monument to the former 'Sister Kirkes', Withernsea 114
Plate 127 View of east pier of medieval harbour, South Landing, Flamborough 115
Plate 128 John Wood's 1828 plan of Bridlington Quay and harbour, showing original line of South Pier extending from Langdales's Wharf, which may represent the eroded south bank of the Gypsey Race 116
Plate 129 Bridlington harbour entrance between North and South Piers 116
Plate 130 Remains of the late 18th-century addition to the earlier timber North Pier, Bridlington, east of the present pier 117
Plate 131 Remains of short 18th-century jetty or breakwater east of North Pier 117
Plate 132 View of east end of Bridlington harbour from South Pier with Crane Wharf, Fishermen's Steps and North Pier to rear 117
Plate 133 North-west corner of Bridlington harbour centred on former Clough Hole and boat lift serving repair yard 118
Plate 134 Fishing boat under repair, Clough Hole, Bridlington 118
Plate 135 19th-century ship's capstan, North Pier, Bridlington 118
Plate 136 North exit of Alexandra Dock, Grimsby, into disused Rennie's Lock (1800) 122
Plate 137 Looking north from Rennie's Lock, Grimsby, along the Freshney tidal channel towards former shipyards 122

Plate 138 Mid 19th-century coffer dam used to construct moles around Royal Dock, Grimsby 123
Plate 139 View along mid 19th-century Royal Dock towards contemporary hydraulic accumulator tower of 1852, Grimsby 123
Plate 140 Later hydraulic accumulator tower of 1892, north end of Royal Dock, Grimsby 123
Plate 141 Remains of wharf and former slipway of shipyard, Grimsby 124
Plate 142 Disused slipway of former shipyard north of the Fish Dock, Grimsby, blocked by later flood wall 124
Plate 143 Silted fishing and possible trading haven, Anderby Creek 126
Plate 144 Silted and reclaimed medieval/post-medieval harbour, Saltfleet Haven, Saltfleetby 127
Plate 145 Exposed stakes and stone reinforcement, approach channel to Saltfleet Haven, Saltfleetby 127
Plate 146 Wreck of steam vessel, Saltfleet Haven 128
Plate 147 North-eastern bank of silted Wrangle Haven 128
Plate 148 Post-medieval ships' timbers, with trenail fastenings, beach near Donna Nook, North Somercotes 130
Plate 149 View along hold compartments of 20th-century steel shipwreck immediately north of the Fish Dock, Grimsby 130
Plate 150 Wooden wreck, Grimsby 130
Plate 151 One of a number of 19th-century wrecks at Cleethorpes 131
Plate 152 Small disused private dock, Fishtoft 131
Plate 153 Scarborough Castle dominating the headland between North and South Bays, Scarborough 133
Plate 154 War Department marker post, late 19th-/20th-century rifle range Scalby Ness 134
Plate 155 Possible WW1 square pillbox, Flat Cliff, Filey 134
Plate 156 WW2 minewatch post and adjacent coastguard lookout, Burniston 135
Plate 157 Remains of WW2 pontoons for coastal minesweeper fleet on site of old Whitehall shipyard, Whitby 136
Plate 158 WW2 anti-tank cubes blocking Reighton Gap 136
Plate 159 Rare angled WW2 clifftop section post, one of two south of Robin Hood's Bay 138
Plate 160 Interior of WW2 section post, showing embrasures and shelves 138
Plate 161 Collapsed WW2 section post, one of two at Cayton Bay 138
Plate 162 In-situ WW2 section post on cliff edge at Killerby, Cayton Bay 138
Plate 163 WW2 clifftop 'lozenge' pillbox, Primrose Valley, Filey 139
Plate 164 WW2 'lozenge' pillbox slipped from position on cliff, Hunmanby Sands, Filey 139
Plate 165 WW2 'eared' heavy machine-gun pillbox, Cayton Bay 139
Plate 166 WW2 beachlight with blocked searchlight aperture, Hunmanby Sands, Filey 140
Plate 167 Displaced possible WW2 command post, Cayton Bay 140
Plate 168 Collapsed prefabricated segmental wall sections of WW2 Ruck machine gun post, Reighton 140
Plate 169 Standby generator building and fuel store, WW2 radar station, Bent Rigg 141
Plate 170 Entrance to WW2 Special Duties Branch Out Station, Cloughton 141
Plate 171 North end of Danes Dyke, Flamborough 142
Plate 172 Site of Iron Age promontory fort, Briel Nook, Flamborough 143
Plate 173 Site of Winsetts moated grange, Skeffling, one of several sites inland of the Humber sea defences 145
Plate 174 WW1 blockhouse and western defensive wall, Spurn 146
Plate 175 WW1 northern 9.2-inch gun emplacement reused for 3.7-inch heavy AA gun in WW2, Green Battery, Spurn 147
Plate 176 WW1/WW2 crew shelter, northern gun emplacement, Green Battery, Spurn 147
Plate 177 One of two collapsed 9.2in gun platforms, WW1/2 Godwin Battery, Easington 147
Plate 178 WW1/WW2 Officers' Barracks, Green Battery, Spurn 147
Plate 179 Section of WW2 military railway embedded in later roadway, Spurn 148
Plate 180 Scheduled interwar concrete sound mirror with surviving microphone post, Easington 148
Plate 181 Pair of WW1 pillboxes straddling hedgebank south of Auburn Farm 148
Plate 182 WW1 square pillbox with WW2 machine-gun embrasures replacing smaller original single splayed opening, Auburn Farm 149
Plate 183 Unusual large rectangular WW1 blockhouse, Auburn Farm 149

Plate 184 Sunken entrance to WW1 underground command/communications bunker, Atwick 149
Plate 185 Line of in-situ WW2 anti-tank cubes, Carnaby 150
Plate 186 WW2 anti-tank cubes well to east of present shoreline, Easington 151
Plate 187 WW2 anti-tank blocks on concrete foundation dividing beach into sectors, Barmston 151
Plate 188 WW2 'eared' heavy machine-gun pillbox and integral anti-tank wall, Carnaby 151
Plate 189 Remains of WW2 gun emplacement and anti-tank blocks, Barmston 151
Plate 190 WW2 beach searchlight, Barmston 152
Plate 191 WW2 'lozenge' pillbox supported by a WW1 square pillbox (left), concealed in hedgebank, Barmston 152
Plate 192 Surviving buildings of WW2 heavy AA battery, Warren Head, Kilnsea, now used by Yorkshire Wildlife Trust 152
Plate 193 WW2 3.7-inch heavy AA gun platform, Warren Head AA battery, Kilnsea 152
Plate 194 WW2 barrage balloon anchor points on cliff path, Flamborough Head 153
Plate 195 Collapsed WW2 Battery Observation Post, Ringbrough Battery 153
Plate 196 Collapsed remains of WW2 gun positions and other debris, Ringbrough Battery 153
Plate 197 WW2 magazine, Light Temporary Battery, Spurn 154
Plate 198 WW2 6-inch gun emplacement with roof removed, Light Temporary Battery, Spurn 154
Plate 199 Interior of WW2 searchlight housing, Light Temporary Battery, Spurn 154
Plate 200 RAF Bempton radar station 155
Plate 201 Post-war ROC aircraft observation post and the blast/radiation measuring equipment of a post-war underground radiation monitoring station, Skipsea 155
Plate 202 WW2 lozenge pillbox with post-war ROC Orlit aircraft observation post on roof, Roos 155
Plate 203 WW1 trapezoidal pillbox with rear entrance and machine-gun embrasure in side wall, next to WW2 AA pillbox, Skidbrooke 157
Plate 204 WW1 trapezoidal pillbox with WW2 or later additions to support observation tower for RAF Theddlethorpe air gunnery/bombing range, Skidbrooke 157
Plate 205 Rear of WW2 Type 23 Lincolnshire variant pillbox with entrance to central AA gunpit and flanking blockhouses, Tetney 158
Plate 206 Front of one of two WW2 Type 23 Lincolnshire variant AA pillboxes constructed on seawall, Grimsby, all embrasures blocked 158
Plate 207 WW2 AA pillbox (left) and twin Type 22 pillboxes (right) on former seabank, Butterwick 159
Plate 208 WW2 Type 22 pillbox with enclosed porch, Gibraltar Point 159
Plate 209 Pair of WW2 square Type 26 pillboxes protecting the Witham, The Scalp, Fishtoft 159
Plate 210 Roof of intact sunken WW2 Ruck Machine Gun Post Holbeach 160
Plate 211 Base of the northern of two WW2 Ruck machine gun posts on the seabank south of Freiston Shore Battery 160
Plate 212 WW2 variant pillbox apparently designed for reverse slope of seabank near Type 23 AA pillbox, Holbeach 160
Plate 213 Triple WW2 anti-tank blocks on a single strip foundation, Holbeach 160
Plate 214 WW2 gun emplacement converted into a viewing platform, Chapel St Leonard 161
Plate 215 WW2 6-inch gun emplacement, Fishtoft, now a summerhouse 161
Plate 216 Western 6-inch gun emplacement, WW2 Freiston Shore Battery 162
Plate 217 WW2 searchlight emplacement, now a summerhouse, Freiston Shore Battery 162
Plate 218 Rare 1930s two-bay 'No 4' hangar with side-opening doors, RAF North Coates 162
Plate 219 WW2 Observation post (right) and tunnel entrance formed from Stanton shelter components (left), Tetney 163
Plate 220 WW2 brick blockhouse, perimeter of RAF North Cotes 163
Plate 221 Side chamber formed from Stanton shelter components, WW2 observation post, North Somercotes 163
Plate 222 WW2 blockhouse and post-war ROC Orlit observation post, WW2 AA pillbox and building to the rear, RAF Donna Nook 163
Plate 223 RAF Theddlethorpe, concrete wall and bank around turret firing range prior to partial clearance c 2010 164

Plate 224 RAF Theddlethorpe, general view of turret range maintenance building/store next to turret firing apron 164
Plate 225 Remains of post-war ROC post, Mablethorpe 165
Plate 226 Post-war ROC brick aircraft post, looking towards later underground nuclear monitoring bunker in the copse, Old Leake 165
Plate 227 Post-war RAF Wainfleet control tower, Friskney 165
Plate 228 Target ships and markers, RAF Holbeach bombing range, Gedney 166
Plate 229 Comet tank hull target, RAF Theddlethorpe post-war bombing range 166
Plate 230 Scarborough Spa, 1813 (Papworth's Poetical 'Sketches of Scarborough') 168
Plate 231 Victoria Spa Well, Whitby 169
Plate 232 Plaque celebrating 1811 discovery of tidal chalybeate spring, Garden Walk, Bridlington 169
Plate 233 Bathing machines, Scarborough (1813), from Papworth's Poetical Sketches of Scarborough' 170
Plate 234 Nos 5–7 Pier Road, Whitby, the Quayside Hotel, formerly the town library, museum and public baths 170
Plate 235 Late 19th-century view of Moorish-style heated Seawater Baths, Scarborough, with Turkish Baths in the rooftop pavilion, after the construction of Foreshore Road 170
Plate 236 Former St Thomas' Hospital, Sandside, Scarborough 171
Plate 237 Whitby railway station, Station Square, looking south-east 172
Plate 238 Viaduct of disused Whitby–Scarborough railway over former Peak alumworks access, Staintondale 172
Plate 239 Sutton-on-Sea railway station 173
Plate 240 Example of pre-war railway advertising 174
Plate 241 The Rotunda Museum (1828–9), Cliff Bridge Terrace (c 1840) red-painted Cliff End House late 18th century) and the Grand Hotel (1863–7), Scarborough 176
Plate 242 Neo-Grecian Londesborough Lodge (1839), Scarborough, one of four villas built as part of The Crescent development 177
Plate 243 The Art Deco Winter Gardens, Skegness (left) opposite the glazed Victorian Café Dansant, 1937 178
Plate 244 The superb frontage of the Alexandra Hotel, Bridlington, now demolished 178
Plate 245 Mid 20th-century postcard of the Sun Castle solarium and gardens, Skegness 179
Plate 246 1930s Moderne entrance and surviving buildings of former North Bay Lido, Scarborough 179
Plate 247 Post-war Sands Café, Bridlington below the Expanse Hotel (1937), North Sands, Bridlington 179
Plate 248 The late 1930s Empire Theatre, Butlin's, Filey 180
Plate 249 Group of late 20th-century amusement arcades at north end of Pier Road, Whitby 180
Plate 250 East Pier, Whitby, modern artwork in concrete of a new causeway section linking the Pier and East Cliff 181
Plate 251 Crescent Gardens, Filey, with rebuilt bandstand 181
Plate 252 Refurbished boat compound, Hornsea, with 2010 café, rescue service education centre and offices, 181
Plate 253 Modern shops, South Promenade, Bridlington 181
Plate 254 The Point apartments (2005) on site of the 19th-century Cliff Hotel, Cleethorpes 182
Plate 255 Beside The Seaside visitor centre, traditionally-styled refacing of mid 20th-century reinforced concrete building, 34–35 Queen Street, Bridlington 182
Plate 256 Henrietta Street, Whitby, restored late 18th-century cottages with more recent dwelllings in similar style beyond 182
Plate 257 Refurbished late 18th-century Angel Hotel, next to traditionally styled modern flats, New Quay Street, Whitby 183
Plate 258 Mid 19th-century terraces of George Hudson's West Cliff development above Whitby harbour, including the Royal Hotel (corner, left) 183
Plate 259 The 19th-/20th-century Whitby Pavilion entertainment complex, West Cliff, Whitby 183
Plate 260 Original stone seating and capstan, West Pier, Whitby with later additions including lamp standards and railings 183
Plate 261 Scotch Head, modern bandstand replacing 19th-century original 184

Plate 262 Battery Parade, Whitby, site of 18th-century gun battery, including original circular watchtowers, and incorporation of 19th-century shelter (left) and coastguard station (centre) into later cafés and apartments 184
Plate 263 Reuse of lifeboat station to create a museum, Pier Road, Whitby 184
Plate 264 Nos 10–14 Pier Road, Whitby, the buildings at either side of the altered central property have been maintained and sympathetically restored 185
Plate 265 Nos 1–9 Marine Parade, Whitby, general view of tourist businesses 185
Plate 266 One of the few houses built at the failed early 20th-century Ravenscar development, Staintondale 185
Plate 267 Modern artwork decorating former Peak Station platform built for Ravenscar development, Staintondale the trackbed is now a popular footpath and cycleway 186
Plate 268 Platform of railway station built for short-lived resort at Hayburn Wyke 186
Plate 269 Early 20th-century coloured postcard, Hayburn Wyke 186
Plate 270 The Crescent (1832–57), Scarborough 187
Plate 271 View across the former South Bay swimming pool (1914–15) to the 19th-/20th-century Spa complex, Valley Bridge (1827) and the Grand Hotel (1863–7), Scarborough 188
Plate 272 The Crown Terrace and Crown Hotel, the Esplanade, Scarborough 188
Plate 273 The Italian Gardens (1912), part of the Valley Gardens (1910 onwards), Scarborough 189
Plate 274 King George V Coronation Memorial Clock Tower (1911), Esplanade Gardens, Scarborough 189
Plate 275 Early 20th-century postcard of Peasholm Park, Scarborough 190
Plate 276 The Futurist Theatre, Scarborough (1920) showing the 1960s panelling with the roof of the original neo-classical building visible above 191
Plate 277 No 45 Sandside, Scarborough ('The Lancaster' public house) & late 20th-century amusement arcade 191
Plate 278 Sympathetic restoration of former Bethel Mission Chapel, Sandside, Scarborough to create new restaurant 192
Plate 279 North Wharf, Scarborough, modern restaurant and Tourist Informtation Centre fronting Sandside behind a stack of more traditional lobster pots 192
Plate 280 The popular tourist attraction of Scarborough Castle behind the castellated Castle by the Sea Hotel 192
Plate 281 The Crescent (1840 onwards), Filey 193
Plate 282 Outbuildings at Ravine Villa, Filey 193
Plate 283 Filey seafront extending south of Church Ravine 194
Plate 284 Post-war amusements, café and lifeboat house, Coble Landing, Filey 194
Plate 285 Former fishermen's cottages (1696), now a Folk Museum, 8–10 Queen Street, Filey 194
Plate 286 Beach access from Crescent Hill and 20th-century paddling pool, Filey 194
Plate 287 Post-war conversion of houses to create amusements, Garrison Street, Bridlington 195
Plate 288 Late 19th-century Albion Terrace, Bridlington 195
Plate 289 Seafront shelter below Royal Crescent, refurbished South Promenade, Bridlington 196
Plate 290 Rebuilt Spa complex (1932), Bridlington 196
Plate 291 Rebuilt Floral Pavilion complex (1904 onwards), Bridlington 196
Plate 292 19th-century harbour shelter, Bridlington 197
Plate 293 21st-century remodelling, South Promenade, Bridlington 197
Plate 294 Modern outdoor amusements, North Promenade, Bridlington 197
Plate 295 Late 20th-century Leisure World building, Beaconsfield Promenade, Bridlington, closed for redevelopment in 2014 197
Plate 296 Fishermen's Steps, formerly used to collect tourists for boat rides, and modern kiosks replacing earlier wooden structures, Bridlington harbour 198
Plate 297 The rear elevation of the Beside the Seaside attraction overlooking the landscaped Garden Walk 198
Plate 298 Modern marker for end of Trans Pennine Trail at the entrance to the former Hornsea Pier (1878–8) 199
Plate 299 Entrance to much-altered Floral Hall (1913 onwards), Hornsea 199
Plate 300 Interwar café and toilets, seafront promenade, Hornsea 199

Plate 301 Guesthouse and shop conversions, Marine Drive, Hornsea 200
Plate 302 Typical 1960s/1970s building housing amusement arcade, Hornsea 200
Plate 303 Modern artwork, Hornsea seafront 200
Plate 304 Modern beach huts, central promenade, Hornsea 201
Plate 305 Entrance to former Withernsea Pier (1875–7) and pier model 201
Plate 306 General view south along refurbished Withernsea promenade 202
Plate 307 Monument commemorating historical Holderness 202
Plate 308 Former Cleethorpes Station (1863) 203
Plate 309 Pavilion, Cleethorpes Pier (1873) and Pavilion (1903) 203
Plate 310 Ross Castle (1885), Cleethorpes, built by the Manchester, Sheffield & Lincolnshire Railway Company as an added visitor attraction 203
Plate 311 General view south along Cleethorpes seafront 204
Plate 312 18th-century New Inn, Saltfleet 204
Plate 313 The rebuilt Book in Hand, Mablethorpe 205
Plate 314 Wavelands behind Lindum, Mablethorpe, built from former railway carriages 205
Plate 315 Concrete and asbestos beach huts, Mablethorpe 205
Plate 316 Skegness Clock Tower (1898), built to commemorate Queen Victoria's Diamond Jubilee 206
Plate 317 Skegness Pier (1881), much shortened from the original structure 206
Plate 318 20th-century medieval style fortifications and Astroglide' slide, Skegness 206
Plate 319 Moderne Ship Hotel (1935), Skegness, replacing an earlier building 206
Plate 320 Late 18th-century Plummers Hotel, Freiston Shore, Freiston 207
Plate 321 Remains of late 18th-/early 19th-century Marine Hotel, Freiston Shore 207

1 SUMMARY

This report is the final product of the Rapid Coastal Zone Assessment Survey of Yorkshire and Lincolnshire (Project 3729). It summarises the principal areas of study or themes identified in Phases 1 and 2. The report has been undertaken by Humber Field Archaeology on behalf of English Heritage, and is the eighth volume of a series of reports constituting the deliverable products of Phase 3 of the RCZAS.

The principal themes which were identified and are covered by this report include: early exploitation, settlement and land use; industry; fishing; ports, harbours and shipbuilding; military installations; tourism. The report includes a selection of distribution maps, illustrations and photographs, mostly extracted from earlier reports, but with some additional material added. Although intended to be a comprehensive summary, the report is not intended to be exhaustive and the original reports contain fuller details of individual monuments and complete location plans covering all areas.

The purpose of the report is to provide an overview which can be used in isolation as a summary of Phases 1–3, but is also intended to offer a point of entry to the project for researchers wishing to study areas in more detail. Further research has been carried out on some aspects of the subject topics, including those covered in 2012 and 2013 by Phase 3, generally where new information has become available or a review of the evidence has suggested new lines of enquiry. The rapidity of morphological change along the coastline owing to increasing levels of storm damage, erosion, flooding and the processes of managed realignment, has also forced alterations to earlier conclusions and recommendations as the physical state or risk assessment of monuments has altered. There is every indication that the impact of dynamic natural coastal processes has increased in the past decade and will continue to be a major problem unless there is a slowdown or stasis is eventually reached, but this is highly unlikely to occur in either the short or medium term.

2 INTRODUCTION

2.1 Background

This report is intended to summarise the results of Phases 1–3 of the Rapid Coastal Zone Assessment Survey of Yorkshire and Lincolnshire in the form of a series of historical, architectural and archaeological themes relating to the coastline. The themes were developed during the course of the project and the final selection was listed in the Phase 3 Updated Project Design (Brigham 2012). Phase 3, of which this report is the final product, itself consisted of a series of analytical reports looking at specific aspects of Phases 1 and 2; this report includes the results of that analysis.

The significance and potential impact on the archaeological resource has been outlined in previous reports. Clearly, national and local planning and heritage management policy insists that steps must be taken to preserve the resource from development where possible, but this is more problematic when dealing with natural processes, in this case principally erosion; the approach needs to be holistic. Shoreline Management Plans present an overall policy for coastal management, but do not deal with development, while the English Heritage Historic Seascape and Landscape Characterisation programmes will eventually outline human impact and use, area by area, of the entire country and sea area of England and Wales to the 12-mile limit, but do not look at these at the level of individual monuments. The Rapid Coastal Zone Assessment Survey programme has therefore provided planners and heritage workers with a potentially important tool, particularly when used with Historic Landscape Characterisation, which places monuments in their setting.

From the point of view of development pressures, the planning process requires the archaeological resource on each development site to be evaluated on a case by case basis where such a resource is considered likely to be present. Property ownership within such a large area is naturally fragmented: although the main risk comes from relatively large land blocks such as caravan and holiday parks, other sources of potential damage caused by smaller scale developments are still a reality. Although there is generally a tightly-controlled development policy for the coastal area, which restricts the size, placing and nature of developments, an overall archaeological strategy will still be difficult to develop and implement, particularly in areas affected by dynamic natural processes such as the Holderness coast.

2.2 Definition of the study area

The area of coverage includes the shoreline (to Lowest Astronomical Tide level) and 1km band of cliff and coastal hinterland of North Yorkshire, the North York Moors National Park, the East Riding of Yorkshire, North-East Lincolnshire, and Lincolnshire, extending from Whitby in the north, to Gibraltar Point in the south, taking in the Humber estuary as far as Sunk Island and Grimsby *(Figs 1–3)*. For the Wash coastline to the Norfolk boundary at Sutton Bridge the study area boundary was extended to 2km to take into account the more extensive zone of modern reclamation.

For the purposes of dividing the study area into manageable sections, the Phase 1 and Phase 2 reports followed the internal boundaries and numbering systems of the UK's eleven coastal 'sediment cells' adopted for Defra's Shoreline Management Plans. The study area falls into four sub-cells. These are:

- 1d: Saltburn to Flamborough Head;
- 2a: Flamborough Head to Donna Nook;
- 2b: Donna Nook to Gibraltar Point;
- 2c: Gibraltar Point to Snettisham.

The boundaries of the sub-cells within the study area's outer boundaries (Whitby and Sutton Bridge) are shown on Figure 1.

2.3 Objectives

The general aim of this report is to summarise thematically information relating to the known or potential cultural heritage resource within the study area (Sections 3–8). The themes identified comprise:

1 Early exploitation, settlement and land use
2 Industry
3 Fishing
4 Ports, harbours and shipbuilding
5 Military installations
6 Tourism

2.4 Sources

The background information upon which this study is based has largely been collated from the existing reports for Phases 1 and 2 of Project 3729 and the first seven Phase 3 volumes, of which this is the eighth and final report. For some themes, additional research has been undertaken where this has been identified as desirable or necessary. The original reports should be consulted for fuller details and a complete set of

location maps for individual monuments and findspots.

In the order of Humber Archaeology Report series numbers and by phase, the RCZAS volumes are as follows:

Phase 1

Brigham, T., Buglass, J., & George, R., 2008 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Bempton to Donna Nook, English Heritage Project 3729*, Humber Archaeol Rep 235

Buglass, J., & Brigham, T., 2008a *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Donna Nook to Gibraltar Point*, Humber Archaeol Rep 236

Buglass, J., & Brigham, T., 2007 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Gibraltar Point to Sutton Bridge, English Heritage Project 3729*, Humber Archaeol Rep 237

Buglass, J., & Brigham, T., 2008b *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Whitby to Reighton, English Heritage Project 3729*, Humber Archaeol Rep 238

Phase 2

Brigham, T., & Jobling, D., 2011a *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Bempton to Donna Nook, English Heritage Project 3729, Phase 2*, Humber Archaeol Rep 324

Brigham, T., & Jobling, D., 2011b *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Donna Nook to Gibraltar Point, English Heritage Project 3729, Phase 2*, Humber Archaeol Rep 325

Jobling, D., & Brigham, T., 2011 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Gibraltar Point to Sutton Bridge, English Heritage Project 3729, Phase 2*, Humber Archaeol Rep 326

Buglass, J., & Brigham, T., 2011 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Whitby to Reighton, English Heritage Project 3729, Phase 2*, Humber Archaeol Rep 327

Phase 3

Brigham, T., Buglass, J., & Jobling, D., 2013 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Field Survey, Selected First and Second World War Monuments, North Yorkshire, East Riding of Yorkshire, Lincolnshire, Phase 3*, Humber Archaeol Rep 415

Brigham, T., & Fraser, J., 2013 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Site Survey and Historical Summary, Flamborough Medieval Harbour, Flamborough, East Riding of Yorkshire, Phase 3*, Humber Archaeol Rep 416

Brigham, T., & Jobling, D., 2013b *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Historical Audit, Bridlington Harbour, Bridlington, East Riding of Yorkshire, Phase 3*, Humber Archaeol Rep 417

Buglass, J., & Brigham, T., 2013a *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Historical Audit, Scarborough Harbour, Scarborough, North Yorkshire, Phase 3*, Humber Archaeol Rep 418

Buglass, J., & Brigham, T., 2013b *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Historical Audit, Whitby Harbour, Whitby, North Yorkshire, Phase 3*, Humber Archaeol Rep 419

Buglass, J., & Brigham, T., 2012 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Field Survey and Historical Assessment, Cayton Cliff Mill and Filey Brigg, North Yorkshire, Phase 3*, Humber Archaeol Rep 420

Brigham, T., & Jobling, D., 2013c *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Site Investigation and Assessment, Selected Palaeoenvironmental and Archaeological Sites, East Riding of Yorkshire, North-East Lincolnshire, Phase 3*, Humber Archaeol Rep 421

Brigham, T., 2014 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Project Overview, Thematic Discussion of Selected Aspects, English Heritage Project 3729, Phase 3*, Humber Archaeol Rep 422

These and other sources cited or consulted during production of this report are included in the Select Bibliography.

3 EARLY EXPLOITATION, SETTLEMENT AND LAND USE

North Yorkshire

Palaeolithic–Bronze Age

The most obvious topographic features of the North Yorkshire coastline are the dramatic sea cliffs, which are among the highest in England. These have effectively limited access from the land to the foreshore and the sea itself to a relatively small number of locations where ravines or less sheer areas of cliff are present. Understandably therefore, the many ravines which characterise the area have attracted occupation and activity from the earliest periods onward and also provided useful sources of fresh water, both for local communities and the crews of visiting or coasting vessels looking to replenish their onboard supplies. In the medieval and post-medieval periods, these water supplies were also controlled and used to power watermills, while the only large river in the study area, the Esk, provided a fishing and trading harbour, supplemented by partly sheltered anchorages offered by headlands at Scarborough and Filey. The same combination of high cliffs and broad vistas also made the area suitable for providing early warning of invasion as well, ultimately, as attractive for tourism.

Plate 1 Typical high cliffs and headland at Peak, Staintondale

Because of their crucial role in the development of the area, the coastal ravines are likely to preserve evidence for activity from the earlier prehistoric periods onwards, and would reward further investigation. As a result of the inherently unstable geology of much of the coast, many areas also include undercliffs, subsided stretches affected by previous rotational failures, which may protect and preserve early deposits, evidence for past environments which has been lost elsewhere. The immediate hinterland contains areas which have been used for a variety of agricultural, ritual and industrial purposes, squeezed into a relatively narrow strip between the cliff, the upland areas of the North Yorks Moors and northern Wolds, and the carrlands covering the bed of the former 'Lake Flixton'. These all have considerable palaeoenvironmental and archaeological importance in their own right.

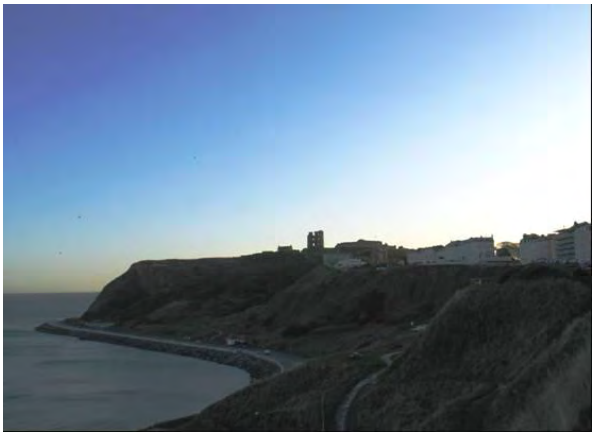


Plate 2 High cliffs and headland at North Bay, Scarborough, with areas of old rotational failures and undercliffs in the foreground

The Late Upper Palaeolithic and Mesolithic periods are poorly represented, although the study area was undoubtedly transited by early hunter-gatherers during the short Windermere Interstadial (c 14700–12900 cal BP) which followed the last main period of glaciation, and from the beginning of the Holocene (c 11500 cal BP) after a short intervening cold period, the Loch Lomond Stadial. These visitors represent the first modern humans to enter the British Isles, but left little trace of their presence within the narrow confines of the study area, apart from very rare lithics assemblages or individual implements.

In the south of the North Yorkshire coastal area and adjacent parts of the East Riding, toolmakers exploited poor quality greyish local chalk flint derived from the tabular sheets and nodules of the Burnham Chalk formation and the nodular flints of the underlying Welton Chalk, both of which were exposed in the cliffs forming both sides of Flamborough Head. The deep upper Flamborough Chalk has no flints and is in any case covered by a deep capping of glacial till (boulder clay), ensuring that mining — a common method of collection in southern England — was not an option. Flint eroded from the cliff was therefore collected from the foreshore using easily accessible points in the modern East Riding along Flamborough Head at Thornwick Bay, Selwicks

Bay and the North and South Landings, and along the foreshore from Speeton.

Much better-quality flint was also present in the form of erratic nodules eroding from the glacial till forming the cliffs above the beaches of much of North and East Yorkshire. This included two main types, the best quality being black and translucent, the second rate medium to dark grey. The till flints were used in small quantities from the earliest period but often formed at least 95% of the later (Neolithic and Bronze Age) assemblages; they most closely resemble the dark, translucent flints familiar to archaeologists working in southern England and East Anglia, where nodules were obtained by chalk mining in preference to the potentially frost-damaged material available through surface collection.

A Mesolithic flintworking site in Reighton included butt-thinned flakes and tanged flakes produced from irregular cores, mainly of tabular (Burnham) chalk flint. A Palaeolithic production site has also been recorded in the parish, although no further information is available. This is the northern outlier of a core area where substantial flint assemblages have been recovered and several production sites identified, including locations in Bempton, Flamborough, Sewerby, and Bridlington, comprising areas of waste (debitage) and discarded cores used to produce blanks for specialised tools, distinct from less specialist 'domestic' assemblages found on inland sites.

The area was presumably initially a 'stopping-off' point for groups of hunters operating in the sub-region, collecting flint cores for their own use before moving off into the richer hunting grounds of the North Sea basin and the Holderness wetlands. Prepared cores would have been carried long distances to allow hunters to move into areas where suitable flint was absent but where they were able to retain the ability to replace broken, lost, or worn blades, arrowheads and other tools. In the later Mesolithic and early Neolithic periods, however, with the North Sea hunting grounds lost through rapid sea level rise, the Flamborough area seems to have become the centre of a more specialist industry, with a settled or seasonal population producing tools for trading across a much wider area.

Lithics assemblages from further north in the North Yorkshire Moors and Scarborough areas are derived from a much wider range of sources, with only small quantities of chalk flint from the Wolds, but including till flint, local erratics and material from further west, perhaps imported as prepared cores or finished tools. A series of unprovenanced Mesolithic artefacts have been found in the Scarborough area generally, which includes early stone axes among later material, while at Mill Lane, Cayton, an assemblage of late Mesolithic and early Neolithic flint tools was found, including microliths, blades, blade cores, a micro-scraper and a microburin. Cayton lay at the east end of an extensive area of early occupation spread along both shores of the post-glacial Flixton palaeolake. This included nationally important sites at Star Carr and Seamer Carr, both dominated by better-quality till flints, presumably collected from the beaches in the Cayton/Osgodby area, which would have been located some distance east of their present line, although still within easy walking distance. Late Upper Palaeolithic flint tools have been found in the same area, at Flixton and Seamer Carr.

The Neolithic period is largely represented by stone artefacts recovered along the coast, including a hammer (Fylingdales), a macehead (Scarborough), many axes and flint tools, including scrapers and thumb scrapers. An assemblage from the Whitby area included a possible greenstone axe from the Langdale factory, polished and perforated axes, a battle axe, a flint saw, arrowheads, and a possible discoidal knife blade. A debitage scatter from Bay Ness, Hawsker, reflects local production; a small polished axe from outside the area was also found in the parish. Another flintworking site was identified from fieldwalking within (but not necessily associated with) a small undated enclosure in Staintondale; a greenstone axe was also found in the same parish at Danes Dale Farm, together with three polished axes from Ravenscar, and an assemblage of late Neolithic or Bronze Age arrowheads, scrapers and a knife found on the ground surface at Cloughton Hulleys. Further south, large numbers of scrapers and thumb scrapers in particular continue to be recorded from Reighton and neighbouring Bempton (East Riding) by the Portable Antiquities Scheme.

A possible standing stone in Hawsker, eight cup-and-ring marked stones at Raven Hall, and a long barrow in the Peasholm area of Scarborough could all be of either late Neolithic or Bronze Age date. Inland of the study area, an extensive fire near Fylingdales in 2003 destroyed 2.4km^2 of moorland, revealing c 2500 contemporary and previously unknown monuments, including over 100 examples of rock art, with many additional cup-and-ring markings, indicating the potential density of monuments across the region. Excavations at Mill Lane, Cayton Bay in advance of work on the realigned A165 have also revealed two phases of a Neolithic/Bronze Age barrow, located on a slight rise. This was originally

ditched, but the ditch was later filled and replaced by a stone kerb, which included earlier cup-marked stones, while the eroded early mound was reinstated as a stone cairn. The barrow was accompanied by a large assemblage of late Mesolithic and early Neolithic flints, the latter including flake cores and scrapers.

The extensive remains of Bronze Age funerary monuments are to be seen in almost every parish along the coast between Hawsker and Reighton, either singly or in groups. These monuments form the eastern outliers of an extensive landscape stretching across the North York Moors and further south across the Yorkshire Wolds. The presence of high ground was exploited as a means of enhancing the setting and visibility of monuments within the landscape.

There is a concentration of surviving and recorded barrows in the high moorland parishes where preservation remained good for longer, particularly Staintondale, but several have also been recorded in areas which were subsequently turned over to agriculture or built over, suggesting that the known distribution is largely an accident of survival. Many were investigated in the early modern period, and no longer survive: although three barrows in Staintondale which survived into the 20th century have been scheduled, including Burnt Howe and two examples at Raven Hill near Ravenscar, all three have been plough damaged, with the latter two almost imperceptible swellings.

Plate 3 Hilda's Howe barrow, Hawsker

The clearest evidence for Bronze Age occupation is seen along the edge of the moors just inland of the northern part of the study area at Fylingdales where the extensive 2003 fire referred to previously revealed exceptionally clear traces of Bronze Age field systems as well as rock art. The cup-and-ring markings at Raven Hall may also belong to this period, as many of the barrows in the parish are grouped in the same area, although the latter may simply represent continued use of a Neolithic ritual site. It is quite likely that the density and range of sites revealed after the fire is representative of the region as a whole, buried beneath undisturbed moorland in the west and by the later agricultural landscape along the coastal fringes.

Compared with the more obvious funerary sites, there are few identifiable Bronze Age or Iron Age settlements within the study area, although a site has been identified near Fylingdales. Another settlement site on the Castle headland, Scarborough has been dated to the late Bronze Age/early Iron Age: most of the features there are probably of the 7th/6th century BC, but the reported presence of Beaker pottery also suggests occupation at an earlier period.

Other features include a ring cairn at Cloughton, consisting of a raised outer circle containing stones, most of which lies in woodland, the remaining third in a possibly unploughed pasture. A possible stone circle was reportedly present in 19th-century Ravenscar, while a suggested Bronze Age/Iron Age boundary ditch was recorded in the south of the county at Reighton.

Plate 4 Part of prehistoric stone enclosure, Cloughton

Finds from the area include a number of axes, awls, a spearhead, and a palstave, mainly from Whitby and the moorland parishes, including Staintondale, where several axes and one or more bronze awls were found near Ravenscar in 1933. A short-hole axe from Whitby is of Mediterranean origin, suggesting early trade, although this may have been indirect (i.e. traded up the coast from an original landing place elsewhere). Many flint implements and other artefacts, including knife fragments and pottery have also been recovered from the many barrow excavations which have taken place, particularly in the 19th and early 20th centuries.

The vantage points provided by tall cliffs and the presence of potentially defensible headlands along much of the county's coastline were a clear asset in the later prehistoric period when seaborne raids or local tribal conflicts became more of a potential threat, as the accumulation of wealth and economic assets became more of a temptation for those with acquisitive or aggressive leanings. As well as a late Bronze Age/early Iron Age settlement, the Castle headland at Scarborough represented an easily defensible site although no evidence for fortifications has as yet been found: these may have been largely obliterated by later construction work.

Iron Age–Romano-British

Evidence for the Iron Age is limited elsewhere and mainly consists of chance finds; possible settlement sites have, however, been located at Cloughton Hulleys and near Cloughton village. A ditched square barrow and possibly contemporary ditched enclosure are present in Reighton where a Bronze Age/Iron Age boundary ditch has already been noted. The barrow is an outlying example of a monument type more commonly identified in the East Riding where square barrows occur singly, in small groups and in extensive cemetery complexes containing several hundred monuments; they were mostly built between the 5th and 1st centuries BC.

Once considered to be unique to the 'Arras' culture, with the area between the Humber and the southern slopes of the North Yorks Moors the main focus of distribution, square barrows have been found in smaller numbers as far west as Ferrybridge, as far south as Kent and Essex, and as far north as eastern Scotland (where they appear to be later and of slightly different form).

Plate 5 Typical Iron Age bank and ditch, Speeton

Other single and double banks and ditches in Reighton and neighbouring Speeton could belong to the period, with two sets of V- and U-shaped double ditches with possible banks, and a double-banked feature, also seen in section in the cliff edge, although these may be later. Taken together they suggest that the area formed an outlying part of a complex later prehistoric pattern of possible boundaries and enclosures, which reflects in microcosm the broader landscape of 'embankments' and 'dikes' characterising the Wolds; regionally, some of these monuments are still visible, while others are shown on early Ordnance Survey map editions but have since been ploughed out.

Casual finds from the study area included beehive querns from Whitby and Cloughton, which could all be of later Iron Age/Romano-British date, and an early armlet from Scarborough. Some of the querns had been incorporated into later drystone walls and were presumably collected from the area of the enclosed field together with general stone litter during post-medieval/early modern ground clearance to prepare the area for ploughing. A Carthaginian coin found in Whitby may be a product of trade, but could also be a later keepsake or heirloom.

Evidence for late Iron Age/Romano-British transitional settlements, field systems and other features is also relatively limited, with some sites perhaps newly established after the Romans arrived in the area in the AD 70s. Examples of cropmarks, cliff exposures or earthworks which have been identified include enclosures, ditches, and occasional pits, mostly again from the moorland parishes of Hawsker, Fylingdales and Staintondale, but including isolated features in Cayton, Filey and Reighton. As mentioned, a possible settlement site was identified at Cloughton in the 1920s, but may be earlier, while a late Iron Age/Romano-British settlement was excavated during the A165 realignment at Tenant's Cliff and Park Hill, Cayton (see below), while a small pre-Roman Iron Age settlement has been investigated east of Muston Road, Filey.

The area would have been strategically important to the Romans, initially perhaps as a seaborne supply route along the east coast to the flank of the expanding northern frontier, but also as part of an increasingly important early warning system against potential raiders from Scotland and across the North Sea as these became more of a threat. As in later periods, Filey, Scarborough and Whitby would have provided a series of anchorages and landing places for water and provisions. Each of these sites appears to have been reached by radial roads running inland to York through Malton, and they were also probably linked together by a coastal road following the less

severe terrain which fringed the eastern edges of the North Yorks Moors and the Yorkshire Wolds.

The remains of Roman roads are, however, notoriously difficult to identify in rural areas, even when their endpoints and broad alignments are known. In some cases the road material may have been quarried for use in much later road building, in others the ground may have been considered sufficiently firm for the light traffic of the day without the need for substantial preparation. Certainly in remote areas, even major roads may have been little more than waymarked routes with legal status as *viae publicae*. Rather than substantial carriageways with metalled or paved surfaces, these roads may have been largely of compacted soil with at most a light dressing of gravel or a weathered/crushed stone surface (*via glareata*) which was easily dispersed by natural processes, and without either side ditches or an agger (raised roadbed). The main effort may have been directed towards areas where a prepared foundation and good surfacing were necessary, with localised work undertaken to improve matters where difficult terrain was traversed, such as marshy areas and stream or river crossings.

The final section of a road leading from York and Malton to the 4th-century signal station at Scarborough may be expected to have followed the ridge on the line of the present Castle Road, while a similar road from Malton to the signal station at Filey may have followed the present A64, since traces of surfaces have been found at either end in Norton and Flotmanby. A route to Whitby would have had to traverse the North Yorkshire Moors, almost certainly via a ridgeway, possibly close to the line of the present A169, although the disputed Wheeldale 'Roman road' is broadly aligned with Whitby, several miles west of the A169. The Wheeldale road is now considered to be either earlier, like the substantial multi-phase Iron Age road at Sharpstone Hill, Shropshire, or later, similar to the cobbled stretch at Blackstone Edge, Lancashire, which has been re-interpreted as a post-medieval drove road.

Several sections of 'Roman road' recorded in Staintondale, Gristhorpe and Filey town are not firmly dated and some are quite probably later. The Gristhorpe 'road' was found in an electricity trench next to the A165 and would almost certainly, if genuine, have linked Scarborough to Filey, a forerunner of the Scarborough Road/A165 alignment which entered Filey from the north and continued south to Bridlington.

The possibility that elements of the Roman fleet stationed in the province (*Classis Britannica*) were based in the area is explored in Section 7, which also discusses the chain of signal stations established in the 4th century at Scarborough, Filey, and probably at Ravenscar, as well, perhaps, as somewhere close to Whitby. The mouth of the Esk in modern Whitby is a good contender for the site of a naval base as the river provided the only true harbour on the coastline between the Tees and the Humber, as opposed to simply a haven or anchorage.

Certainly there is structural and artefactual evidence for Roman occupation in the area of the present town. Although limited, this consists of coins and pottery from the abbey area, a 'ford' across the river, and a possible culvert identified on the west bank of the Esk near Bagdale. The coins, which were found in the 19th and 20th centuries, cover the period from Augustus (36 BC–AD 14) to Constantine II (AD 337–40), suggesting a long occupation which may have been underway in the pre-Roman Iron Age, while the presence of both coins and pottery near the abbey has been taken to support the possibility of a signal station there.

The 'ford', recorded in the 19th century, was not definitively identified or dated, but was reported to have consisted of 'tree trunks' laid to form a foundation a little upstream of the present swing bridge, and therefore close to the mouth of Bagdale Beck. It was thought to be aligned with the presumed Roman road at Wheeldale from Malton to the Whitby area, but without modern investigation, the interpretation and dating remain doubtful. A medieval/post-medieval ford certainly existed immediately downstream of the present swing bridge linking St Ann's Lane and Sandgate, with another further upstream of the 'Roman ford' between Spital Bridge and Boghall, demonstrating that the river was shallow enough to cross at low tide.

Scarborough with its signal station is another site where a settlement and some kind of landing place are likely. Two possible occupation sites have been identified: one of the sites, at the foot of Bland's Cliff, is an unreliable dating of a cobble wall, but Roman coins including 3rd-/4th-century issues, were found in the same area between the harbour and Ramsdale Valley during the development of the Foreshore Road area in the late 19th century. The second occupation site, in St Thomas's Street, was more securely identified and included a hearth, gully, a quern and pottery. The presence of Roman tiles on a medieval pottery production site in Castle Road also suggests the presence of buildings overlooking the harbour and close to the putative road to the signal station, possibly of masonry, but certainly of some pretensions.

A coin and an amphora were found during the construction of the Grand Hotel in the 1860s: amphorae were imported throughout the Roman period from France, Spain or the Mediterranean, mainly as containers for wine or olive oil, suggesting either landing facilities or transhipment from an anchorage. The date of the amphora is unknown, and it cannot therefore be determined whether it was contemporary with the signal station; the Grand Hotel is, however, some distance from the Castle Road area, and there may therefore have been a dispersed settlement along the top of the cliff between the Castle headland and the deep Ramsdale Valley. The latter would have formed a suitable landing place in the absence of a harbour, with good beach access and fresh water (see below). Late Roman pottery has also been recovered in the Northstead Manor area to the north of the town, overlooking Peasholm Gap, another potential landing ground with a watered valley leading inland, but this time in the more exposed North Bay, protected only by the short promontory of Scalby Ness, but formerly also by 'Monkey Island', removed in the 1960s.

Further south, a Romano-British settlement site was excavated at Tenant's Cliff and Park Lane, Cayton, during recent A165 road diversion works, whilst another has been identified in Osgodby. The Cayton site included four roundhouses of late Iron Age/Romano-British date set within a landscape of trackways and field systems. Contemporary pottery, querns and other artefacts were also recovered, suggesting occupation from the late pre-Roman Iron Age into the 3rd century AD.

Plate 6 Church Ravine, Filey is characteristic of ravines on the North Yorkshire coastline; the road covers a culverted stream which was formerly the North Sea outfall of the Derwent system

Not far away, a formerly substantial but eroding site at Red Cliff Point (Yons Nab), Lebberston was investigated in 1929, and included pottery dating to the 4th century, including Huntcliff ware, while large quantities of similar pottery were excavated south of Filey at Primrose Valley in 1922–3 after sherds were found eroding from the side of the watered ravine near Fowthorpe Lodge. This must have belonged to a settlement in the area, again taking advantage of a good beach access route with a freshwater stream, although no further investigation took place. The main part of the settlement may have been lost as Filey Bay has suffered from coastal erosion, although not as badly as the unprotected Holderness shoreline: it is uncertain how far the cliffline has retreated since the Roman period.

Filey itself would have been an ideal location for a Roman settlement with several well-watered ravines. Whether the two stretches of 'Roman road' found during groundworks within the area of the pre-19th-century 'old town' were genuine, a road to the coast at this point is likely, even if not established until the signal station was built in the 4th century some distance from the present town. As yet, there is no clear evidence for Roman occupation in the area of the town itself, although there was a rich late Iron Age/Romano-British rural landscape in the surrounding countryside.

Early medieval

There is very little archaeological evidence for early medieval (pre-Conquest) occupation in the coastal margin, the main surviving indicators being the existing settlements themselves, the majority of which can trace their origins to this period. The placenames of the settlements which survived long enough to be recorded in historical sources are a mixture of pure and hybrid Anglian and Scandinavian origin, reflecting the history of invasion, settlement and integration. As elsewhere in eastern England, the evidence from West Heslerton, 18km south-west of Scarborough, suggests a pattern of early settlement which initially overlapped with late Romano-British (or sub-Roman) culture, but quickly developed a distinctive character. It is quite possible that the names of earliest origin were given to settlements which subsequently moved away from their original sites through the process of 'settlement shift' (local migration) for a variety of socio-economic and environmental reasons, but retained their names until they were fixed in their present locations by the later part of the middle Saxon period. The establishment of open field systems, road networks and early churches with cemeteries attached may all have combined to slow and finally halt the movement process.

The archaeological remains of the early monastery, 8th-/9th-century cemetery and

settlement on the abbey plateau at Whitby constitute one of the few substantial areas of known development from this period. The settlement itself, *Prestby* ('priest's settlement'), was separate from the site which grew around the waterfront area and eventually became known by the Old Scandinavian name *Hvitbi*, but the two settlements and the monastery probably developed a symbiotic relationship similar to that between Bridlington's Priory, 'Old Town' and harbour areas. Whitby presumably provided fish and imported trade products, while Prestby supplied agricultural produce; both formed part of the large manor administered by Whitby Abbey.

The earlier Anglian name for the Whitby abbey site according to Bede in his 8th-century *Ecclesiastical History of the English People* was *Streanaeshalch* (various spellings: standard Old English *Streoneshalh*), with Bede himself translating the name as 'bay of the beacon or watchtower' (Latin *sinus fari*, the last element derived from the Greek *pharos*, 'lighthouse'). Bede's interpretation of the meaning is undoubtedly an incorrect rationalisation, however, as the compound placename *streones+halh* appears in at least three other situations in both the Northumbrian and west Mercian dialects, all located inland far from any bay or beacon; the repeated occurrence of the same formation in four instances also rules out a personal name, unless a high degree of coincidence is allowed. The second occurrence, Strensall near York, is the only one of the four still to retain the name (Barnwell *et al* 2003); the third is included in a late Saxon estate boundary description attached to a lost charter for Bengeworth near Evesham, Worcestershire, the fourth refers to a boundary lease for an estate at Wick Episcopi near Worcester (Brigham & Buglass 2013, 49–50).

As modern maps of each of the four areas of occurrence show, the name appeared near a particularly sharp bend in a watercourse which must have stood out sufficiently to be singled out as 'the angle' (*halh*) in each case. The Bengeworth perambulation refers initially to *in streones halh* and subsequently to the same site simply in the dative form as *þam hale*, indicating that the *halh* element is the most important. *Streon* and its variants have a number of homonyms, but the Wick Episcopi description refers to both the uninflected nominative *æt on streon halh* and the dative *be streonen halæ*, which when considered with Bengeworth's *in streones halh* infer that the first element is in all likelihood a qualifying adjective, not a noun or part of a personal name (Buglass & Brigham 2013b). *Streon* may have been derived from a homonym with the meaning 'strength', with the compound sense of a 'strongly defined/prominent bend'. In many Anglo-Saxon descriptive placenames where the dative ('to'/'at') or occasionally genitive ('of') case was used, the inflected endings became fossilised through familiarity as words lost their original sense. The process was already taking place during the pre-Conquest period as the case of Strensall shows, hence Bede's confusion, although in the case of Whitby, the Scandinavian *Hvitbi* supervened later.

The present town of Scarborough has generally been considered to have originated as a planned mid 12th-century settlement, although Icelandic saga evidence claimed an 11th-century Viking foundation for the settlement and a legendary origin for the name (*Skarþborg*, 'Skarthi's stronghold'). Key locations like the Castle headland and harbour area are unlikely to have been ignored, however, and the town does contain several sites identified as belonging to an earlier period. Excavations on the site of the medieval St Thomas's Hospital revealed suggested 6th-/7th-century, 8th-/early 9th-century, and 10th-/11th-century phases, while possible 10th-/11th-century occupation was also noted at St Mary Street and West Sandgate.

If any of these sites have been correctly interpreted, they suggest an early nucleus in the town. A more definite identification is the site of a 10th- or 11th-century chapel on the Castle headland, incorporating part of the Roman signal station in its structure. It also included a cemetery, perhaps serving both a religious and a secular community. Scarborough does not, however, appear separately in Domesday, but formed part of the extensive and important Falsgrave estate (DB *Walesgrif*), which covered the area from Staintondale to Filey and continued some distance inland. Falsgrave was almost completely laid waste and depopulated during the 'Harrying of the North' by William I (1069–70) and, and it is unclear whether anything remained of the coastal settlement: only seven freemen were recorded in the whole manor in 1086, compared with 108 in 1066. Falsgrave itself was progressively overshadowed by Scarborough from the beginning of the 13th century, and was relegated to the status of an inland village, now a western suburb of the modern town. It is unlikely that a manor as significant as Falsgrave ignored the possibilities of raising revenue from regulated trade and the South Bay would have been a good location for a beach market controlled by the manor, since the broad sandy foreshore between the Castle headland and the Spa, centred on Ramsdale Valley, would have been one of the few safe places available between Whitby and Filey for beaching the fragile clinker-built vessels of the

period (Section 6). This suggests a polyfocal arrangement similar to Whitby Abbey/Whitby/Prestby and Bridlington Priory/Burlington/Bridlington Quay.

Further south, a bank dated to the 6th–8th century survives on the east side of Filey Roman signal station, which if correct may be the last traces of a small defended enclave, presumably incorporating the earlier earthworks. A grave marker decorated with zoomorphic interlace is present at St Oswald's Church, Filey, reused as a step in the tower, while a 9th-/10th-century occupation site was investigated on the opposite side of Church Ravine in Queen Street, where it was sealed by later development, including a post-medieval fisherman's bait shed.

Elsewhere, there is limited evidence for the reuse of Bronze Age barrows as Anglian burial sites, with an early glass bead found in Gnipe Howe, Hawsker. One or more 6th-century graves were also found in the Robin Hood's Bay area, complete with a range of gravegoods.

Medieval

The medieval and post-medieval periods saw the growth of the principal settlements, Scarborough and Whitby, and their development into ports (Section 6), although Prestby continued to exist as a separate entity to Whitby into the 14th century. Scarborough expanded and the influence of Falsgrave waned as the former attracted investment, including a probable early planned settlement laid out along Castle Road by William le Gros, Count of Aumale (Albemarle), and incorporating the first St Mary's Church, contemporary with the construction of Scarborough Castle in the second quarter of the 12th century.

There may also have been a continuing waterfront enclave near the 10th-/11th-century site at West Sandgate, since Scarborough is known from documentary evidence to have had a port prior to the more widely accepted foundation date for *Oldborough* (the initial core of the present town) in 1155, followed a few decades later by *Newborough*, an eastward expansion (Buglass & Brigham 2013, 25–6). The granting of 60 acres (24.3ha) of Falsgrave manor to Scarborough by King John in 1201 gave the new borough open fields to support itself for the first time, marking the reversal in fortune of the two settlements.

The settlement first appeared under a 'Normanised' variant of its present name (*Escardeburg*) in a Yorkshire charter of c 1163 granting rights from Henry II to the burgesses of the town, and as *Skarþborg* in the later Icelandic *Kormakssaga*, although it is reasonable to conclude that the name was used at least as early as its conventional foundation date in 1155, was possibly attached to Aumale's proto-settlement, and that it may have been recognised much earlier. Discounting the legendary saga origin, the first element was probably derived from the Old Scandinavian *skarþr*, 'mountain pass', probably referring to the ravine between the Castle plateau and the Castle Road ridge, as the second element, *borg*, 'fortified place', clearly referred to the headland with its Roman signal station and possible Iron Age hillfort earthworks. The fact that the appellation appeared within a decade of the foundation of Oldborough suggests that 'Scarborough' was already recognised and that the name had probably been transferred at an unknown earlier date from a recognised seamark (the Castle headland) to the adjacent settlement, a common occurrence ('Flamborough' is another probable example: see below).

Filey was a minor medieval settlement which remained a small fishing village until the 19th century, detached from Falsgrave after the Norman Conquest to become part of the manor of Hunmanby. For much of its history, Filey remained subordinate to Hunmanby, three miles away, which was classed as a town with a market charter until local government reorganisation in the last decade of the 19th century, when it reverted to village status as part of Filey Urban District.

The church of St Oswald north of Church Ravine was originally a detached chapelry of Whitby Abbey, but in the early 12th century the rectorial manor was granted to Bridlington Priory upon its foundation, together with half a carucate of land (c 60 acres/24.3ha) and a mill by the lord of the manor, Walter de Gant. The 12th-century church is larger than should be expected of such a small community: it was almost certainly built by masons from Bridlington Priory and has some similar detailing, including clustered columns supporting the central tower and a western tower which was never completed: stone from Filey Brigg was used to build both the Priory and the parish church, granted by Ralph de Neville, who was sub-tenant to the de Gants of Hunmanby.

Important notes on excavations undertaken in the 1920s and 1950s recently discovered by the local historian D. Eaton identified several phases of masonry buildings immediately north of the church in a small field in front of the neighbouring Church Cliff Farm (Eaton 2005; Buglass & Brigham 2011, 70). These included what appeared to be medieval and early post-medieval complexes, the

earlier phase included a large room floored with blue tiles and north of that, two hearths and a circular structure; this may have been a dovecote, ownership of which was restricted to those of manorial or equivalent status. These features were cleared and the remains buried during the construction of the latest 17th-century manor house, which was probably built by the Greene family and subsequently occupied by the Bucks. A late 17th-/early 18th-century dovecote nearby is presumably a replacement of the demolished structure, although not necessarily a direct successor. There was a suggestion that the earliest phases might include domestic buildings and a possible small ecclesiastical centre. The complex contained several fireplaces which may have been inserted later. Some of the walls are shown on the 1928 1:2500 Ordnance Survey with the legend 'Mediaeval Pottery found A.D. 1924–26'.

The church was without a stipendiary priest for most of its history, served by a curate appointed by the prior of Bridlington Priory from among the brethren before its dissolution in 1538, and afterwards by the lords of Hunmanby as lay impropriators of tithes and successors to the rectorial manor. On balance, given the close connection between the church and the Priory, the possible presence of a dovecote and high quality masonry, the buildings formed part of a rectorial manor originally built at the same time as the church.

The church now stands largely in isolation on the north side of the ravine, with the Church Cliff Farm complex of c 1800, while the fishing settlement and later town extends away to the south. Well-preserved ridge-and-furrow still remains on the site, although most in the surrounding area has been ploughed down.

Earthworks relating to the medieval open field systems were formerly present in all of the coastal parishes, including the northern part of the county between Whitby and Scalby where the arable area was mostly restricted to a relatively narrow zone between the sea cliff and the moorland hills, and the floors and lower slopes of valleys running inland. The south end of Fylingdales and the adjacent sections of Staintondale are the most exaggerated examples of this 'squeezing', although ridge-and-furrow surviving in the area around the middle of the 20th century already consisted of small, scattered pockets, perhaps reflecting the use of much of this well-watered undulating land as pasture. Several deserted or shrunken settlements have also been identified, including *Prestby*, *Lingehou* (Hawsker parish), Osgodby, Reighton and Speeton. Two medieval moated sites were present in Hawsker (a monastic grange) and Gristhorpe, with smaller farmsteads or crofts in Staintondale and Reighton. Many of these sites have retained surviving earthworks.

Plate 7 Well-preserved ridge-and-furrow and hollow-way, Cloughton Wyke

Much of the evidence recorded during Phase 1 of the RCZAS was based on the analysis of aerial photographs from the second half of the 20th century, with the majority taken in the 1940s, which coincided with the beginning of modern intensive agriculture. Many recoded features were destroyed as a result of the extension of the productive agricultural land area to include historic pasture and moorland, both areas where earthworks had formerly been preserved. Surviving landscape features, including ridge-and-furrow, boundary ditches, enclosures and banks are therefore relatively rare and usually degraded, with only small areas remaining in Hawsker, Staintondale, Cloughton, Newby, Scarborough, Lebberston and Filey, chiefly in areas which are too insignificant or inaccessible for inclusion in modern arable. The scheduled medieval War Dike south of Ravenscar is an important survival, forming the boundary of an estate held by the Knights Hospitallers, later Bridlington Priory, in existence by 1184.

Post-medieval

In the post-medieval countryside, the pattern of fields and villages continued with only a slow pace of change, with (for example) timber-framed dwellings being slowly replaced by stone, and heather or straw thatched roofs by pantiles, a process largely completed by the early 19th century (the 'Great Rebuilding'), so that few examples of earlier secular architecture remaining. Enclosure (and the 'agricultural revolution'), the creation of new roads and turnpikes, and the spread of rural industries, were

the main engines of change in the 17th and 18th centuries.

Industry, in particular alum production and stone quarrying (Section 4), resulted in permanent topographical changes in the landscape, while enclosure led to the replacement of the existing pattern of open fields and commons, and the construction of many new farms outside the main settlements and townships, consisting of farm houses surrounded by foldyards, barns, stables, granaries and other structures. Some of these were located on the sites of former townships or moated sites, such as Widdy Farm, Hawsker, but most were in new locations, reached by a purpose-built network of minor roads and tracks.

Traces of post-medieval ridge-and-furrow survive in some places, indicating either continued use or extension of the open field system although some early modern farming techniques could create similar features, such as steam ploughing. The present landscape therefore incorporates the remnants of features from a number of different periods. It remains overwhelmingly rural in character, with Whitby, Scarborough and Filey the only substantial coastal settlements, although the first two in particular have spread well beyond their historic centres. Outside these centres, tourist development has been kept in check on most of the coastline between Whitby and Scarborough, with the main areas of expansion being located between Filey and Scarborough (Section 8).

East Riding of Yorkshire

Palaeolithic–Bronze Age

The coastal margin of the East Riding has clearly been exploited since the end of the Late Devensian, although evidence is understandably extremely sparse for the earliest periods. Throughout the late Upper Palaeolithic and much of the Mesolithic period, Holderness formed the western fringes of a wetland landscape extending across the North Sea basin, an area generally referred to as 'Doggerland' (Coles 1998), characterised by river valleys, meres and freshwater marshes which extended well inland of the present coastline to the Wolds edges.

The Phase 2 RCZAS survey located undated buried land surfaces and organic deposits in the cliffs at Atwick, Holmpton and Easington, while possible ponds were identified at Withernsea, Holmpton and Easington, and a palaeochannel at Easington. Two possible palaeochannels were identified further south at Kilnsea Warren in 2012 as part of a programme of coring, surface sampling and recording undertaken as part of Phase 3. This programme also revealed details of the post-glacial deposition sequence along the north bank of the Humber, principally relating to the deposition of estuarine alluvium over the exposed till surface which subsequently became saltmarsh and eventually woodland during the Neolithic period. Extensive areas of former land surface were mapped on the North Sea foreshore, extending west beneath the present headland and presumably continuing beneath the mudflats of the Humber foreshore. In the winter of 2013/2014, this area was extensively damaged by storm surges, and it is unclear how much of the fragile relict landscape survives.

The earliest hunter-gatherers undoubtedly passed through this area but left very little evidence for their activities, with the exception of occasional artefacts. The temporary return to cold conditions during the Loch Lomond Stadial ended late Palaeolithic activity.

The discovery of a Middle Palaeolithic flint core on the beach at Sewerby Cliff is the earliest evidence for activity in an area which became increasingly attractive because of the accessibility of flint from the Burnham and Welton Chalk forming Flamborough Head, as well as better-quality nodules scavenged from the overlying till. The flint was recovered not far from an important exposure of the buried Ipswichian cliff line, dated by Optically Stimulated Luminescence (OSL) to c 120000 BP, which includes a palaeobeach and faunal remains. If the identification and dating of the flint core are correct, its presence implies rare activity during a period when access to Britain was thought to have been separated from the Continent by ice.

Meres were scattered across the landscape from Skipsea to Burton Pidsea although Hornsea Mere is the only example still in water; the extent of these relict features is occasionally revealed by flooding, including the catastrophic events of 1953. The remnants of several meres are present on the coastal margin where a number have been truncated by erosion, including examples at Barmston, Skipsea (Withow), Sand le Mere and Owthorne. In some instances, these include surviving inland sections and cliff exposures, although Sand le Mere mainly consists now of faint traces of lake bottom deposits on the till foreshore platform below the present covering of sand and shingle, while other known meres have been entirely destroyed, including Spring Mere, which lay east of and fed into Sand le Mere, and another documented example close to the lost village of Hornsea Burton.

Plate 8 Eroding seaward edge of Barmston Mere

Plate 9 Remains of Withow Mere western outflow channel, Withow Gap, Skipsea

Those meres which survive contain potentially important palaeoenvironmental information and are likely to have attracted past settlers. The seaward portion of Barmston Mere is visible as an area of peat on the boulder clay foreshore platform, but also extends inland as a clearly-visible depression which has been the subject of palaeoenvironmental investigation, most recently as part of RCZAS Phase 3 (Brigham & Jobling 2013c). A sequence of lacustrine deposits is also exposed in the cliff and foreshore platform in the vicinity of Withow Mere, Skipsea, where a considerable amount of previous work has taken place: a new profile across the cliff exposure was constructed in 2013 (ibid).

As mentioned above, only traces of the western end of Sand Le Mere now survive although more extensive foreshore exposures may be revealed as sand Is periodically removed by exceptional conditions. The original outflow stream, however, originally flowed in a south-westerly direction into the Humber where it is represented now by Keyingham Drain, but the eastern section is followed by modern Tunstall Drain, which has reversed the flow to empty in the North Sea through a tidal sluice. Significant deposits relating to the mere therefore still remain in the buried inland valley of the channel. Owthorne or Withernsea Mere survives below the sunken Valley Gardens in modern Withernsea immediately north of the site of the former pier, and deposits are presumably preserved in the silted and infilled basin. The names 'Owthorne Mere' and 'Withernsea Mere' appear side-by-side on the 1855 1:10560 Ordnance Survey next to a large indentation in the cliff, but it is unclear whether there were originally two entirely separate meres or a single water body with two inland arms which had become separated in the later stages of coastal erosion.

There is some evidence from the wider region for Late Upper Palaeolithic activity, including a bone harpoon point found in 1993 in a quarry at Gransmoor near Driffield, dated by AMS to c 13350–12950 cal BP (11400–11000 cal BC). By this time, regular seasonal hunting and fishing were probably being pursued in the area, with the hunters taking advantage of the increasing variety and quantity of game and the improving climate during the short Windermere Interstadial (14700–12900 cal BP). The point was, however, deposited in the later part of the period as conditions were beginning to deteriorate before the onset of a temporary return to cold conditions between 12900–11500 cal BP (the Loch Lomond Stadial).

Several Upper Palaeolithic flint flakes have been found near Hamilton Hill, Barmston, in the surface of natural sands and gravels, although their exact provenance is unknown. A flint blade in the area of a later lake settlement at Withow Gap, Skipsea, also lies in an area of Mesolithic activity. A barbed bone harpoon may also be of this period. In Hornsea, a uniserially barbed bone point, presumably of Upper Palaeolithic date, was found in 1905 beneath lacustrine peat during the construction of a gasholder, not far from the present extent of Hornsea Mere; it had clearly been deposited on the fringes of the original lake. Further south a flint scraper was recovered at the northern end of Holmpton parish,

Other finds from the period comprise animal bones, which are possibly contemporary: these include a mammoth tooth from the beach between Mappleton and Cowden, and an elephant's tooth from the beach at Owthorne near Withernsea. These at least suggest the presence of contemporary deposits within the eroding cliff.

The Mesolithic period was a development of its predecessor, rather than a cultural break. As the climate warmed, woodland expanded, exploiting

and enriching the soils which were forming on the weathering surface of the frost-shattered rock, glacial tills and moraines. The variety of game animals and different environments led to an increase in the range of tools developed; the similarity of these on both sides of the North Sea reflects the ubiquity of a common Mesolithic culture in northern Europe. The rich diversity and concentration of animals, fish, wildfowl and plants area is likely to have made the North Sea basin a core area for human activity in the British Isles/Scandinavian region, contrasting sharply with the less attractive upland districts, which would have taken longer to recover from glaciation. Aquatic plants, both salt- and freshwater, would have been exploited for food, medicine, fuel, clothing, basketry, rope, and temporary shelters.

The sea level was, however, rising rapidly as more water was unlocked from the ice sheets, and had probably already reached c –65m OD at the beginning of the period, c 11500 cal BP (Coles 1998), and perhaps –10m OD by the end (Jelgersma 1979). This would have led to an increasing migration of human and animal populations as the area was divided by submerging valleys into peninsulas and eventually, islands, the larger of which (including what became Dogger Bank) survived well into the Mesolithic. By the end of the period, however, the coastline would have reached a recognisable form, although located several kilometres east of the present alignment for much of its length.

The wetland landscape of Holderness survived as a remnant of Doggerland with the added attraction of a coastal environment, and it presumably became the home of some of the displaced population from further east. Traces of transitory Mesolithic hunting camps may exist in the study area: concentrations of finished tools or other artefacts, shell middens, hearths and the remains of temporary structures may reveal such sites, but in practice the sparse and fragile evidence is hard to identify unless encountered as part of a careful site investigation or during the course of a research excavation.

In addition to the possibility of hunting camps or temporary settlements, the presence of easily available flint, although not of the best quality, made the fringes of the chalk Wolds attractive, and the Bridlington–Flamborough area was a particular focus for flintworking, represented by scatters of production waste (flakes, cores and other debitage).

A possible flint industry identified as operating from the early Mesolithic period has been identified on Sewerby Golf Course, matching a similar centre in Reighton on the north side of the headland (see above). Further south in the Barmston area, a harpoon head was recovered from near the low tide mark at the mouth of The Earl's Dike. A nearby find of an elk antler may represent a prevailing cool local wooded environment near the start of the period. In Ulrome, a probable Mesolithic blade core was included among a number of largely undated flints found during fieldwalking by the Humber Wetlands Project.

Skipsea is an important area for the early prehistoric period, with an interconnected cluster of several former meres represented, although only Withow Mere falls within the study area. Artefacts from the area of the Mere include a possible Mesolithic bone spear point, and a barbed bone harpoon found in 1903. These were recovered from among animal bones and antlers, including deer and elk/giant elk, in the case of the harpoon from lake bed silts lying below 1.5m of peat. Other provenanced and unprovenanced artefacts have been found in the parish, including an axe and core. The Withow area clearly includes one of the best opportunities locally for examining *in-situ* artefact-bearing deposits. The sole find from the study area in Hornsea was a barbed antler harpoon recovered from the beach below the low water mark. This could have been re-deposited from some distance away, although there was a mere in the area of the former settlement of Hornsea Burton, both lost to erosion in the early post-medieval period.

Further south, Sand le Mere in Roos parish presents another good opportunity for the study of *in-situ* deposits of early date. The remains of timber structures have been recognised at low water since at least the late 19th century; although, these are likely to have been of Neolithic/Bronze Age date, earlier natural deposits may be present below the present foreshore.

At Withernsea, a submerged Mesolithic forest, colloquially known as 'Noah's Wood', was uncovered during spring tides in 1839, when animal bones and freshwater mollusc shells, suggestive of a freshwater lake, were also recognised. The lake is identifiable as the former Owthorne or Withernsea Mere, which Lord Burleigh's navigation chart of c 1560 shows to have been of considerable size even after it was permanently breached in the 15th century. Noah's Wood was presumably located around the eastern end of the mere, although traces of woodland had been found near the western end in the 18th century, associated with the remains of two

Bronze Age logboats, 50 yards (45.7m) south-east of St Peter's church (itself lost in 1816).

Although Britain was cut off from the Continent during the Mesolithic period, following the submersion of the Channel land bridge, this was not a barrier to the arrival of agriculture and perhaps other cultural ideas during the Neolithic. Long and round barrows representing collective burials and cursus monuments were constructed on the Wolds, with settlements apparently concentrated in similar areas to those exploited by previous hunter-gatherers; this in itself suggests continuity, rather than a break with the past. The decline of tree pollen and the arrival of cereals are attested in the archaeological record as farmers began to clear areas of woodland; the presence of silt layers within some mere sequences are considered to represent evidence for the erosion of areas of surrounding newly-cleared farmland.

Plate 10 South Landing, Flamborough, focus of Neolithic flint industry and occupation

The Flamborough Head area contains evidence for a substantial Neolithic flint industry exploiting material extracted from the local till. Findspots in the area assessed include implements from near the northern cliff edge in Bempton and scrapers from near Metlow Hill, while the cliff edge between South Landing and Sewerby appears to have been particularly popular, probably because it was more sheltered than the northern part of the headland, and had better access to the beach, with its exposed flint deposits. Flint knapping sites have been recognised next to the beach access point of South Landing, with a considerable number of individual flints recovered from several locations during fieldwalking. A flint industry which potentially began in the Mesolithic period has been identified on Sewerby Golf Course, as already mentioned. Hartendale, Beacon Hill and Sewerby Golf Course additionally reflect either continuity into the Bronze Age or later reoccupation.

The construction of Danes Dyke itself has been assigned to this period, although it could be much later; it certainly reflects a considerable investment in terms of labour, whether at the behest of a secular or religious elite, or was a communal effort. The nearby Buckton Dyke may represent a similar much smaller feature, but could simply have formed a local boundary.

Plate 11 The prominent and well-preserved Danes Dyke monument, Flamborough

Isolated worked flints and small assemblages are relatively common and several occupation sites have been identified in the Dykes End/South Landing areas, including Hartendale Gravel Pit and Beacon Hill Quarries. Another possible site was found in association with the flint production area at South Landing. Further occupation sites associated with the flint industry, presumably subsisting on fishing and small-scale farming, are likely to remain undiscovered in the Flamborough/Sewerby area. In addition to local flint production, an unprovenanced Great Langdale axe fragment was recovered in the parish and an imported basalt axe was found at South Landing in 1975.

South of Bridlington, three unprovenanced stone axes have been found on Carnaby Moor, and a fourth, of greenstone, near the deserted medieval village of Wilsthorpe.

At Barmston, the period is represented by a 26m diameter ditched enclosure, identified c 200m inland, although this is perhaps more likely to be of Bronze Age date given the presence of an occupation site of that period to the east. Several stone and flint axes have also been recovered from the parish, and there have been a number of sizeable flint assemblages from organised fieldwalking, particularly in the area either side of Earl's Dike, which seems to represent a channel crossing a former mere.

Withow Mere, Skipsea, includes the remains of what has been interpreted as a settlement, although there are indications that at least some of the concentration of brushwood and twigs encountered in the late 19th and 20th centuries may be a natural accumulation, perhaps as a result of beaver activity. Whether natural or not, an alder sample recovered between 1978–84 has been dated to the early Neolithic (3771–3370 cal BC), indicating the build-up of woody material during a period of peat formation; the peat itself ceased to form after 3363–2940 cal BC, with the ensuing siltation attributable to increased run-off following local woodland clearance. As in earlier periods, significant preserved organic remains may survive in the vicinity of other sites including Sand le Mere, but also perhaps in Withernsea where, as mentioned, the silted inland section of the former mere is preserved beneath the early 20th-century Valley Gardens.

In Atwick, Hornsea, East Garton and Withernsea parishes, a number of artefacts have been found in the study area, including flints from an evaluation in Hornsea and unprovenanced or unstratified stone axes, axe hammers, a quern and ploughstones. Ploughstones (flattened pebbles embedded in ploughshares to improve the cutting process and general durability) indicate agricultural activity.

Not until Easington is reached is there further structural or occupational evidence for Neolithic activity in the coastal strip, from beneath two Bronze Age barrows east of the present flood defences. The main occupation site dates from the early 4th millennium BC to the mid or late 3rd millennium BC, and consists of rows of postholes which were interpreted as marking the outline of a long rectangular building, with associated hearths and refuse pits. The finds assemblage was substantial, and included over 650 sherds of pottery, saddle querns, a very early loomweight, and over 750 pieces of worked flint, included a polished adze, a tranche-type arrowhead, narrow blades, knives and scrapers. Charcoal recovered from one posthole gave a radiocarbon date range between 3915–3650 cal BC.

A nearby mini-henge may also be of late Neolithic date. Extending to the south along the foreshore, several exposures of contemporary land surface were mapped as part of RCZAS Phase 3 (Brigham & Jobling 2013c). Two tree samples recovered from the area were ^{14}C dated, one to 3640–3370 cal BC, a little later than the land surface beneath the Easington barrows and the second to 2880–2570 cal BC, a similar date to wood samples taken from the Cleethorpes area south of the Humber.

Plate 12 Typical area of eroding Neolithic surface, Kilnsea Warren, Easington

The Bronze Age has been seen in the past as being triggered by the arrival of new peoples, characterised initially by the use of beaker-shaped vessels, the working of bronze, and the adoption of burials in round barrows, but it is now recognised that it is more likely to represent a period where new ideas were absorbed, perhaps transported by relatively small numbers of settlers or itinerant craftsmen rather than mass migration or invasion. In fact, single burials in round barrows were already present in the late Neolithic, and the 'Beaker' period seems to have been a transitional late Neolithic/early Bronze Age phase, when copper was first exploited, and before bronze was commonly used (after c 2150 BC). The production and use of tools such as socketed axes spread rapidly, probably as woodland clearance expanded. The construction of round barrows ended c 1400 BC with the adoption of urned cremation cemeteries and secondary cremation burials in the mounds or ditches of existing barrows. Another feature of the period is the construction of the first linear dykes on the Wolds, perhaps marking tribal boundaries.

Agriculture became more widespread, with wheeled vehicles coming into use alongside 'scratch' ploughs. Seaweed was possibly used as a fertiliser, and settlement locations alongside coastal areas and tidal estuaries may therefore have been favoured. The warm, dry weather of the earlier part of the period, however, allowed the spread of settlements into upland areas which were later abandoned as the climate became colder and wetter, marked by the formation or expansion of blanket and lowland bogs. The construction of trackways or causeways across such lowland bogs allowed exploitation of their resources and a means of communication. As for the Neolithic period, evidence for settlements, as opposed to burial sites, has proved relatively

elusive. Early houses seem to have been irregular or broadly rectangular like those of the preceding period, and either occurred singly or in small groups. Later Bronze Age settlements were characterised by groups of circular houses which were sometimes enclosed by defensive structures, the forerunners of Iron Age hillforts.

The period is well-represented archaeologically by barrows — individual and grouped — in several parishes. These include a concentration on Flamborough Head, with a group of four in Bempton, of which only one is still visible as a ploughed-out mound, a barrow from the Buckton Dyke area, two barrows near Metlow Hill, and several others from the eastern part of the headland which are no longer extant.

Plate 13 Remains of plough damaged barrow under rape crop, Bempton

Other features may include Buckton Dyke, a north–south entrenchment from Bempton, which could however be earlier or later. There are also occupation sites at Beacon Hill and Hartendale; the former includes the remains of an early Bronze Age building, with contemporary pottery and evidence for flintworking.

Evidence for Bronze Age activity was also apparent in Bridlington, where a barrow existed at Marton Hall until c 1963, with others in the Marton Road area, at Queen's Park and possibly close to the Gypsey Race near Bridlington Quay, neither of which survive. Two extant examples remain just outside the study area in the north-west of the town at Butt Hill, with a third found nearby during a recent geophysical survey. The discovery of several artefacts, including a penannular bracelet from the Quay area could represent the locations of former barrows rather than casual findspots.

A Bronze Age occupation site next to Barmston Main Drain on the edge of the former Barmston Mere, including traces of timber structures, has been dated broadly by two ^{14}C timber samples to 1502–830/1441–799 cal BC. It includes hearths, ovens, pits, postholes and cobbled surfaces, constructed on the surface of an earlier peat horizon dated 8590–8090 cal BC, representing the much earlier infilling of the mere. The site was originally interpreted in the late 19th and early 20th centuries as a lake settlement, but the dating of the mere peats has revealed a broad dating gap; there may, however, have been some later regrowth sealing traces of the later settlement. Three mounds to the north on Watermill Grounds could well represent large barrows; the southernmost (now gone) seems to have included a central pit which may have been an early excavation of the primary burial area; these lie close to a large double-ditched enclosure of potential Neolithic or Bronze Age date.

A number of unprovenanced artefacts have been recovered in Barmston, including spearheads and axes of various forms (including a side-looped spearhead, early flat axes and a flanged axe) together with flint assemblages, mainly from the Earl's Dike area, sufficient to demonstrate an active local Bronze Age population.

Evidence for the period from Ulrome includes two further possible ploughed-out barrows, a pit containing artefacts, and several findspots, including a winged bronze axe, flanged axes, leaf-shaped and side-looped spearheads. Skipsea, Atwick and Hornsea have produced less evidence, comprising a few artefacts, including a debased beaker from near Withow Mere, looped spearheads, an early flat axe, and stone axe hammers, one of them datable to 1650–1250 BC, although a possible Bronze Age/Iron Age settlement seems to have been based around the Mere.

At Mappleton, Roos and Hollym are further possible barrows, while a burial attributed to the period has been found at Aldbrough. From Withernsea, two complete but undated dugout canoes were apparently found in the 18th century, among the remains of a submerged oak and hazel forest, perhaps related to a former mere between Owthorne and Withernsea.

Easington appears to have been an important centre of Bronze Age activity. Although there are a large number of undated cropmarks, some of which may belong to this period, several barrows (individuals and small groups) have been located at various locations from Out Newton south to Kilnsea, and towards the Humber shore near Lockham Farm. Of these, a barrow which overlay a Neolithic occupation surface was investigated

several times over the course of a century, most recently in 1996–7.
A little to the north-north-east, a second barrow was excavated in 1998 when it was exposed by the tide, and also overlay a Neolithic occupation site; a nearby mini-henge was excavated at the same time and contained a cremation dated 2500–2000 cal BC. The infilled ditch is still visible as a patch of rough vegetation.

Plate 14 Site of excavated Bronze Age round barrow marked by darker circle of vegetation in front of sea bank, Easington

Further south, a fragment of a sewn-plank boat was found on Kilnsea beach in 1996, lying in peat deposits. The boat was dated to c 1870–1670 cal BC and is considered to have been used in an estuarine environment, possibly in one of the large tidal channels connected to the Humber, such as the Kilnsea Fleet, which passed the sites of the two barrows and mini-henge.

These structures appear to have been built on the west bank of the Fleet after it had partly silted, together with other barrows in the area, suggesting it formed a tribal or ritual boundary. The sites now lie on or close to the head of the beach and are vulnerable to erosion. One barrow site to the south may also still survive below the sand, although its exact location is unknown.

Other than fieldwalked flints, a relatively small number of provenanced and unprovenanced artefacts have been found in the Easington area, including an axehead, leaf-shaped spearheads, and pottery. These have principally been recovered from Easington and Kilnsea beaches, including fragments of cinerary urns representing a late Bronze Age/early Iron Age cemetery, which was exposed and investigated at Kilnsea Warren in 1957.

A land surface was recorded below the beach in the area of the cemetery, including dated Neolithic tree remains and related woodland deposits, but in 2011, traces of a circular timber structure were exposed at the edge of the upper beach shingle.

Plate 15 Detail of two posts of Bronze Age circular structure on Spurn foreshore, Kilnsea Warren (British Geological Society)

Two of the posts were ^{14}C sampled in 2012 as part of Phase 3 and returned a combined date of 2040–1880 cal BC, the period immediately before the Kilnsea boat was built. The function of the structure cannot be determined until excavation takes place and it may represent either a large roundhouse, a post-built mini-henge, or a funerary structure, with a diameter of c 20m.

Iron Age–Romano-British

As with earlier periods, the Iron Age reflects continuity rather than invasion as previously believed, the adoption of a new metal being the main difference between the late Bronze Age and early Iron Age. Tools of iron, which was brittle, were initially inferior to bronze, which could be hammered back into shape. Iron, however, had the advantage that it did not need to be alloyed with other metals, and could be reforged. Improvements in technology quickly led to the metal achieving dominance in use for tools and weapons and there were other new developments, including the manufacture of wheel-thrown pottery.

The patterns of settlement and tribal land-holding were probably little altered, with the Wolds dikes available as convenient land divisions. In the middle and late Iron Age, however, there is evidence for the increasing subdivision of the rural landscape, with the appearance of smaller fields, trackways, initially unenclosed settlements of circular huts, and hillforts. There is evidence for a deterioration in climate and a possible increased dependence on livestock farming as opposed to cereal production, although raised post structures,

identified as grain stores, are common, surrounded in low-lying areas by drainage gullies.

The most widespread evidence for the Iron Age generally takes the form of features identified by aerial photography, and the majority of these are difficult to date without further investigation: many features assigned in HER records to the later Iron Age/Romano-British period, or which are simply described as 'prehistoric', may actually be of early or middle Iron Age date. Many of the complex later village sites in the area may have begun as small unenclosed settlements or farmsteads in the earlier Iron Age, as has proved to be the case where these have been excavated elsewhere in the region.

Square barrows are the most easily identifiable feature which can be assigned to the middle and late Iron Age. Elsewhere in Britain, the identification of Iron Age burials of any type is relatively rare, but the 'Arras' culture which emerged principally in the East Riding and surrounding area is perhaps best known for its square barrows and occasional 'cart burials', although small numbers have been found elsewhere (see North Yorkshire discussion above). These barrows were a clear departure from the burial culture of earlier periods, and may be a reflection of the increased wealth of a new elite, with their prosperity perhaps based on cattle herds. The East Riding barrows are broadly datable to the 6th to 1st century BC and appear singly, in groups, and in large cemeteries, sometimes with a central burial pit visible. They fall within a restricted range of dimensions perhaps with large early examples giving way to smaller barrows.

Although the largest concentrations of square barrows are on the Wolds, for example near Wetwang and Garton, around sixteen have been identified across the study area, principally by aerial photography in the northern part of the study area. Four possible examples have been identified in Flamborough and Bempton parishes near Metlow Hill and Buckton Dyke. At Headlands Upper School, Bridlington a square barrow is located near a field system of presumed later date. In Barmston, a north–south line of 6–8 square barrows has been identified south of the Earl's Dike near Conygarth Hill, with a further example to the east in Sheep Walks. Three possible conjoined square barrows in Low Grounds and a single example at Watermill Grounds are located among the traces of later Iron Age settlements. A cart burial of either Iron Age or Anglo-Saxon date was found near the seafront in the northern part of Hornsea: although this was close to an Anglian cemetery below the former Hornsea Hydro, the juxtaposition of burials of different periods is well attested, as existing mounds seem to have acted as ritual foci for later generations.

Other features in the area may be of Iron Age date, although few have been definitely dated. There is a considerable problem with dating cropmarks where these have not been investigated, and even where they have, reports (particularly early examples) often do not give clear dates. Some features can therefore only be assigned a general Iron Age or Iron Age/Romano-British date. In any event, areas of cropmarks frequently represent a multi-phase palimpsest rather than a single phase of activity, and this is more apparent in complex monuments, where earlier elements are clearly cut through by later examples, or are on a different alignment.

Monuments assigned a possible Iron Age date include Buckton Dyke, Bempton, although it may well be earlier, and a small promontory fort at Briel Nook to the east of Danes Dyke (see Section 7). Three further small enclosures were identified by aerial photographic analysis on the northern cliff edge between Briel Nook and Danes Dyke.

Plate 16 Buckton Dyke visible as infilled ditch and banks on cliff edge, Bempton

Settlement traces on Sewerby Golf Course and a ditch are probably of the later Iron Age, while a late Bronze Age/early Iron Age 'lake settlement' was investigated near the mouth of Barmston Main Drain on the site of Barmston Mere. Ditches containing Iron Age pottery were recorded to the north of the Drain in the cliff face, while pottery was found immediately north of Barmston Beach Caravan Park in association with a flint scatter, but in an area of Iron Age/Romano-British settlement. In Ulrome, a ditch of non-specific Iron Age date containing pottery and animal bone was located near Seaside Caravan Park, while an Iron Age or later double ditch or two pits in section,

containing a coin and pottery, was exposed in the cliff nearby. Near Withow Gap, Skipsea, there is possible Bronze Age/Iron Age settlement activity on the edge of the former mere as at Barmston.

In Atwick, a number of structures have been identified; possibly all late: these include pits exposed in the cliff and an Iron Age occupation site, with cremations, artefacts and iron slag at Virginia Lodge in the village itself. A ditched enclosure near Low Skirlington could be of Iron Age date. A 'pit dwelling' (possibly late) was discovered at Rolston near Mappleton, while a late Bronze Age or early Iron Age occupation site has been identified in the cliff face at Easington.

Other than pottery from fieldwalking, casual findspots are few, but include a carved chalk figurine recovered in Withernsea, Corieltauvian gold staters from Princess Street in Bridlington, and from the beach or cliff at Barmston, Ulrome, Atwick, and Hornsea, and a bronze coin of the Catuvellauni from Hollym. Two coins of unspecified denomination were also found on Easington beach.

The presence of the staters and other late Iron Age coins indicates trade, particularly with Lincolnshire, and this continued into the Roman period before their official crossing of the Humber c AD 71: Redcliff near North Ferriby appears to have flourished for a while as a frontier trading settlement on the north bank of the Humber.

Other settlements in the south of the study area can also be expected to have had the earliest contact with the Romans both pre- and post-invasion, although the distinction between 'contact' settlements and post AD 71 sites would be difficult to identify archaeologically, unless distinctive early Roman artefact forms (such as coins and brooches) were identified.

The arrival of the Romans north of the Humber added new elements to the East Riding landscape, with the construction of a series of roads linking planned centres such as Brough and Hayton and extending to the coast at Bridlington and elsewhere. In the rural hinterland, the Iron Age culture continued to develop, with existing settlements becoming larger, and more elaborate patterns of enclosures and droveways emerging, increasingly surrounded by boundary ditches. 'Ladder settlements' also appeared, often strung out along the new roads, taking advantage of improved communications to transport goods and materials.

Villas were constructed from the 2nd and 3rd centuries, often replacing native farmsteads; examples include Rudston, Brantingham, Harpham and Welton Wold. Cereal production probably became more dominant, with the supply of the new towns, the Roman army and the villas driving an intensification of agriculture. Native industries such as pottery and ironworking continued, while new centres also started, for example in the vicinity of Holme upon Spalding Moor and North Cave.

The difficulties in dating rural cropmark sites has already been outlined, and the number of monuments assigned to the generic late Iron Age/Romano-British period is therefore disproportionately large in some areas. In others, however, the presence of medieval/post-medieval ridge-and-furrow masks any features of earlier date; there is no reason to assume that the pattern of small nucleated settlements with adjoining field systems is not evenly spread across the study area, with the exception of wetland zones. The cropmarks identified normally consist of enclosures, droveways and boundary ditches, although possible house sites are occasionally indicated.

In Bempton, there are three areas of cropmark features and a considerable number have been identified in Flamborough parish, including parchmarks in the village itself. These are located inland, but on the cliff edge east of Dykes End are a group of enclosures and ditches. Excavations next to the cliff at Flamborough Quarry in 1979 identified ditches and possible Romano-British burials. Beacon Hill has traditionally been associated with the site of a 4th-century Roman signal station, and late Romano-British pottery has been found in the area, including Crambeck ware.

The location of Bridlington at the east end of the road from Malton suggests that it was a focus for Romano-British settlement, although the location of any port may lie east of the present harbour (Section 6). There are, however, traces of contemporary activity in the town and surrounding district, including a settlement outside the study area at Bessingby Hill, excavated in 1949.

Between Danes Dyke and Sewerby Park, the evidence for occupation along the clifftop and its immediate hinterland continues from Flamborough parish in the form of a concentration of settlement features, field systems and associated artefacts, some of them examined archaeologically. Among them, the slight earthworks of a possible Romano-British enclosure on the golf course are considered to be the remnants of a rectilinear earthwork which is on the verge of being lost to cliff erosion.

Plate 17 Possible north bank of Roman enclosure, Sewerby golf course, Bridlington

At Headlands Upper School as already mentioned, a field system and square barrow are present in the grounds, while a possible enclosure has been identified immediately north of the Hull–Scarborough railway line. Traces of Roman occupation near Bridlington Quay include an alleged coin hoard, an urn from Prince Street, and a female skeleton with a bronze armlet from St Olinda Road. Further west is a stretch of bank and ditch. In the Hilderthorpe area are two areas of cropmarks, one of which extends southward into Carnaby where two other concentrations include enclosures and trackways. There is a more complex and regular series of features near Cliff Farm, which extends over the cliff edge. A fragment of 4th-century 'signal station type' pottery found on the beach near this point suggests this may be a late Roman monument.

Plate 18 Exposed Romano-British ditches in low cliff edge, Barmston

Barmston also contains a number of cropmark complexes and isolated features, some located in the cliff. A site near Hamiltonhill Farm includes two possible rectangular huts, while another near Barmston Beach Caravan Park is a possible settlement site extending to the cliff edge, and consisting of several phases of ditched enclosures, boundary ditches and trackways.

In Ulrome, there is comparatively little later prehistoric activity in the study area: in the area of a possibly contemporary double ditch at Seaside Caravan Park is a probable Romano-British pit broadly dated by pottery. Ditches or pits were recorded on the cliff, one dated by pottery. An Iron Age/Romano-British enclosure was recorded just beyond the edge of the study area, but heading eastwards. The picture is the same at Skipsea, where a possible ring ditch east of Skipsea Grange and a partly ploughed-out bank to the north, possibly flanked by ditches, and quite possibly much more recent, are the only monuments, although several pits or ditches which may be of this period have been recorded in the cliff edge. In Atwick, the smelting site at Virginia Lodge and enclosure at Low Skirlington may be assigned to this or the preceding period, and there are two pits or ditches recorded in the cliff edge.

Hornsea, which could be expected from its later importance and the presence of the Mere to have been a centre of Romano-British activity, has so far produced only the cropmarks of undated ditches and an enclosure from the northern edges of the town, and a ditch recorded in the cliff edge. There is also limited artefactual evidence for a Roman presence, including early–mid 4th-century coins of Magnentius and Licinius, and pottery from a recent evaluation at The Levels. One possibility is that Roman activity was focussed further east nearer the sea, an area which has been extensively eroded.

The period is better represented at Mappleton, where a number of cropmarks have been recorded. These features have not been investigated, but a substantial ditch containing 4th-century pottery, a gully and two pits located just outside the study area boundary suggest the presence nearby of a late Romano-British settlement.

At Aldbrough three areas of cropmarks have been identified c 1km inland. Roman pottery and coins have also been found at different times in the cliff near the coastguard station, suggesting a lost settlement in the vicinity. The evidence from East Garton includes linear and curvilinear ditches of uncertain date near Bracken Hill. There is no trace of a Romano-British 'signal station' and enclosure said to have been located 250m inland in the north of the parish; it is in any case more likely

that a structure of this type and date would have been located further east on a site now lost. There are a considerable number of probable late prehistoric features in Roos, including a trapezoidal enclosure near the cliff edge at Hooks, a road or track near the cliff at Monkwith and other ditches/ring ditches and enclosures. The ^{14}C analysis of peat found on the foreshore at Sand le Mere determined that it had formed c 2000BP, presumably within the former mere, although there was no indication of a settlement in the immediate area.

In Rimswell, the largest of a cluster of enclosures and associated boundary ditches to the north-west of Withernsea contains a possible hut circle with a diameter of c. 20m. Further features in the parish include ditches and enclosures.

There is little cropmark evidence for the period from the built-up area of Withernsea, and it is chiefly represented by local finds, including a large oval pit containing Romano-British pottery found during a watching brief in 1996, fragments of possible cinerary urns, Roman pottery recovered from the cliff and a quernstone recovered prior to 1909. Roman occupation in Hollym is represented solely by an early 2nd-century Hadrianic denarius from the beach; undated cropmarks representing enclosures and field boundaries have been identified at Holmpton where the only dated artefact is a silver denarius of Faustus.

Late Iron Age/Romano-British occupation in the large parish of Easington is, curiously, represented by artefacts and features which were mainly located along the rapidly-eroding cliff, rather than by earthwork or cropmark features. These include a quern from the shore at Out Newton, sherds of pottery, including Huntcliff Ware, and a plate found in the village of Easington itself. Roman antiquities from the Kilnsea area include kitchen middens and a number of finds from the Humber shore, comprising a complete pottery vessel and a headless skeleton found in peat deposits at Kilnsea Beacon. 'V'-shaped ditches containing artefacts have been seen in a number of locations on both the estuary and seaward side of Kilnsea, including a 1st-century ditch found on the Humber foreshore in 1962, several single or double ditches and possible pits or ditches.

To the north of Kilnsea, fieldwalking undertaken by HWP north of Long Bank recovered 95 sherds of 3rd- to 4th-century Romano-British pottery, suggesting an occupation site in the vicinity.

In Skeffling, two undated rectangular enclosures may represent agricultural activity of the period.

Early medieval

The Anglo-Saxons arrived in the area as early as the 5th century, co-existing for a time with the remaining indigenous Romano-British population, although the latter appear to have been rapidly assimilated, at least in terms of their material culture. The Vale of Pickering formed one route from the coast to the interior, with strings of early settlements along the carrs, and the Humber was almost certainly another gateway, with early burials found in the North Cave, Sancton and Everthorpe areas. The later part of the period saw the creation of most of the present settlements, although some have been lost, or are now represented only by farms. The present parish boundaries also began to come into being at some point in the period, perhaps quite late, although research elsewhere in England has demonstrated the probable survival of some Roman villa estate or political boundaries in the parish system. Archaeological remains of the early and middle Saxon period, other than burial sites, are extremely sparse, but this is also the case for late sites, which largely lie beneath existing settlements, and have been destroyed or are otherwise inaccessible.

Most of the known past and present settlements in the area appear in the 1086 Domesday survey, including a number which are now lost or represented only by farmsteads. These include Bempton (*Bentone*), Flamborough (*Flaneburg*), Bridlington (*Bretlinton*), Sewerby (*Siuuarbi*), *Marton* (*Martone*), Hilderthorpe (*Hilgertorp*), Wilsthorpe (*Wiflestorp*), Carnaby (*Cherendbi*), Barmston (*Be[r]neston*), Fraisthorpe (*Frestintorp*), *Auburn* (*Eleburne*), Ulrome (*Ulreham*), *Cleeton* (*Cletun*), *Skirlington* (*Schereltun(e)*), Hornsea (*Hornesse*), *Hornsea Burton* (*Burtune*), Mappleton (*Mapletone*), *Great Cowden*/*Little Cowden* (*Coledun*/*Coldun*), Rolston (*Roolfestun*), Aldbrough (*Aldenburg*), *Ringbrough* (*Ringheburg*), East Newton (*Niuuetone*), East Garton (*Garton*), Grimston (*Grimestun*), Tunstall (*Tunestal*), Hilston (*Hildoveston*), Roos (*Rosse*), *Anderby* (*Andrebi*), *Monkwith* (*Moneuuic*), Rimswell (*Rimesuuelle*), Waxholme (*Washam*), Withernsea (*Witfornesse*), Owthorne (*Torne*), Hollym (*Holam*), *Redmere* (*Rotmare*), Holmpton (*Holmetone*), Easington (*[H]esintone*), *Dimlington* (*Dimelton*), Out Newton (*Niuueton*), Kilnsea (*Chilnesse*), Weeton (*Wideton*) and Welwick (*Weluuic*).

Skipsea, Atwick and Skeffling are notable for their absence from the list, although all are Anglian placenames. They were probably simply included

with their parent manor: Skipsea with its motte-and-bailey castle established before 1086 fell within the large manor of *Cleeton*. Other than a small proportion of coastal placenames there are very few traces of Danish occupation and settlement from the 9th–11th centuries despite the area forming part of the Danelaw. This could indicate either rapid assimilation or a very small incoming population, but in fact the archaeological evidence for the period as a whole is sparse. The creation of the open field system and the core layout of many villages are the most enduring monuments of the period, albeit modified and extended later.

The villages of Holderness were typically built along a single street with parallel back lanes to one or both sides, joined by interconnecting cross streets, possibly added as the village expanded. If there was a church or manor, these were often located at opposite ends of the main street, sometimes accompanied by a green, where any fairs or markets could be held. A high proportion of settlements in the area were recorded as *wasta* (waste) following the 'Harrying of the North' in 1069–70 and the similarity of many village layouts may be a reflection of wholesale rebuilding over a short period by new feudal tenants: little investigatory work has been undertaken, however, and they may simply have been rebuilt as before. The presence of pre-existing field systems may well have limited the option to develop new sites.

At the north end of Flamborough village are the remains of what appears to be a large ditched enclosure. This may pre-date the present road layout as the road leaving the village for the North Landing bisects it at an angle, implying that the enclosure is earlier, although this is not necessarily the case. This monument could be interpreted as an early fort, either of Roman or earlier medieval origin, perhaps originating as a defensive work by or against Scandinavian intruders (see Section 7). Without further investigation, this cannot be confirmed, and there is no firm evidence currently that a single monument is represented by the apparent earthworks shown on a small number of wartime aerial photographs, or that the banks and ditches are necessarily of any great antiquity. Potentially, however, this is an extremely important site.

The area immediately east of Sewerby contains an important early to middle Saxon inhumation cemetery, and a single burial of the period was also investigated at Barmston in 1982. Further south, erosion has destroyed a number of important early settlements east of Hornsea, but a small early cemetery has been excavated at the Hydro site, suggesting the presence of a 6th-century settlement in the eastern part of the town between the present church and mere, on a quite different site to the later village.

At Tunstall, the latter part of the period is represented by the discovery in 2000 of the partial skeleton of a cow which seems to have either fallen into the former lake at Sand le Mere or been buried there; the remains were located within foreshore peats laid down c 2000 BP, but the bones were ^{14}C dated to around AD 1000. In Easington, there was reputed to be a 7th-century monastic site, although there are few details and its location is unknown.

Medieval

The medieval period represents a continuation of the pre-Conquest pattern of settlement and land division, albeit largely under new tenure at manorial level and above. A form of feudal system was already starting to develop in the late Anglo-Saxon period from traditional patterns of obligation and service, but with the destruction or ejection of a large proportion of the native land-owning class following their defeat at Hastings and a series of subsequent revolts, this was to go much further with the imposition of a more rigorous continental system under what was effectively a military occupation. The most obvious physical manifestation of this came in the form of the construction of castles such as Skipsea Brough, which was built shortly after the Conquest. A larger number of later moated manorial sites are also present in Holderness, including several in the study area. From the 12th century, monastic communities and granges were also constructed in considerable numbers.

These various classes of monument have often left identifiable remains, and the period is therefore better represented than its immediate predecessor. There is also a considerable body of documentary evidence for monuments which are no longer extant, including former manors, almshouses, windmills and watermills. The sites of some of these are identifiable, others are not, although they may be encountered as chance finds.

As far as can be determined from the limited direct evidence, the open field system was retained and extended, with additional fields, pastures or commons added as surrounding waste or woodland was assarted to meet the food needs of an expanding population. It is likely that there was internal reorganisation in some cases, with fields subdivided, for example, as tracks were laid to new outlying fields or commons. As in North Yorkshire, traces of field systems, in the

form of ridge-and-furrow, trackways, headlands and field boundaries, are still evident in the East Riding, although the area of extant remains contracted considerably during and after the Second World War with the extension of cultivated fields at the expense of old pasture, and the adoption of deeper ploughing techniques, with most earthworks ploughed out by the early 1990s. In the coastal strip, many areas of earthworks surviving in fields traditionally used for dairy and beef production have been lost as the process of conversion to arable farming was almost completed in the first decade of the 21st century. Another major source of damage over the same period has been the levelling of earthworks to allow the construction of holiday parks.

Medieval and, more rarely, early post-medieval ridge-and-furrow, enclosures and trackways of the pre-enclosure open field systems were present until the mid 20th century in most parishes, and aerial photographic analysis for Phase 1 of the RCZAS identified extensive areas in Bempton, Flamborough, Bridlington, Carnaby, Barmston, Ulrome, Skipsea, Atwick, Hornsea, Mappleton, Roos, Rimswell, Withernsea, Holmpton, Easington, Skeffling and Welwick. Late ridge-and-furrow survived in some areas, such as Hollym and Easington.

Most extant remains of the period are now concentrated within existing settlements in the form of surviving village or manorial earthworks. Flamborough contains several important medieval monuments other than its church, including the 'Castle', in reality a fortified tower surrounded by the fairly extensive earthworks of a hall and ancillary buildings. There is also the site of a possible hall at the south end of the village. At the north end is what appears to be a substantial ditched enclosure, discussed earlier.

Another important monument in the parish, and the only one at risk from coastal erosion, is the site of a medieval harbour at South Landing, represented by an area of chalk blocks and large cobbles, which probably dates from at least the early 14th century (Section 6). The presence of these monuments reflects the former importance of the village, which, as has already been discussed, appears to have expanded southward towards the church from an early northern nucleus.

Until the mid 19th century, Bridlington effectively consisted of two separate sites, the larger and originally more significant of the two being the present 'Old Town', located inland, outside the study area boundary, with the Augustinian Priory precinct established at the eastern end of its main street. The smaller settlement of Bridlington Quay at the mouth of the Gypsey Race did, however, include a harbour granted to the Priory c 1135 (Section 6). Traces of the small settlement attached to the Quay have been excavated at Beck Hill, but there has otherwise been relatively little investigatory work in this part of the town, including the area around the harbour, where medieval waterfronts may be expected. There were probably few buildings of note, the area being mainly a fishing community, although warehousing and other structures associated with the commercial side of the port may be expected. The core of the settlement lay north of the Gypsey Race, although there is good reason to believe that the south bank was progressively eroded westwards to its present line from a point considerably further to the east until the process was halted in the 19th century. Whether there were any elements of the settlement or port facilities on the lost south bank cannot now be determined.

Sewerby was located in the park of Sewerby Hall, but the village shifted to its present site in the 18th century, leaving only traces of ridge-and-furrow. The Hall now lies on an isolated site surrounded by parkland at one end of the present village, occupying the site of its predecessor; some of the masonry from the medieval building remains in the 18th-century complex; a chapel was also built here c 1414. Traces of a medieval building outlying the village have been found to the east on the site of the Anglo-Saxon cemetery. West of Sewerby is *Marton* DMV and a ditched and banked enclosure, possibly fishponds associated with the village manor. South of Bridlington, *Hilderthorpe* DMV has been scheduled, and a large area remains as an extant earthwork, including the main street, several houseplots and a possible moated manor. The scheduled western portion forms part of a golf course while the eastern section now lies below modern housing on the seafront, and was undoubtedly damaged by erosion before the present sea defences were constructed. Stonework and a skeleton found in Kingsgate may indicate a site for the village's unlocated medieval chapel. The village was still occupied by a dwindling population in the late 17th century, but by the 19th century had been replaced by two farms.

Similarly, *Wilsthorpe* DMV in Carnaby parish consists of well-preserved earthworks of the western section, the eastern part under houses, with areas lost to the sea. This site appears to have been largely deserted by the 16th century and there is a possibility that it was deliberately depopulated by Bridlington Priory to allow the site to be used for sheep farming.

In Barmston, a square ditched platform of medieval or later date is one of the few monuments of the period, although a building was excavated south of the village in 1982. Traces of *Auburn* DMV remain in the north of the parish, including a short section of street, several house plots, and the site of *St Nicholas' Chapel*, a little to the south of the settlement, although most has now been lost to erosion. The village appears to have been largely depopulated by the early 16th century, with only a few houses still extant in the 18th century.

Plate 19 Medieval land drainage, Earl's Dike, Barmston

Hartburn, which was located further south near the mouth of the Earl's Dike, had probably been lost by the 15th century, with no further documentary references after that time. Earl's Dike itself was an ancient stream forming part of the boundary of Barmston, which was canalised and the flow reversed to empty into the sea in 1798.

A ploughed-out moated site remains at Ulrome; the village itself contains earthworks representing former tofts, ponds and other features. In Skipsea parish, the former main settlement, *Cleeton*, survived into the post-medieval period to the south-east of Skipsea village, but has been lost, having been superseded by Skipsea itself, possibly in the 12th century. Work in 2004 for the 'Time Team' Channel 4 series suggested that the village may still remain rather than having been lost to erosion as previously thought.

The main medieval monument in the parish, Skipsea Brough, and the village itself lie outside the study area, as does a small planned settlement attached to the castle after its construction, *Skipsea Brough* DMV. Low Mere and Bail Mere, which formed a moat for the Brough, have been infilled by natural silting, while Withow Mere, an important medieval fishery, has largely been lost after being breached by the sea in the 16th century, with the exception of part of the western end of the lakebed and the infilled exit channel.

In Atwick, principal features of the village are the earthworks of a number of house platforms and other habitation features, indicating substantial shrinkage, although this probably occurred in the post-medieval period. The village monuments include a large scheduled cross shaft. *High Skirlington* DMV to the north of Atwick was also reduced to a single inhabited messuage by the post-medieval period, but was never large and appears to have been largely pastoral by the 13th century, including areas owned by Bridlington Priory, which may have been in the process of developing sheep farms on its properties.

As might be expected, Hornsea, with its church, moated rectory and two medieval crosses includes more evidence for the period than the surrounding villages, although the parish itself lost several settlements, including *Northorpe* and *Southorpe,* the 'port' of *Hornsea Beck* with its pier, and *Hornsea Burton,* the latter two succumbing to the sea by the end of the 17th century or a little later. *Southorpe*, which had been deserted by the mid 17th century, is still visible as earthworks south of Hornsea Mere, outside the study area.

Plate 20 Medieval village earthworks north-west of Rolston, near Mappleton

At the north end of Mappleton parish, Rolston includes several areas of house platforms, plot boundaries and enclosures, and the moat of the original manor house. On the cliff in the south-east, both *Great Cowden* and *Little Cowden* are now represented by the last traces of eroding earthworks at the landward sides of the original villages, including the possible remains of a manorial moat at the former site. Mappleton village has no extant medieval features other than the church, but the predecessor of the present

Hall was originally moated. An enclosure, field boundaries and a ditch have been identified north of the village, extending over the cliff.

Plate 21 Ditch of medieval enclosure exposed on cliff edge, Mappleton

Aldbrough parish included several townships, of which Thorpe Garth and Ringbrough remain as farmhouses. Ringbrough Farm includes a dubious moat, and there is a further possible moat near East Newton. Near the cliff at Low Farm/Hill Top Farm are the earthworks of a possible lost (or at least unrecognised) settlement.

Plate 22 Moat of medieval manor house at Moat Farm, Grimston, near East Garton

East Garton itself lies outside the study area, but the township of *Grimston* is represented by cropmarks of the main street and adjoining house plots, and to the east, the moats of a manor house and possibly its garden and fishponds at Moat Farm. A further part of the village may have extended east of the manor, but this area has now been lost to coastal erosion. The village was probably small but either loosely nucleated or polyfocal, unlike most of the other settlements in the area which were linear; as such, it seems to have been deserted over an extended period.

In Roos parish, Tunstall village, with its unusual 'cranked' plan, includes two areas of earthworks, one with a possible moat, the second including two small enclosures. Hilston, in the same parish, is also a shrunken settlement, while *Monkwith* and *Sand le Mere* have been entirely lost to erosion; the former may already have been largely depopulated sometime between the late 14th and 17th centuries, when the last elements were lost. Two isolated enclosures of medieval or later date have been identified in the north of the parish at Hooks. Losses in Rimswell include a chapel and small settlement at Waxholme.

The medieval village of Withernsea was an early casualty, being entirely lost in the 15th century, including the church of St Mary (lost 1444); the present church of St Nicholas which replaced the original is therefore also medieval, being completed in 1488. The original site of neighbouring Owthorne was also lost, although elements remained until the 19th century, including the tower of St Peter's church, which, together with St Mary's, had given the village and neighbouring Withernsea their alternative medieval name, *Sisterkirkes*.

A small medieval close or moated site still remains on the cliff north of present Withernsea, although is at risk of loss. There may have been a moat at Hollym, as one is shown on the First Edition Ordnance Survey, although nothing now remains. Further south at Holmpton, a moated site could represent the remains of a documented manor house.

Easington village included a number of documented monuments, including a manor house, rectory, hall and almshouses, all now lost to subsequent demolition and redevelopment, with the principal exceptions of the church, cross base and 'tithe barn'. Elsewhere in the northern part of the parish, *Out Newton* medieval settlement has been lost to the sea, together with a moated site and chapel there. There may also have been a medieval hospital nearby.

Further south, *Dimlington* and the original site of *Kilnsea* have also been lost, the latter replaced in the mid 19th century by a new village further west with the same name; the last remains of the original church were finally destroyed in 1831.

An extensive area of eroding ridge-and-furrow survives on the beach north of Kilnsea. There is no cliff at this point for some distance, close to the location of the important Neolithic/Bronze Age henge and barrow sites. The upper beach is formed by the edge of an area of recently tilled

land cut off by the present seabank. Ceramic pipes laid in the furrows represent late 18th-/19th-century drainage.

Plate 23 Partly exposed ridge-and-furrow on eroding upper beach, Easington

Ravenser and the 13th-/14th-century port of *Ravenser Odd* (Section 6) were located east of the present Spurn; stonework found at Old Den in the early 19th century, and thought to relate to Ravenser, lies to the west of Spurn, and must represent some other feature, perhaps an outlier of one of the missing villages. Other settlements, including *Turmarr*, *Northorpe*, *Hutton*, and *Sunthorpe*, were also lost in the late 14th century, too long ago to have any recognisable remains.

In the Humber estuary, Skeffling includes several sites of interest, including the lost sites of *Burstall Priory*, *Burstall Garth* and the original St Mary's church: stonework of Burstall Priory was still reportedly extant on the foreshore in the early 20th century. Two earthwork sites survive in Skeffling: a moated monastic grange at Winsetts Farm, now scheduled, and a manorial site nearby, possibly originally the manor of Winsetts township, where the existing farmhouse was built in the early 19th century to replace a predecessor.

The fact that the area is currently subject to sediment accumulation may mean that these sites survive to some extent under the current intertidal mudflats, although their exact locations are unknown. A protective seabank had been built by 1350 following devastating storms, and although its location is uncertain, it may be broadly followed by the present seabank, which itself probably follows a 17th century predecessor. The bank was probably constructed along the shortest possible line inland of the area devastated by flooding, cutting off several former village sites and the southern portions of their former attached lands while the inland fragments of the open fields and commons were preserved behind the hastily constructed seabank and absorbed into the parishes immediately to the north, including Skeffling and Welwick..

The site of *Pensthorpe* DMV in neighbouring Welwick has been lost; the village appears to have been one of those destroyed by flooding in the 14th century when most of its lands were destroyed, although the site itself it may survive in part beneath the present mudflats. The village was grouped in tax records with a lost inland site, *Welwick Thorpe*, until the 17th century, and the name was still attached thereafter to a small piece of land next to the estuary, *Green Close*, which was presumably the last remaining fragment of the former common fields or pastures. Beyond to the west were further settlements stretching along the former coastline between what is now Sunk Island and Paull, including *Frismersk*, *Orwithfleet*, *East Somerte*, *Tharlethorpe* and *Saltaugh*, all lost in the 14th or early 15th century.

Post-medieval

Rural early post-medieval England was largely characterised by a continuation of medieval institutions. Materially richer, the patterns of landholding remained much the same, although new families were taking over from those who had benefited from the conquest, whether by marriage, inheritance, purchase, or royal grant. At the start of the period, much of the East Riding remained in the hands of the great ecclesiastical landowners, including the Archbishop of York, the collegiate churches (York and Beverley Minsters), and the abbeys.

Following the Dissolution of the Monasteries (1536–40), large areas of this land were either redistributed by the Crown or retained in hand for a time. Although this had a profound impact on the sociological and economic affairs of the county, it had little initial archaeological impact in rural areas, beyond the actual demolition or partial demolition of monastic houses such as Burstall Priory and Bridlington Priory. There was, however, an early movement towards the creation of houses with private parks on former monastic sites. Parts of Burstall became a private house occupied by the Hildyard family for a while; an arch from the buildings is thought to have been moved to Skeffling Manor House, while other elements have reportedly been incorporated into a number of churches in the area, including Easington and Welwick.

Most secular moated sites were simply abandoned by c 1500 and new manor houses were often built elsewhere. A small number of sites were, however, retained with the moats

either infilled or kept as ornamental features, although many were rebuilt as farms in the late 18th and early 19th century.

Moat Farm, East Garton, occupies the site of a moated manor house with a second moat perhaps containing a garden; the manor house was listed in the 1672 Hearth Tax, but was replaced in 1781–6 by Grimston Garth (see below). The 18th-century Rolston Hall also survives on the site of its moated predecessor. Deserted sites include the Hall Garth rectorial moated site in Hornsea, where the final building was cleared by 1787 but scheduled earthworks survive, and manorial moats at Out Newton, Great Cowden, and probably Little Cowden, all lost to coastal erosion in the late 20th century.

A much greater impact was that of enclosure. This had been taking place since the medieval period as landholdings were consolidated and internal boundaries removed to create more convenient new blocks or 'closes' within the existing open fields. The open fields themselves had in many cases been altered considerably, with new fields added or created by amalgamation. The last few decades of the 18th century and the early years of the 19th, however, saw a dramatic upsurge of enclosure by means of parliamentary act.

The historic open field systems largely disappeared in a period of less than a century, although some of the old internal boundaries of the larger component blocks ('furlongs' or 'flatts') were retained as fields.

Areas of older closes were also often incorporated into the new pattern as they already represented settled landholdings rather than parts of the common fields. These are particularly common around the margins of settlements, although may occur as blocks of smaller narrow enclosures within a pattern of larger square or rectangular fields: the area often includes the word 'Close' or 'Closes'.

The drainage of lower-lying areas to improve and extend the area of agricultural land from the 17th century onwards created new features in the form of dykes and sluices (cloughs), with Barmston Drain, Earl's Dike and Tunstall Drain emptying into the North Sea, reversing the ancient natural flow towards the Hull Valley. Those outfalling in the Humber include Easington Clough, Ireland's Clough, Firtholme Clough, Winsetts Clough, Skeffling Clough and Weeton Clough. Seabanks, such as the Long Bank, Easington, built in 1771, and the 17th-century Humber bank at Skeffling and Welwick protected the drained inland areas from seasonal floods and storm surges; the latter replaced a medieval bank constructed by c 1350.

Plate 24 Post-medieval Humber outfall of Easington Clough, passing through the sea defences by means of a sluice

Along with the new field systems came new roads, some of them created by turnpike acts. Others rationalised or rerouted existing roads, often replacing the typical pattern of winding lanes with characteristic straight sections which often changed direction abruptly for no apparent reason, although the purpose was to pass around the boundaries of the rectangular blocks of fields laid out by the enclosure commissions. New farms were created across the previously empty landscape, replacing many of the older buildings within the villages.

A new class of gentleman farmers emerged, some of them descended from older families, but including many new arrivals. Large residences such Marton Hall (1672) and Sewerby Hall (1714–20) were built; occasionally settlements were removed in whole or part to make way for enlarged parks attached to the houses, as at Sewerby, where the Hall replaced a 16th-century building and still earlier manor house. Other substantial residences of the period include the 18th-century Marton Manor. Flat Top Farm at Hilderthorpe originated in 1776 as a summer holiday home for the newly-rich Sykes family of Sledmere, with fine views overlooking the bay in the first floor family apartments, and the farmer's quarters at ground level; this was unfortunately demolished in the post-war period.

The post-medieval period in the study area is mainly represented by buildings located within the many settlements, whether towns, such as Bridlington and Hornsea, or smaller villages.

Hornsea includes some notable buildings, including Low Hall and Old Hall in Hornsea, both built in the late 17th century by the prominent Quaker Acklam family whose Grade II listed funerary monuments lie behind the latter. The present Hornsea Museum in Newbegin occupies the 17th-century Burns Farm.

Bridlington was protected by a harbour and presumably sea defences from the medieval period onwards, and the historic core (Bridlington Quay) was subsequently at much-reduced risk from coastal erosion, beyond the immediate area of the harbour, however, it was not until the construction of the promenades to the north and south in the 19th century that the flanking cliffs were protected, and both areas suffered considerably as a result.

Hornsea and Withernsea also suffered considerable erosion. The satellite villages of *Hornsea Burton*, *Hornsea Beck* and possibly *Northorpe* were all largely destroyed. *Hornsea Beck* was particularly important as the 'port' of Hornsea, with its own pier, apparently lost by c 1609. Aldbrough and Mappleton, both listed as ports in 1565, have been badly affected by erosion, and the satellite villages of Great and Little Cowden have largely been lost; Little Cowden had lost its church by 1690. Kilnsea had a timber jetty in 1691 somewhere on the Humber shore, and its site may still remain beneath the estuary mud, perhaps near the point where the elbow of Easington Road touches the coast.

In Roos, the seaward end of the mere which gave Sand le Mere its name was under constant attack from coastal erosion and while the 'Burleigh' navigation chart of c 1560 depicts a small bay, the entrance had been protected by a bank by 1622. This implies that the lake was breached more than once, but as it still appears on 17th- and early 18th-century maps, it is assumed that the protective bank was effective until the cliff at either side had retreated so far as to make its maintenance untenable. The mere was sufficiently reduced by the later 18th century that it was no longer shown. Erosion continued in Withernsea parish after the original settlements of Owthorne and Withernsea had been substantially destroyed, with the church of St Peter, Owthorne, unusable by the end of the 18th century and the last remnants of the village destroyed around the same time.

Post-medieval farmhouses and other rural buildings survive in smaller numbers, and include Carr Farm in Flamborough village, which retained part of its original cross-passage form and Beacon Farm, occupying the site of an earlier structure. Manor Farm, Barmston is of late 17th- or early 18th-century date, and may incorporate elements of an earlier moated hall. High Skirlington Farm, Atwick was built on the site of the DMV of the same name. Manor House Farm, Holmpton is apparently of 17th-century date, although rebuilt rather later.

As mentioned earlier, Moat Farm, East Garton, was built on the site of the earlier moated manor of *Grimston* and replaced in turn by Grimston Garth (1781–6), a Gothic-style building standing in its own park to the south, leaving extant elements of the earlier layout as ornamental features around the farm. Glebe Farm, Hilston is a relatively rare late 17th-century survival.

There are a few other notable classes of buildings, such as mills (Section 4) and lighthouses, the latter including the Old Lighthouse at Flamborough, Angell's 1674 High and Low Lights, Spurn, and Smeaton's 1776 replacements. Most pre-19th-century windmills in the study area have been demolished; a few of these had been constructed on traditional sites, occupied by medieval or earlier post-medieval predecessors. No former watermills now remain in the study area apart from the former Victoria Mill, Bridlington: the limited number of suitable locations meant that these were often located on the sites of medieval mills.

Early 18th-century almshouses survive in Barmston, now converted into two cottages; those constructed in Waxholme and Out Newton have not survived. An early school was built at Atwick in 1715, and remained in use until 1877.

The present landscape is largely agricultural land with relatively little direct access and just three expanding urban centres at Bridlington, Hornsea and Withernsea. These are also the focus for tourist developments (Section 8), although the rural coastline between is punctuated at intervals by a considerable number of holiday camps.

North-East Lincolnshire/Lincolnshire

Palaeolithic–Bronze Age

Lincolnshire, in common with other parts of the north and east midlands, was exploited in all periods from the end of the last glaciation, although the pattern of that exploitation altered and changed emphasis over time. The earliest periods are the least well represented in the archaeological record of the study area, as would be expected, partly because of the prolonged history of inundation and reclamation of the Lincolnshire Marshes and Fens which extend from

the foot of the Wolds to the present North Sea coastline and around the Lincolnshire part of the Wash.
Apart from the blanketing effects of reclamation, on the north Sea coastline, the periodic deposition of dredged materials as part of the 'Lincshore' beach replenishment scheme since 1994 has also covered an important area of the prehistoric and later archaeological resource between Mablethorpe and Skegness where the coastline was actively eroding rather than accreting. The early findspots are therefore extremely sparse, with the majority coming from the beach. Those recorded prior to replenishment could therefore have travelled some distance from their original point of loss via longshore drift, while those recovered since 1994 may well have been imported with beach replenishment materials dredged from the submerged Palaeolithic and Mesolithic landscapes of the North Sea Basin.

Evidence for the early post-glacial fauna of the area is currently represented by a mammoth tooth found on the foreshore at Ingoldmells in 1973, and the more recent discovery of a juvenile mammoth's tooth and wolf's jawbone from Mogg's Eye, Huttoft, reported in the *East Lindsey Target* (4/3/2013), although other unreported finds have no doubt been made. The bones from Huttoft were recovered from sand dumped as part of the local beach replenishment scheme although the 1939 discovery of a mammoth tooth inland at Ruskington does show a broad distribution of similar species across the area. There is some evidence from the region for Lower Palaeolithic activity in the form of a flint blade recovered from the foreshore in Anderby.

At the earliest levels of the Lincolnshire coastal marshes are a surviving remnant of the submerged Mesolithic landscape at the edge of the North Sea basin. There are no recorded monuments or artefacts of the period in the coast zone, but rather than reflecting an absence of activity, this is likely to be the result of subsequent inundations of the area, which resulted in the deposition of substantial marine silt over the Mesolithic horizon, punctuated by organic horizons representing the development of salt- and freshwater peat, with evidence for forest growth. Tree stumps and other organic deposits formerly exposed on the foreshore in the Mablethorpe and Sutton-on-Sea area are considered to be the remains of forests which began to flourish in the late Mesolithic period, indicating that buried landscapes survive further inland beneath the present coastal marshes.

Evidence for Mesolithic activity has certainly been recorded elsewhere in the county, with at least 100 locations recorded in the county as a whole, mainly lithic scatters (Membery 2000, 1). In 2001 for example, a flint scatter interpreted as a temporary hunting camp was found at Burgh-le-Marsh, 5km inland of Skegness, not far from an earlier discovery of a microlith, blades, flakes and a core, clear indications that early remains are likely to be present across the area.

Plate 25 Exposed clay beds of early land surface, Cleethorpes

Plate 26 Neolithic forest floor, Cleethorpes, with tree stump (left) and worked timbers from late Neolithic structure (right foreground)

On the foreshore at Cleethorpes are extensive areas of former land surface. In the north these consist of an eroding till shelf from which any original surface deposits appear to have been lost. Extending to the south is part of the 'Humber Forest', consisting of peat and embedded tree stumps which are exposed at low tide, covered by more recent oyster beds and gravels. A tree stump in this area has previously been ^{14}C dated to 4865–4249 cal BP/2915–2299 cal BC, indicating a late Neolithic to early Bronze Age date (Jobling & Brigham 2013, 38–40); this coincided with a period when clearance of the forest in favour of arable or pastoral farming

began in the area as a whole, including the present Lincolnshire Marsh to the west.

In the same area, several timbers were recovered as part of Phase 3 of the RCZAS. Two examples examined in more detail had been drilled by a series of 8–18mm auger holes at irregular intervals along their length. They may have retained thin withies or poles, but could alternatively have been for attaching strings or lines; the structures may therefore have functioned as part of a building or another type of structure entirely, possibly even part of a fishtrap. One of the samples returned a ^{14}C date of 4830–4450 cal BP/2880–2500 cal BC, significantly placing the structure in the late Neolithic period; an apparently unworked branch from the same area returned an overlapping date of 4860–4620 cal BP/2910–2670 cal BC. Both of these results agree with the previous tree stump date.

The few records of the Neolithic period from the study area relate to the casual finds of flint artefacts, principally on the foreshore, including axes from Mablethorpe, Trusthorpe, Huttoft, Chapel St Leonards, and Skegness, and Neolithic/Bronze Age flint blades or flakes from Trusthorpe and Chapel St Leonards. Barbed and tanged arrowheads recovered from Skegness may belong to this period.

Inland of the study area, there is plentiful evidence for Bronze Age activity, although as elsewhere this is skewed by the large number of records for barrows, particularly on the Lincolnshire Wolds. Although the early Bronze Age coastline lay to the east of the present sea defences in many areas, there is little evidence for settlement activity in the coast zone, perhaps a result of later erosion. In the later Bronze Age, creek systems and wetlands began to extend well inland as the sea level rose, with a late Bronze Age/Iron Age saltmaking site recorded in 1992–3 just west of the study area boundary at Newton Marsh Lane, Tetney.

Bronze Age artefacts include axes and axe hammers from Cleethorpes, Humberston, and Skegness, a Bronze Age/Neolithic flake, scraper, dagger and antler pick from Chapel St Leonards.

The Cleethorpes axe hammer retained part of a well-preserved poplar handle, ^{14}C dated to c 1941–1452 cal BC; this was embedded in the eroded upper peat horizon of the late Neolithic/early Bronze Age Humber Forest exposure referred to earlier, suggesting that it was discarded before the contemporary deposits were destroyed by coastal erosion following the inundation of the area in the later Bronze Age. It is possible that the axe was deposited during a phase of forest clearance for agricultural purposes, although this is, of course, speculative without pollen analysis and evidence for the nature of the overlying sediment, although it is possible that the contact horizon survives in some part of the area. Three possible Bronze Age burials have also been found on the foreshore in Ingoldmells.

There are no known monuments of the earlier prehistoric periods in the study area around the Wash, although this may not represent the true picture. More extensive aerial photographic analysis may reveal sites behind the earliest line of sea defences. In those areas which have been reclaimed, particularly in the post-medieval and modern periods, large areas of early landscape may have been buried beneath alluvial sediments, as seems to have been the case on the North Sea coast. These could include (for example) the remains of sites in the fenland districts.

Iron Age–Romano-British

The Iron Age is principally represented by the regionally (or nationally) important remains of a once-extensive salt production industry, chiefly centred in Ingoldmells (see Section 4), although as mentioned earlier, Iron Age/Romano-British salterns also existed inland of the study area in the north, including the late Bronze Age/early Iron Age site at Tetney and another to the west of Rosper Road, South Killingholme, where an early Iron Age settlement was recorded in advance of the construction of a Combined Heat and Power plant in 2000 and 2002. Settlement resumed on the latter site in the late Iron Age, continuing to the end of the Roman period. This site was involved both in agriculture and salt production.

There are few contemporary occupation sites further south, although a number of earthworks present in the area could indicate Iron Age activity. A ‘prehistoric’ site consisting of possible hut circles was noted on the foreshore in 1907 at Ingoldmells Point, and this could represent the site of a settlement occupied by salt production workers: the industry was seasonal, however, and the inhabitants were probably also engaged in farming and fishing, in common with other locals not engaged in salt manufacture.

The remaining datable records from the period are related to casual finds of artefacts, including a long-necked beaker from the foreshore at Sutton-on-Sea. A possible occupation site near Ingoldmells Point is perhaps more likely to be later Iron Age or Romano-British.

In general Lincolnshire was intensively occupied during the late Iron Age/Romano-British period, including coastal settlements engaged in fishing, farming and salt production. Romano-British monuments and findspots are therefore more common than those for previous periods, although on the North Sea coast they are mainly restricted to the area between Mablethorpe and Ingoldmells where the Roman shoreline reaches the present coastline and in some areas has been eroded where it extends beyond the sea defences into the intertidal zone.

To the north of this stretch the shoreline is located just beyond the study area boundary, with the area to the east mainly consisting of medieval and later reclamation. The period is therefore represented by casual findspots, mainly from the Cleethorpes foreshore, including a small number of coins, a few pottery sherds, and a limestone beehive quern, with an oil lamp from Grimsby, dredged from the docks in 1930. There was nothing diagnostic about this assemblage, which simply represented general occupation: coins include issues from Vespasian (AD 69–79) to Valens (AD 364–78), while one of the pottery findspots consisted of a sherd from the late Roman Swanpool kiln site near Lincoln. Some of these artefacts may have been eroded from the shore prior to the accumulation of post-Roman silts, while others may have been deposited elsewhere and arrived through the process of longshore drift. The next recorded findspot to the south was a samian sherd found well beyond Cleethorpes at Skidbrooke.

Plate 27 Modern lane following a possible Roman road from the Stixwould area to the coast at Saltfleetby

The line of a Roman road from the Stixwould area, Margary's RR273, approaches the coast in Saltfleetby. This suggests a lost coastal site of some significance, possibly a military installation or haven, although whether this would lie behind the present sea defences or to the east is unclear.

A Romano-British site exposed in Mablethorpe in 1948 included a Flavian bowl containing a hoard of coins from Augustus to mid 4th century. An assemblage of 2nd- and 3rd-century pottery was also found. In 1943 Romano-British pottery and 3rd-century coins were found at the low water mark. Other pottery has been recovered in Mablethorpe, including an assemblage buried by later marine silts. A little further south, a pennanular brooch was found in 1969 on the beach at Trusthorpe. Further findspots of Roman pottery have been recorded from Huttoft, Anderby, and Chapel St Leonard; many of the sherds were recovered from the foreshore, but an almost complete pot from Chapel St Leonard was covered by 3m of alluvial silts.

Salt production remained an important industry, with a site investigated in Chapel St Leonards, although the main concentration lies in Ingoldmells, where they appear to extend inland along tidal creeks as well as standing on the former North Sea shoreline (Section 4). These sites presumably lie close to settlements and there are a large number of other sites of the period from this parish, including ditches, occupation sites, undated cropmarks and earthworks, which on balance are likely to be of late Iron Age/Romano-British date.

At least three Romano-British sites, possibly farmsteads, were observed at Ingoldmells prior to the construction of 20th-century sea defences, together with brick and bone. Pottery, bricks, coins and other artefacts have been recovered on several other sites in Ingoldmells, including a denarius of Carausius (AD 287–93) and a half-follis of Constantine I (AD 324). Pottery and animal bone were recorded when parts of two sites were washed away during the floods of 1953, while a ditch containing 3rd-century pottery and bone has also been recorded.

There are indications that saltmaking continued southward towards Skegness, consisting of the discovery of briquetage and clay cylinders related to evaporation on three sites, two of which included medieval material. Some pottery was also found, and a Roman brothel token (c AD 1), indicating local occupation, although no sites have been found or identified from aerial photography.

In the fenland district around the Wash, the expansion of Roman settlement into the coastal zone would have been greatly assisted by an apparent fall in sea level relative to the land (Brigham 1990), but the extent of occupation is

unknown owing to later silting and reclamation. There is a single Romano-British occupation site from Fishtoft; this appears to be a late site, probably of 3rd- to 4th-century date, and the inhabitants were engaged in agriculture: a corndrying oven and an iron plough coulter were found. The presence of worked jet may be a reflection of the site's coastal location, as it was presumably traded down from North Yorkshire, perhaps by a boat headed for the inland port of Lincoln. This particular area, north of the canalised River Witham, has seen relatively little reclamation, and the older more settled landscape is therefore much closer to the present sea defences than elsewhere around the Lincolnshire Wash. As the same area has also produced medieval pottery in the past, there is clearly the potential for more evidence of early occupation to be present, and detailed aerial photographic analysis could reveal further sites behind the earliest medieval shoreline.

Early medieval

The resumed deposition of marine sediments along the North Sea coast after the end of the Roman period means that there is a vertical dislocation between the medieval/post-medieval levels and earlier landscapes.

The occupation of the eastern part of the area was made possible by the construction of successive seabanks such as the Eastseadyke, Tetney, which allowed areas of saltmarsh to be drained and settled, although the final portions of the Out Marsh remained as wet seasonal grazing until the late 18th/early 19th centuries. Tetney became one of a series of early salt production centres which continued to operate for much of the medieval period (Section 4).

Plate 28 Medieval flood bank, the Eastseadyke, Tetney

The majority of the medieval settlements in the north of the coastal area were 'daughter' villages constructed on the reclaimed Out Marsh, with their 'parent' settlements located to the west behind the earlier coastline around the 10m OD contour at the junction of the Out Marsh and Middle Marsh, between Tetney and Cockerington; these were themselves probably founded in the Middle Saxon period from 'grandparent' villages following a still earlier coastline close to the foot of the Lincolnshire Wolds.

The process had largely been completed by the 11th century, with most settlements appearing in the Domesday survey (1086), including Grimsby (*Grimesbi*), *Clee* (*Cleia*), *Itterby* (*Itrebi*), *Thrunscoe* (*Ternescou*), Tetney (*Tatenei*), Grainthorpe (*Germundstorp*), Somercotes (*Sumercotes*: now North and South Somercotes), Skidbrooke (*Schitebroc*), Saltfleetby (*Saltflatebi*) and Theddlethorpe (*Tedlagestorp*).

Saltmarsh continued to form in front of many of these new settlements which gave them the opportunity to acquire land through drainage and reclamation just as their parent settlements had done. The physical evidence for early medieval occupation in this area is, however, limited to a 'Danish' dagger found in Cleethorpes in 1937.

Further south, where there has been considerable erosion, the earlier settlements are located closer to the present coastline. Again, most of the settlements in the southern half of the coastal area appear in Domesday, including Mablethorpe (*Malbertorp*), Sutton-on-Sea (*Sudtone*), Addlethorpe (*Ardulvetorp*), Huttoft (*Hotoft*), Anderby (*Endrebi*), Mumby (*Mundebi*), Ingoldmells (*Guldelsmere*), Skegness (*Tric*), and Croft, although there are still few traces of pre-Conquest settlement. One exception is a late Saxon wattle hurdle from the foreshore at Sutton-on-Sea. A few sherds of pre-Conquest pottery were also found in the area during the construction of a new Mablethorpe-Sutton rising main.

The settlements fringing the Wash are also of pre-Conquest origin, and the majority appear in the Domesday survey, including Wainfleet (*Wenflet*), Friskney (*Frischenei*), Wrangle (*Werangle*), Old Leake (*Leche*), Leverton (*Levretune*), Butterwick (*Butuic*), Freiston (*Fristune*), Fishtoft (*Toft*), Wyberton (*Wibertune*), Frampton (*Franetune*), Kirton (*Chirchetune*), Holbeach (*Holebeche*), Gedney (Gadenei), and Lutton (*Luctone*). Those settlements between Wainfleet and Kirton were spaced at intervals along the contemporary northern Wash shoreline, giving each an area of settled fields and foreshore, which potentially

allowed the settlements to benefit from saltmarsh grazing, saltmaking, and fishing. Wainfleet was an area of active salt production sites by the late 11th century, although any evidence for this is likely to lie inland of a series of later medieval salterns, which themselves lie north of the A52 (Section 4). Late medieval and post-medieval reclamation has left these settlements some distance from the present coastline and mainly outside the RCZAS study area, even though this was specifically extended from 1km to 2km to include older, more settled areas of landscape. Consequently, there is as yet no structural or artefactual evidence for early medieval activity in the immediate coast zone, although the outer haven channels at Wainfleet, Wrangle and Friskney do cross the area and have the potential to contain early deposits or structures.

Medieval

The majority of the Domesday settlements on the North Sea coast flourished, with *Itterby*, and *Thrunscoe* eventually combining with *(H)oole* in the 19th century as three of the six 'thorpes of Clee' to become the expanding seaside settlement of Cleethorpes. The earthworks of *Thrunscoe* were still visible in the 20th century, but have been destroyed by modern housing and Cleethorpes Cricket Ground. Of the other 'thorpes', *Old Clee* remained separate, while Weelsby and *Holme* now form part of Grimsby.

Although most of the northern settlements were set back from the coast and became even more isolated from it through ongoing reclamation, several further south were severely damaged by storms during the later medieval and early post-medieval periods, including Mablethorpe, Ingoldmells, Addlethorpe, Sutton on the Marsh (now Sutton-on-Sea), and Mumby Chapel, with the port and town of (Old) Skegness lost entirely in 1526 (Section 6).

Plate 29 Typical view of modern seabank and saltmarsh, North Somercotes

Compared with earlier periods, medieval and early post-medieval sites outside the settlements are relatively common, including former havens and sea defences such as the Roman Bank and Crook(ed) Bank which have been fossilised within modern field systems. Some medieval havens have survived in reduced form, including Tetney, Saltfleet and Wainfleet Havens, although the majority of those in use in the medieval period silted up and were incorporated into the reclaimed areas behind later seabanks, often after the natural drainage system was realigned to create the present landscape of straight artificial dikes (Section 6). A few were accompanied by small settlements, occupied with agriculture, fishing and trading.

A possible lost medieval settlement is present at Skidbrooke North End, although most of the earthworks have now been ploughed out, leaving traces of at least one enclosure and an area of ridge-and-furrow. Further south, traces of medieval *Saltfleetby* can still be seen near Saltfleet Haven, with several possible medieval or early post-medieval salterns nearby, but there are no visible remains of the former small settlement of *Marr*/*Mare Haven*.

Traces of unidentified settlement earthworks do, however, survive to either side of the Saltfleetby/Theddlethorpe parish boundary, extending south into Theddlethorpe St Helen, including platforms, enclosures and ridge-and-furrow, some of which may be associated with the site of *Saltfleetby All Saints.*

Plate 30 Medieval house platforms, Theddlethorpe All Saints

Several sites consisting of enclosures, hollow-ways and house platforms have been located in Mablethorpe and Sutton-on-Sea, but have been lost to modern housing and caravan parks, although two sites still have well-preserved earthworks of enclosures, house platforms and

ridge-and-furrow. A small enclosure at Huttoft has recently been built over, while another area of at least six enclosures has been ploughed out. At Anderby, Chapel St Leonard, and Ingoldmells, several areas of enclosures, possible house platforms and embankments have also been removed by ploughing and redevelopment.

Addlethorpe has retained enclosures and areas of ridge-and-furrow associated with what appears to have been an important boundary, the Dudic Bank. This was partly followed by the parish boundary with Chapel St Leonard, and sections of bank still survive as an earthwork and field boundary. An area of enclosures and associated ridge-and-furrow also survives in Skegness.

As in East Yorkshire, moated sites in the coastal zone appear to have been rare, but one has been located in Mablethorpe (no longer visible), with two sites in Skegness, at least one of which is in good condition.

A less usual category of site is represented by a former rabbit warren in North Somercotes, now covered by a caravan park and reforested area. These were established to provide a ready supply of meat as late as the 18th century.

Plate 31 Surviving ridge-and-furrow near lost medieval settlement, Theddlethorpe All Saints

Many areas of medieval and post-medieval ridge-and-furrow cultivation survived until the mid 20th century in most parishes, including Humberston, Tetney, North Somercotes, Saltfleetby, Theddlethorpe All Saints, Theddlethorpe St Helen, Mablethorpe, Huttoft, Chapel St Leonard, Addlethorpe. Ingoldmells, and Skegness. Both Theddlethorpe and Mablethorpe/Sutton-on-Sea were particularly rich in surviving ridge-and-furrow, although few traces have survived the pace of recent redevelopment. New housing schemes and the construction of extensive holiday and caravan parks have been particularly detrimental in urban areas, while modern ploughing has been a factor elsewhere.

Along the coastline of the Wash, drainage and reclamation commenced in the East and West Fens north of Boston and Wainfleet during the medieval period with seabanks constructed to extend the land area south of the chain of villages already established between Wainfleet Haven and the Witham. As already mentioned, most of these were relatively evenly spaced along the original shoreline with the parish boundaries extending straight out to the Wash to give each an area of grazing marsh, which was also used for salt production from the early medieval period, while the nearer marsh was progressively enclosed and converted to arable use as reclamation proceeded.

Plate 32 Medieval seabank near Roads Farm, Frampton, incorporated into the landscape as a hedgerow

Sequences of aerial photographs taken during the course of the Second World War show reclamation underway in the area of the North Sea Prison, Freiston; not only do these chart the process itself, they also demonstrate how quickly the reclaimed land could be used for arable farming once the seabanks were completed, the water table had been lowered and the salt was presumably flushed away by rainfall or freshwater irrigation. Natural stream channels and springs were diverted into canalised drains and collected into larger channels which emptied through sluices set at intervals in the new seabanks. The former channels can often be traced as soilmarks, passing through fields established on the reclaimed ground.

Although the degree of reclamation in the Wash has ensured that there is little evidence for medieval activity in the study area, small quantities of medieval pottery have been found in the Fishtoft area north of the Witham, where there has been

less reclamation and an earlier unreclaimed landscape therefore lies not far behind the present sea defences. There is also evidence for late medieval salt production in the Wrangle area: both Wainfleet and Wrangle were known production centres, the former as early as the 11th century (Section 4 and above).

South of the Witham, one, possibly two small moats were identified from aerial photography in Frampton, but are no longer visible. The remains of the moated Multon Hall, established by 1216, probably lie within the grounds of the present hall of the same name, also in Frampton.

Post-medieval

The North Sea coast saw continued silting and reclamation along the foreshore and the implementation of extensive inland drainage schemes in the 18th and 19th centuries, extending the area of available agricultural land at the expense of former grazing marshes. The late 18th-century construction of the Louth Navigation from Tetney Haven to Louth also allowed the development of Tetney village as a small port at the expense of some of the longstanding nearby havens, which continued to decline (Section 6). Other settlements expanded as the effects of industrial growth and the nascent tourist industry took effect. In the north, Grimsby expanded enormously while Cleethorpes was created through the amalgamation of small existing settlements, partly as a residential suburb of its larger neighbour. Further south, settlements from Mablethorpe to Skegness also began to grow.

Plate 33 Early 19th-century Hobhole Drain near Hobhole Sluice, Fishtoft

The Hobhole Drain was constructed between Freiston and Fishtoft in the early 19th century to remove water from the East and West Fens, formerly drained by the River Steeping (Wainfleet Haven), allowing inland reclamation to take place.

Former seabanks understandably form an important part of the landscape with some sections in the Wainfleet–Fishtoft section probably dating from the medieval period, but there are also sea defences of 17th-century date succeeded by examples from the 18th to mid 20th centuries.

The degree of post-medieval reclamation around the Wash was such that few settlements approach within 1km of the present seabank and there was no urban development to match that on the North Sea coast, with the exception of Boston, inland of the study area.

Wainfleet and Wrangle, however, continued to be involved with the production of salt into the 16th century and possibly the early 17th at the latter location. Traces of the salt production industry are still extant just outside the study area boundary as earthworks in Wainfleet and Friskney, but have been ploughed out further south in Wrangle, Benington and Old Leake (Section 4). Some of the sites included evidence for settlement, presumably for workers engaged in this seasonal industry, but again, these do not survive as visible remains. A cluster of enclosures, possible trackways and ditches was formerly present in Freiston, but has been poughed out.

Derby Hall, Old Leake, had medieval origins, with a house on the site in 1295, but the final building which was demolished in 1873 was probably of 16th-century and later date. Whiteloaf Hall, Freiston, still survives, and the earliest of several datestones is for 1613; an 18th-century occupant, John Linton, was an enthusiastic exponent of land reclamation and was probably responsible for the embankment beyond the late medieval/early post-medieval 'Roman Bank' in front of the house, which bulges out beyond the areas to either side.

There was a possible duck decoy in the same area. Decoys (from Dutch *eendenkooi* 'duck cage' or *de kooi* 'the cage') were introduced in the 17th or 18th century, although the Frampton example is likely to be of 18th- or 19th-century date. Decoys normally consisted of a central pond with several curving screened and netted tapering arms ('pipes') leading off. Operators lured ducks into landing on the main pond and tricked them to follow a trained dog, preferably fox-like, along the pipes, taking advantage of their natural curiosity and a desire to keep watch on possible predators. The birds were lured further along the pipes by a trail of food into nets where they were trapped and killed to provide fresh meat.

Land reclamation and drainage also continued into the second half of the 20th century in the southern part of the Wash as the final stages of a

process which began sporadically in the medieval period and recommenced with some vigour in the second half of the 17th century with the reclamation of the fens inland of Spalding and Wisbech and the construction of new seabanks, including a surviving 17th-century example near Gedney.

The construction of the Bedford Rivers represented a substantial investment, but the resulting shrinkage of the peat combined with constantly rising sea levels relative to the land led to widespread flooding, only alleviated later by the construction of networks of windpumps, which were eventually replaced by steam and finally electric pumping stations.

The late 18th and early 19th centuries saw the construction of channels for the main river outlets to fix them in their present locations and provide better conditions for navigation. These required extensive embankment, as the rivers now flowed above the level of the surrounding land. The embankments extended across the intertidal zone in the form of 'training walls', the ends of which were indicated by navigation markers or lights; this was essential, as the entrances extended some distance from the shore and were easy to miss in poor conditions or bad light. Good examples remain at the entrances to the Witham (1884), and the Ouse and Welland Outfall (1837), while those at the Nene Outfall (1826–31) have been subsumed within the reclaimed areas to either side as part of the inland river embankments.

Plate 34 View of Witham Navigation, Wyberton, rebuilt 1884

The function of the walls was to prevent the outer channel from shifting ('training') and provided a deep water entrance which was available to shipping for a much longer period of the day. As a result the original twin lighthouses marking the entrance to the trained Nene now lie some distance inland. These structures, which can more accurately be described as ornamental seamarks, were authorised by the Nene Outfall Amendment Act 1829 and built by the prolific engineer John Rennie, who was also responsible for the Outfall itself. The eastern lighthouse was the former home of the naturalist Sir Peter Scott, the location strongly influencing his interest in wildfowl.

Plate 35 Early 19th-century training walls at entrance to the River Nene channel, Sutton Bridge

Plate 36 Lighthouse which formerly marked the entrance to the trained Nene channel, Sutton Bridge

The present landscape within the study area is largely a product of post-medieval/early modern reclamation and subsequent land enclosure, overlain along the northern and southern stretches of the North Sea coast by urban development and tourist facilities such as holiday camps and amusement complexes. The remainder of the area is, however, overwhelmingly agricultural and relatively remote, particularly the Wash coastline which has remained largely unaffected by the later 20th and 21st centuries.

4 INDUSTRY

North Yorkshire *(Fig 4)*

Although the principal land use is now agriculture and to a lesser extent leisure, the rural areas of the North Yorkshire coastline have seen varying degrees of industrial exploitation, particularly within the later post-medieval and early modern periods. Some of the industries, such as jetworking, were relatively small-scale and seasonal, particularly in the early years of the 19th century, although it expanded from about the middle of the century until the 1870s. Other industries, such as quarrying for stone, were more extensive, and have left their mark in the form of locally modified landscapes, particularly at Filey Brigg. The most significant remains, however, are those of the alum extraction and production sites at Saltwick Nab and around Robin Hood's Bay.

Alum production

Alum has historically been important for several purposes: as a mordant (chemical fixer) in dyeing, for chemical tanning (tawing), and in paper production and other processes, all of which were expanding in the early modern period, demanding ever increasing quantities of raw materials. The alum industry employed a large number of workers who transformed the landscape in a handful of locations between the middle of the 17th and 19th centuries, quarrying huge areas of shale and constructing coastal installations in remote and often barely accessible rural areas where none had existed before.

Plate 37 Remains of alum house at Saltwick Bay

In the study area alum extraction was concentrated between Saltwick Nab and Ravenscar, where remains have survived representing most of the stages in the production of alum. There has been extensive study and survey of the industry north of the study area (Miller (ed) 2002), but there were significant production centres at Saltwick (1649–1791), Stoupe Brow (1752–1828) and Peak (1615–1862). There were also minor sites, including an abortive works at Hawsker Bottoms (1764) and another nearby at White Stone Holes, Fylingdales, 'White Stone' being a colloquial name for alum.

At Peak there has been considerable recent investment in on-site interpretation by the National Trust, including site clearance, improved access, signage and interpretation. In their heyday, these sites could be extensive and self-contained, with their alum houses, stores, workshops, engine houses and laboratories, stone-lined tanks, steeping pits and channels, access roads and trackways, dwellings for the site managers and some of the workforce, as well as large quarries to provide a constant supply of alum shale. The use of stone and drystone walling for the principal buildings and the extent of the alum quarries have ensured that an impression of the impact of the alum industry can still be seen in the landscape around the plants. Another prominent feature is the presence of large areas of roasted waste shale, forming distinctive red mounds or cliff tips around the processing works.

Plate 38 Remains of alum house, Saltwick Bay

On the foreshore below the alum works, substantial areas of docks, stone platforms, breakwaters, piers, ramps, rutways and other features represent the remains of the facilities for landing coal and exporting barrels of processed alum; these are a particularly threatened component of the former industry, at significant risk from storm damage, erosion and cliff falls.

Until the mid 16th century, supplies of alum were imported, but thereafter a search for domestic sources began, with production commencing at Slapewath, Guisborough, in 1604. In the early 17th century, accessible alum (aluminium

sulphate) shale was discovered near Whitby, with production commencing at the Peak Alum Works in 1615, but the rate of output was slow until 1635, when c 1800 tons per annum were produced. The alum monopoly was abolished around 1648 allowing new alum works to be set up, including Sir Hugh Cholmley's works closer to Whitby at Saltwick Nab.

Plate 39 Walls and burnt shale raft within harbour, Saltwick Bay

The early Yorkshire industry had an advantage in that the alum shale was exposed along near-vertical cliff faces, allowing the seams to be relatively easily reached without the removal of large areas of horizontal overburden, effectively by quarrying sideways. The proximity of the coastline also allowed the final product to be removed relatively easily and in bulk, without recourse to the unreliable inland road system, as well as allowing coal to be imported for fuel used during processing. Clean water from springs and streams running off the nearby moorlands was also in copious supply for the washing and steeping processes.

Plate 40 General view of Saltwick Nab alum quarries showing degree of modification of the natural features

Plate 41 Regular pattern of square postholes marking possible jetty or foreshore platform, Saltwick Bay

Plate 42 Stone culvert supplying Stoupe Brow alum house, Fylingdates

Plate 43 Remains of workers' houses, Peak Alum Works

Plate 44 View along New Dock cut to load and unload vessels below Peak Alum Works

Plate 45 Rutways heading towards New Dock, Peak Alum Works

Alum production continued until 1862 at the Peak works. Improvements there included the construction of a tramway to replace an earlier ramp, and a mineral railway at the shale quarries. Following the end of the industry, a brickworks was built by Whitakers & Sons of Leeds in one of the former shale quarries c 1900 (see below), connected to the Scarborough–Whitby railway, which opened in 1885.

Jetworking

In addition to alum production, there are several areas where the working of jet, lime, and building stone were of regional and local importance. With far fewer ancillary processing facilities or installations required, these three industries are less obvious than the alum works and often on a much smaller scale in the coastal areas, although all have left significant traces inland. In some cases the industries probably shared some of the export facilities established on the foreshore for shipping alum.

Plate 46 Alumworks platform with jet mines cut in cliff below alum quarry, south end Saltwick Bay

Jetworking exploited the occurrence of fossilised remains of a giant Jurassic version of the monkey puzzle tree (*Araucaria araucana*) in strata located below the alum shales. Although jet had been used for jewellery and amulets in small quantities from the prehistoric period, jetworking only started to become a significant commercial industry in the first half of the 19th century; the number of workshops in Whitby expanded rapidly after 1861 with the fashion for black jewellery influenced by Queen Victoria after the death of Prince Albert. Whitby Jet was exhibited at the 1851 Great Exhibition and the 1861 Paris Exhibition, providing a showcase for an industry which rapidly gained international markets.

Popularity reached a peak in the 1860s and 1870s, with an estimated 20% of Whitby's workforce employed in the industry in 1871 (Vickers 1987). Exports left Whitby for markets elsewhere in the country, probably largely by rail, and were also shipped to many parts of the Empire: a report in *The Times* of 3rd March 1880, for example, refers to a workshop fire which destroyed a large consignment of jewellery intended for Canada. There had, however, been periods of decline prior to this, with the *Whitby Gazette* reporting that the industry was in a depressed state in 1876.

A further report in *The Times* of 19th October 1880 gave the reassuring news that jet, after a period of reduced interest in the fashion for mourning pieces, was finding a new popularity in the rising demand for costume jewellery produced for the home market as well as France and Germany, although the main export market was in America. By 3rd March 1884, however, the same newspaper was referring to the industry as 'dormant', and by February of 1885 it had reportedly collapsed, with notes of bankruptcies appearing.

The early 1880s was a bad period for Whitby in general, with shipbuilding also extremely depressed, and there was a resulting rise in unemployment and attendant poverty. In 1887, as if to set a seal on the decline of Whitby Jet, Queen Victoria finally agreed to silver jewellery being worn by ladies at court in place of black, to mark her Golden Jubilee. By this time, the royal palaces were one of the last bastions of an outdated fashion: *fin de siècle* jewellery was generally smaller and lighter, but the Whitby industry had largely continued to produce traditional mid-century designs.

A major problem from c 1870 had been the importation of cheap inferior 'Spanish Jet' in an attempt to compensate for the inability of local small-scale mining to produce sufficient quantities of native raw material to keep up with increasing demand at the high end of the market; workers also used inferior local material which previously would have been discarded.

Jet needed to be flawless to achieve a polished finish with fine detailing; the appearance of jewellery made from inferior jet and the occurrence of fakes undoubtedly contributed to a lack of faith in the quality of a product which could command high prices. There was also an increasing trade in cheap pieces for the mass market, sometimes sold honestly, and sometimes as genuine Whitby Jet, but made from a variety of materials including hard coal, bog oak, glass ('French Jet') or vulcanite/ebonite (an early hard rubber).

Plate 47 Spoil mounds on floor of stone or jet quarry, Nigh Jetticks, Fylingdales

The hundreds of workshops were operated by craftsmen working alone or in small teams and were often located in previously unused space such as cellars, outhouses and garrets, which were cleared to make way for the workbenches, with rooflights cut through the pantiled roofs to provide natural light where possible. The Whitby Jet Heritage Centre located in Church Street includes a workshop of this type, registered in 1867 in Burns Yard and walled up after the industry collapsed. Reinstalled in Church Street, it provides a good idea of the poor working conditions of a workshop during the heyday of the industry.

The craftsmen were supplied by an increasing number of tunnel mines, which replaced casual foreshore collection by fishermen and other locals intent on augmenting their incomes. Many of these mines were initially located in the sea cliffs between Saltburn and Ravenscar where the jetbearing strata were exposed, with several identified close to the base of the cliffs in Hawsker and Fylingdales, resembling small caves. The waste material was simply dumped on the beach below the entrance to the mine and dispersed by the waves; with no supporting infrastructure, the mine entrances are the only visible evidence for the industry.

The focus of the main area of extraction shifted inland, however, where the same strata outcropped in the sides of valleys. Bilsdale and the Osmotherley area on the western fringes of the North York Moors saw a particular concentration, with other areas centred to the south of Guisborough and near Rosedale (Butlin (ed) 2003, 189–90, fig 9.9). Unlike the cliff mines, their inland counterparts are characterised by large piles of waste shale deposited along the valley bottoms and at the foot of the western Moors escarpment between Guisborough and Osmotherley, a clear indication of the extent of extraction at the peak of the industry.

Jetworking never completely died out, continuing to employ a small number of men through the 20th century, although traditional skills were gradually lost, and poor quality or fake work was still peddled. A court report in *The Times* of 22nd September 1904 refers to a late instance of deliberate fraud in Bradford relating to the sale of fake 'Whitby Jet', stating that '…formerly in the Whitby jet trade 1,500 persons were employed, and the annual income from the production and manufacture of jet articles was £150,000 but the trade had been crippled by the importation of imitation goods from abroad.'

Jet survived as a small-scale craft industry which mainly supplied the increasing Whitby tourist trade rather than a mass national market, with beach collection of eroded material once again the normal way of supplying the few workshops. In the late 20th and early 21st centuries, significant improvements in the environment of the old town

areas and the fostering of a more discerning tourist market, coupled with the rise of internet shopping, however, has made the products of Whitby's workshops more easily available to a worldwide market and it is therefore likely to remain active at a level which is sustainable in relation to the scale of collection of the raw material.

The early 21st-century industry probably supports more workshops than at any time in the previous century and products range from traditionally-styled souvenirs to more cutting-edge modern designs combined with other materials and settings.

Stone quarrying

At its simplest, quarrying for building stone consisted of small-scale local extraction for the construction of farm buildings and small groups of cottages. More apparent is the large-scale extraction and shipping of a substantial volume of stone from large quarries, mainly exploiting the Jurassic limestones, grits and sandstones of the area. Although most of the larger quarries were located inland at sites like Aislaby, important from the medieval period onwards (and reopened in 2002), the coast between Whitby and Ravenscar includes outcrops of the closely-related Saltwick Sandstone, and the more localised Dogger Sandstone near Robin Hood's Bay (Powell 2012).

Further south from Staintondale to Cloughton, stone of the Gristhorpe Member and Moor Grit was extracted. South of Scarborough at White Nab, the engineer John Smeaton exploited a quarry of Scarborough Formation stone on the lower cliff to construct the town's 18th-century East Pier, with the materials transported across South Bay by lighter, but the area was more extensively quarried for Lower Calcareous Grit.

Plate 48 Small stone quarry pit, Cloughton

The most extensive and visible area of quarrying extends along both sides of Filey Brigg where it appears that nearly all of the headland has been affected in some way, although it superficially appears to be an entirely natural formation (Buglass & Brigham 2012). Despite this, there are hardly any references to quarrying, even of more recent late 19th-century extraction of stone for the new seawall, when photographs, recollections and comments by local historians and visitors might be expected. The resulting lack of coverage in modern histories of the town is a surprising omission for what must at times have been a major source of disturbance and local employment.

The various thicknesses and properties of the strata exposed at the base of the till cliffs and extending eastward as an intertidal reef would have provided a variety of products suitable for different applications. Close inspection reveals the scalloped and stepped edges and floors of quarries accompanied by dated graffiti, toolmarks and piles of abandoned blocks, particularly towards the east end where they have been dumped along the northern and southern edges.

On the south side, the blocks form a protective breakwater along the edge of the rock platform while a vast quantity of further material was dumped to form an underwater pier, The Spittals, creating a small harbour around a natural hollow, presumably to facilitate the loading of stone. A series of postholes along the northern edge of The Spitals may have held posts to assist in warping vessels in and out of the moorings, or perhaps supported a loading platform, although there is an early 19th-century reference to a wooden box structure (hully) supported by nine posts built by local fishermen to store live lobsters (Cole 1828, 120).

Along the northern cliff are a series of deep indentations, now known collectively as The Doodles, which also represent quarries; the difficult shoreline access probably required the use of clifftop cranes of a type also used in nearby lime quarries. The steepness and depth of the till cliff above suggests that these northern quarries were sideways enlargements of small natural inlets rather than excavated from the top down; this is consistent with the presence of large and presumably natural intertidal pools at the base of some of the inlets, including the impressive 'Emperor's Bath'.

In one location at the edge of the rock shelf are the clear cuts of wedge-pits used to split the rocks into curving sections by driving wood or later, iron wedges into the stone.

Plate 49 Line of wedge-pits for rock splitting, north side of Filey Brigg

Plate 50 Quarried area, east end of Filey Brigg

Along the exposed reef at the east end, the tough sandstone of the Birdsall Calcareous Grit was quarried while the overlying Upper Hambleton Oolite seems to have been discarded, possibly because this formation was thin and difficult to split into blocks or usable flat sheets for paving or roofing, partly because the base contained the large fossilised burrow casts of the crustacean *Thalassinoides*. The usable Lower Hambleton Oolite was exposed by removal of the Birdsall Grit, particularly along the north side of the reef, with the surface also characterised in some areas by *Thalassinoides* burrow casts which were largely absent from the Birdsall beds.

On the foreshore platform south of the west end of the Brigg a series of long, parallel cuts demarcating a series of narrow strips in the surface of a shallow bed of particularly hard stone suggests that this particular area was quarried to produce stone road setts. The stone would have been suitable for the purpose in terms of its durability and depth.

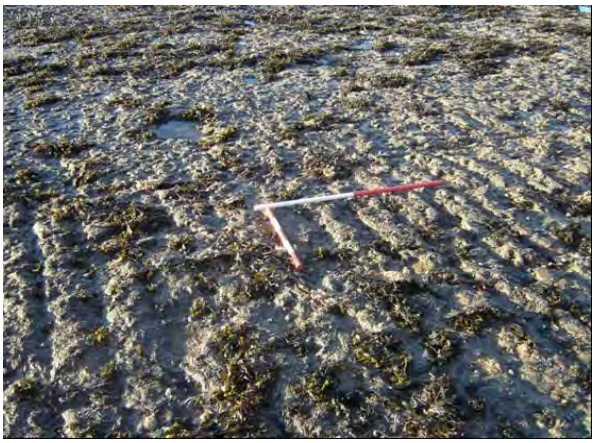


Plate 51 Quarry for stone setts, south side of Filey Brigg

Plate 52 Pillar and stall quarrying, south side of Filey Brigg

Above this level in the nearby cliff, the Birdsall Grit had been removed using 'pillar-and-stall' mining, leaving the Upper Hambleton Oolite as a roof supporting the edge of the till mass. It is probable that the pillars would subsequently have been removed, probably by blasting, bringing down sections of the till and freeing new areas of the stone face for exploitation after the till had washed away. By this method, the cliff would have receded rapidly. Numbers from 1–15 were carved into the cliff face, probably representing quarry sections: half are missing, suggesting later quarrying or natural loss, although '13' may never have been cut for superstitious reasons.

While it is clear that the Brigg was extensively quarried, the full magnitude of this exploitation is difficult to grasp, because the outer edges of the quarried area cannot be reconstructed with certainty. It appears that a significant quantity of material was removed from the east end platform

and along the lower cliffs of the north and south sides as the till cover (Carr Naze) was eroded, but the collapse of the till itself was probably accelerated by undermining. It is notable that the earliest dated graffiti ('1818') belongs to the first half of the 19th century, and extraction from this period onwards would have progressively removed any evidence for earlier quarrying. Some traces may, however, remain around the edges of the quarry zone in the form of areas of extraction or discarded blocks with distinctive datable toolmarks, although this would require expert investigation, and the dating of such features is difficult due to the longevity of quarrying methods.

Brigg stone was used in a number of local building projects, including part of the medieval Bridlington Priory, through a contract dated 1230; Brigg stone also found its way into Bridlington's harbour piers indirectly in the 16th century after the Priory was demolished following the Dissolution. The late Victorian seawall at Filey was built using Brigg stone with the permission of the Lord of the Manor of Hunmanby (which included Filey) at one farthing a ton, using a railway laid along the beach in late 1892 to cart quarried material to the building site.

Documentary evidence and the fabric of local buildings themselves suggest that there was systematic collection of fallen stone, cobbles and glacial erratics from those beaches which had some form of access, such as Whitby, Robin Hood's Bay, Cloughton, Burniston, possibly Scarborough, and Osgodby. In 1520, for example, John Sparrow was granted the right to quarry stone from the Whitby foreshore to make grindstones and for building purposes. Material was also removed directly by boat: south of Scarborough at Cornelian Bay, small gravel was collected by fishing cobles for the use of the Corporation as late as the early 20th century. Several heavily-laden boats were swamped by seas in 1925 and wrecked, reported in the *Scarborough Evening News* (6th November). This was clearly seen as a way for fishermen to augment their living, although it was hazardous, and was probably the tail end of a long tradition: the East Yorkshire coast from Flamborough Head to Spurn was exploited in the same way, and this was undoubtedly a common practice, allowing local landowners with manorial rights to claim tonnage tolls and licence fees.

Stone was also collected from the beach and probable medieval/early post-medieval landing place at Cloughton Wyke, but in a wooded area north of Cloughton Hulleys are a series of earthworks, hollows and linear cuts, representing the remains of open-cut quarrying for better quality stone which was used for building in the area, including Scarborough.

Lime production

A series of small-scale quarries were located on the cliff edge and cliff face. These are mainly seen in Lebberston, Gristhorpe and Filey where the thickness of the overlying glacial till was perhaps prohibitive to more conventional quarrying. At these sites 19th-century Ordnance Survey maps sometimes mark the sites of cranes used for the movement of material up the cliff face, several being present in Gristhorpe and immediately west of Filey Brigg, where traces of some of the platforms remain at the cliff edge. Here the industry centred on extracting limestone for use in associated limekilns, either for 'sweetening' acid soils, as a clay soil improver, or for use in mortar, plaster and limewash.

Plate 53 Remains of limekiln, Bottom House Farm, Hawsker

Plate 54 Remains of limekiln, Cloughton

Lime had other uses, in the chemical and paper industries for example, although the remoteness of the coastal quarries from industrial centres of the West Riding and North-East suggests that

they were intended for local markets. Partly because of the dispersed agricultural market for lime, small quarrying and kiln sites were widely distributed across the area, occurring sparsely in the coastal zone from Hawsker to Filey and inland across the North York Moors (Butlin (ed) 2003, 184–5, fig 9.7). These small production sites were not economical and were replaced in the late 19th and 20th centuries by larger plants with more efficient kilns and better transport connections.

Potash

Prospection for potash was undertaken next to the brickworks site in Peak alum quarry, near Ravenscar, although the date is uncertain; test drilling took place in the area as a whole from the 1930s after potash was discovered in the 1920s, but extraction was not at the time considered commercially viable because of its depth. Potash, a collective name given to naturally occurring potassium chloride, potassium carbonate and other salts, is and was used principally in fertilisers, but also in alum production during purification of the liquor before cooling; this was mainly extracted from vegetable sources, such as burnt seaweed.

Although Peak does not seem to have been exploited, potash has been mined since 1973 to the north of the study area at Boulby, and there are plans to open a new production site near Whitby with the main base at Sneaton, the products of which are likely to be taken deep underground through tunnels by conveyor to the processing plant at Teesport without being brought to the surface.

The potassium salts are ‘evaporites’ deposited 260 million years ago during the Permian period in an area where shallow seas evaporated repeatedly over a period of millions of years. Three principal layers of potash minerals were deposited in what is now North Yorkshire, the Sneaton, Boulby, and Fordon seams. The top two consist of impure and less commercially attractive muriate of potash (‘MOP’), mixed sodium and potassium chlorides, but the deeper Fordon seam consists of polyhalite (hydrated sulphate of potassium, calcium and magnesium), from which the fertiliser sulphate of potash (‘SOP’) can be extracted; commercial by-products include gypsum for plaster production. Polyhalite has been extracted for SOP at Boulby since 2011 and will be the main product of the North Yorks Moors site, if built. SOP is particularly useful for fertilising fruit, nuts and green vegetables, which are chloride-sensitive, while its competitor, ‘MOP’, is more suited to carbohydrates such as maize and wheat which are chlorine-tolerant.

Brick and tile production

While brick and tile is now mostly mass produced in relatively few centres, the historic industry was often very localised, with the availability of suitable clay and a water supply important considerations in site selection. Transport costs and the unreliability of the road system were such impediments for much of the medieval and post-medieval periods that production facilities might be developed at the end-use site for a specific project and then abandoned. Water, and later rail, were the most cost-effective ways of transporting the finished products.

Plate 55 Whitakers & Sons brick kiln in former alum quarry, Peak Alum Works, built to produce bricks for Ravenscar, Scarborough and district

Plate 56 Remains of flue or chimney attached to Whitakers brick kiln

In North Yorkshire, brick and tile production was located at the closed Peak Alum Quarry, Scarborough and Filey. Whitaker & Sons Brick Company of Leeds opened works at Peak in 1900 with the intention of providing materials for the construction of a proposed new settlement nearby

at Ravenscar. Although this speculative development failed (Section 8), the brickworks were provided with railway sidings and it was able to survive the collapse of its main market by several decades, presumably through its ability to move bricks directly onto the Whitby–Scarborough line.

Whitaker's beat the Scarborough United Brick Company to provide building materials for the Northstead Housing Estate, c 1930, and the Art Deco Odeon Cinema, 1936 (now the acclaimed Stephen Joseph Theatre), both in Scarborough; the yard struggled however and the company may have been forced to lower their prices to win the Scarborough contracts.

The winter snows of 1947 cut the railway line off for up to six weeks although the site may already have closed. Bricks with the stamp 'RAVENSCAR', 'W' (Whitaker) or 'BWS' (Benjamin Whitaker & Sons) can still be found in the area of the brickworks, including reuse as track surfaces; the remains of the single Hoffman kiln have been preserved by the National Trust as part of the overall Peak Alum Quarry site, although the two 60ft (18.3m) and 100ft (30.5m) kiln chimneys were demolished in 1960 for safety reasons.

Coal mining

Coal seams were present in the Jurassic rocks of North Yorkshire, with coal mining occurring at numerous small centres across the North York Moors and Yorkshire Dales. Many of the seams were, however, thin and produced poor quality coal, generally exploited by landowners for local use rather than major companies. The coastal exposures were mainly uneconomic and difficult to access although small amounts of coal would almost certainly have been collected from the foreshore after cliff falls. As late as 1923, a landslip at Henrietta Street, Whitby, brought down a sufficient quantity of coal for the locals to collect.

On a more organised basis, a small coal mine was located at Maw Wyke Hole, Hawsker, exploiting thin seams exposed in the lower cliff face when the weather allowed during the summer. The mine, which was worked in the late 18th and early 19th centuries, was reached via a still usable track marked by two stone posts, with the mined coal removed in donkey panniers. Theoretically, there was a potentially lucrative market for coal in the local alum industry if sufficient quantities could be extracted; the site was close to the Hawsker Bottoms alum works, planned in 1764, but never completed.

Saltmaking

A more specifically coastal process was saltmaking, although evidence for this is limited. The placename Salt Pan Well Steps occurs in Whitby and there is an indication of salt pans on a 1771 tithe map of Cloughton, where Salt Pans Road forms the beach access immediately north of Cloughton Wyke. The legend 'Salt Pans' still appears on modern 1:2500 and 1:10000 Ordnance Survey maps of Cloughton next to a substantial indentation in the foreshore rock shelf below the end of Salt Pans Road, and it may be the case that evaporation was once practised there, although the name may have been attached simply because of the resemblance of the feature to a salt pan.

There are documentary references to saltmaking, although this appears to have been localised, never reaching an industrial scale. In Scarborough, for example, the Corporation leased the saltpans, and in 1616 John Farrer (whose wife discovered the seawater springs there) and seven others held the saltmaking monopoly on the foreshore for twenty years, with the right to erect saltpans on the beach; salters had appeared in the town records as early as 1298.

It is not clear why the industry did not take hold in the area; possibly there was a shortage of suitable sites for evaporation tanks. By contrast, a substantial medieval saltmaking site has been identified through aerial photographic analysis at the mouth of the Tees as part of the North-East Coast RCZAS (Bacilieri *et al* 2008, 19), and industrial-scale production is documented in Tyneside and to a lesser extent, Wearside, in the 17th century. As early as 1670, this industry suffered increasing competition from the Cheshire rock salt industry, whose product was cheaper as well as purer and finer grained.

Milling

Milling, by contrast, was a ubiquitous industry with a number of medieval and later windmill and watermill sites within the study area. Much of the coastal area of North Yorkshire was a mixed farming district, with arable farming confined largely to the fringes of the North York Moors and valley bottoms, the uplands given over to grazing. There were consequently fewer mills than the more largely agricultural East Riding, with the main grain growing areas located from Scarborough southwards to the Yorkshire Wolds and inland along the Vale of Pickering.

Plate 57 Former watermill, Boggle Hole, Robin Hood's Bay, now a Youth Hostel

Obviously, mills were located to make the best use of either wind or water for their motive power, both of which North Yorkshire was more than capable of supplying. Many windmills were located on traditional sites used from the medieval period onwards, with the earliest sites often sited around the fringes of population centres. Timber-framed post-mills were either demolished or replaced by brick or masonry towers in the 18th and early 19th centuries.

Many of these sites were lost to urban expansion and rebuilding during this period, but the majority of later post-enclosure sites were located on farmsteads or in open country to ensure proximity to the emerging network of dispersed arable farmers. The threshed grain had to be transported by waggon along unreliable roads and tracks, and most farmers would probably have chosen the nearest or most accessible mill. The finished flour also had to be transported to market.

From the late 18th century, the replacement of natural power sources by artificial sources, initially steam, later oil and electricity, meant that mills could be relocated to larger sites near navigable watercourses or railways, where fuel could be imported and the flour exported, largely reversing the rural dispersal of mills.

Many small local mills closed in the later 19th and early 20th century, with very few still open by 1939. Milling became a large-scale commercial enterprise based at a few locations served increasingly by road.

Windmills on former urban fringe sites which are now part of the built-up area include Union Mill, Whitby (demolished) and the Victoria Mill, Scarborough (now part of a hotel). Rural sites include Smay Lane Mill, Robin Hood's Bay (demolished), and a post-mill at Reighton (represented by a mound). The majority of windmills were, however, located further inland on higher ground, such as Low Hawsker Mill, Peak Mill, Fylingdales, and Muston Mill, Filey.

Plate 58 Victoria Mill, Scarborough

There was, of course, much less flexibility in the location of watermills, since sites required a constant and reliable flow of water and construction involved the modification of natural watercourses, including the creation of ponds, channels and weirs. For this reason, suitable sites were in short supply and the investment required to create and maintain the elaborate infrastructure meant that they tended to be reused over long periods, often for many centuries. There are several important watermills in the study area on the lower courses of streams close to the point where they enter the sea.

Plate 59 Earthworks of possible medieval and later watermill, one of three built on the lower section of Scalby Beck

Documentary evidence suggests that there was already a watermill on Scalby Beck as early as 1164, worth £6 and belonging to the Crown. The Crown alienated two watermills in 1609–10, together with other local properties and although it is not certain that either of these stood on the site of the medieval mill, it is likely that this was the case, given the continued Crown ownership over such a long period. There were three watermills by the later 18th/19th century located between Scalby village and the sea, two of which almost certainly occupied earlier sites in what was now an extensively modified stream valley.

Outside the study area, Scarborough watermills were located at Falsgrave, but suffered from an intermittent water supply which sometimes left local farmers dependent on more reliable mills at Scalby and another at Cayton.

There was a watermill at Cayton Cliff by the 12th century, on a site still in use until the mid 19th century when it was replaced by Scarborough pumping station. The remains of earlier mills may therefore survive, potentially including ponds and water supply systems as well as buildings, depending on the level of later disturbance (Buglass & Brigham 2012).

The stone seawall in front of the pumping station appears to contain more than one phase of stonework and is clearly of some antiquity, the oldest sections probably extending back to at least the late 18th century.

Plate 60 Scarborough Water Works, site of former medieval to early modern Cayton Cliff Mill

A large watermill located at Boggle Hole is now a youth hostel, but stands on the site of a mill established by 1666 and possibly used much earlier. Other mills were located inland in the Robin Hood's Bay/Fylingdales area, including an early mill at Ramshill Wood which is thought to have belonged originally to Whitby Abbey.

East Riding of Yorkshire *(Fig 5)*

Compared with North Yorkshire, there is limited surviving evidence along the East Riding coastline for past industrial activity. This is mainly restricted to a small number of quarries, limekilns and mills, reflecting the largely agricultural nature of the area throughout the industrial revolution. The coastal area remains principally agricultural, with modern industrial sites located inland, often close to the main road network.

Stone quarrying

Quarrying in the north of the area around Flamborough Head was mainly for chalk, including Beacon Hill and Hartendale immediately inland of the south cliff, and the nearby Flamborough Quarry.

Further south in Bridlington and across Holderness, small quarries exploited the localised deposits of fluvio-glacial gravels spread across the area between the coast and the Hull valley for local use in roads and building work; this continues today outside the study area near Catwick and until recently at Gransmoor, sites which have revealed important archaeological and palaeoenvironmental information.

Plate 61 Infilled Beacon Hill quarry, Flamborough

Quarrying close to the coast was, however, very limited, partly a reflection of the absence of large commercially viable areas of sand or gravel near the surface, but probably more influenced by the proximity of a much more accessible and renewable resource: the intertidal zone.

From the medieval period onwards, a substantial degree of quarrying has taken place along the foreshore between Flamborough Head and Spurn, where large quantities of shingle, gravel, cobbles and larger boulders were readily available and could be removed by both cart and boat. Much of

the material probably originated as glacial inclusions in the eroding till capping of the cliffs, although some of the finer material was at least partly deposited by tidal action and longshore drift.

While gravel was much used for roads and in cement, beach cobbles have been used extensively for building construction in Holderness in place of brick or imported ashlar, including high-status buildings such as churches, such as St Paul's, Easington and All Saints, Mappleton, as well as farmhouses, village dwellings, barns and garden walls.

In 1835, the Roman Cement manufacturers, William Thomas and William Piercy of Sculcoates, Hull, were authorised by the agents for the Lord of the Manor of Hunmanby to remove lime-rich '…stone called Oolite Doggers and Basalts' from the shores of Reighton, Hunmanby and Filey manors (Buglass & Brigham 2012, 24). The 'doggers', actually calcareous septarian nodules containing limestone and integral clay minerals,, were present in the cliff at Speeton and the licence may have included a combination of quarrying (possibly by undermining) and the surface collection of nodules which had been spread among the upper beach shingles. Roman Cement was manufactured by a roasting process licensed by the clergyman James Parker in 1796, but as septarian nodules were in short supply, manufacturers subsequently began to use artificial mixtures of chalk/limestone and added clay to create more durable and cheaper products such as Portland Cement, which eventually dominated the market.

The nodules were shipped out from the brick-lined Dulcey Dock, a possibly modified natural inlet cut into the foreshore platform below Speeton Cliff, apparently named after the coaster *Dulcey* which used the site (Section 6). Quarrying is likely to have dwindled after c 1850 as Portland Cement became more common, although Dulcey Dock still appeared on later Ordnance Survey maps.

Local sources have suggested that the Dock supplied Hessle Mill (operative between 1815–1925), which was served by several large chalk quarries at Hessle Cliff for the principal trade in producing whiting for paint and other products. The site may also have been involved in Roman Cement manufacture early on, using nodules from Speeton. Dulcey Dock appears on the 1851–3 1:10560 Ordnance Survey, and would therefore have been available to supply chalk to Hessle early in its development. Earles, an important Hull company, also had a plant next to the Humber from 1821, later on the River Hull, although it is unclear where they obtained their raw materials.

Considerable quantities of stone also appear to have been removed by boat from the beaches along the south side of Flamborough Head for use in the core of the late 18th- and 19th-century piers at Bridlington (Brigham & Jobling 2013b). This included much of the fabric of the late medieval harbour piers at South Landing, Flamborough, which were themselves faced with substantial and durable igneous erratic boulders collected in the area rather than the softer local chalk (Brigham & Fraser 2013). Extending to the south was a 'reef' of similar large erratics close to the shore between South Landing and Barmston, inshore of the better-known shoals of the Smethwick (Smithic) Sands; much of the stone resembles black basalt (Jones 2006), and is therefore similar to a substantial proportion of the material forming the remains of the medieval harbour.

The extraction of stone from the beach was historically the right of the Lords of Holderness, from 1560 the Constable family of Burton Constable; the granting of licences was an important source of revenue, which they appear to have exploited, particularly in the early period and the 19th century. At Hornsea, building cobbles were removed by donkey as early as 1609 (Pevsner & Neave 1995, 25). Shoreline gravel and cobbles were still being removed in Aldbrough, Tunstall and Rimswell parishes in the 19th century, sometimes directly by the Constables, sometimes through licensing (Kent 2002,172–81). The practice may have declined during the post-medieval period as cheap local bricks became available for building, but the introduction of a Brick Tax in 1784 provided an incentive to again make use of alternative materials, at least until its abolition in 1850 (Brunskill 1990, 192–3). This led to a revival of interest in asserting mineral rights, but the introduction of better forms of road construction from the later 18th century, including 'macadamised' surfaces from c 1820, also provided a ready market for gravel.

As already mentioned, the larger material was chiefly composed of glacial erratics washed from the till cliffs and it is likely that much of the smaller material also originated as eroding glacial deposits or moraines, although there was some movement of sediment around Flamborough Head from Filey Bay. While the lighter shingle and sand moved south rapidly as a result of longshore drift, and was replenished as the cliff retreated, the larger cobbles and boulders, which often form steep storm beaches above the normal high tide mark, could only be moved any distance by high energy waves. Migration rates for larger grades would therefore have been relatively slow, although this may have been matched by a low

replacement rate. In Holderness, the scale of quarrying in any given year probably fluctuated depending on local demand and was usually measured in a few hundred tonnes. Over the longer term, however, the balance between accumulation and migration is still likely to have been severely disrupted and the removal of large cobbles and boulders which protected the base of the cliff may therefore have accelerated the high erosion rate for Holderness, which the Ordnance Survey recorded as already close to 2m annually in the later 19th century, a figure just exceeded by recent averages.

The connection between beach extraction and erosion was recognised and the practice led to a partial ban in 1869, some years after court cases in 1845 and 1864 had failed to curtail Sir Thomas Constable's rights, although in 1870 he licensed three Aldbrough men to take cobbles at the rate of 6d a ton and the family still asserted and defended their mineral rights at Spurn as late as 1925. This was a reflection of the income derived from the tonnage tolls, with cobbles fetching up to twice as much as sand and gravel at times (Mathison 2008). Very large quantities of shingle and cobbles had been removed at Spurn in the late 18th and 19th centuries, possibly at least 50000 tonnes in peak years, an indirect cause of the severing of the neck of the peninsula in the 1850s and undoubtedly contributing to its subsequent fragility (Brigham & Jobling 2013c). This would have been exacerbated by the removal of materials from the Holderness beaches to the north, as Spurn depended on longshore drift to replenish itself. A substantial length of the neck south of Kilnsea Warren was once again severely damaged by storm surges in the winter of 2013/14, only remaining passable at low tide.

Lime production

Limekilns are a relatively common class of monument, appearing on the First Edition Ordnance Survey in most parishes north of the Humber. They probably began to appear in the later 18th century, reflecting contemporary improvements in agricultural practice, which made use of quicklime to break up and 'sweeten' heavy clay soil. It would also have been used locally in building mortar, plaster, and for lime-washing chalk house and shed walls to make them waterproof; as well as to brighten and disinfect the interiors.

A number of examples of limekilns were recorded in Flamborough and Sewerby, but also occurred around the fringes of Bridlington in what are now built-up areas, as well as in open country in Atwick, Hornsea, Mappleton and Aldbrough. Very few visible traces remain today, suggesting that many were relatively primitive field kilns built by local farmers rather than more substantial commercial types.

Brick and tile production

Brick and tile were both imported to eastern England in large quantities from the Low Countries in the later 13th and 14th centuries, not as ballast as was popularly believed, but as a cargo in their own right (Smith 2001), with ships probably returning to the Continent laden with a local bulk cargo such as wool or grain. Importation was expensive, however, and local production quickly spread across the county wherever suitable clay could be found.

A number of centres were eventually located along the banks of the Humber exploiting alluvial clays at sites such as Patrington, Melton, and Barton on Humber, as well as inland across parts of the Vale of York, Humberhead Levels and the Derwent valley. The Grovehill area of Beverley close to the River Hull was also a major production centre in the medieval and early post-medieval periods. Brick was used early on for major projects such as the construction of Holy Trinity, Hull, and the city's defensive circuit, but became used widely for domestic buildings in the 17th century. Flat roofing tile, which was already widespread by that time, was replaced from that time by pantile of Low Countries design.

Plate 62 Former clay pit, Withernsea

On the coast, local production sites were located in Flamborough, Sewerby, Skipsea, Hornsea, Aldbrough, and Withernsea. Most of these were of relatively short duration, opening and closing in the 19th century: of the two works at Aldbrough, the last one had closed c 1915. By that time, there were few small local firms, with mass-produced

bricks of uniform quality being imported from the Midlands.

Milling

As an important arable county, the East Riding was home to a large number of mills. The open, windswept landscapes of Holderness and the Wolds were eminently suitable to support a large number of windmills, and every parish had at least one; most had several, far more than the less populated coastal hinterland of North Yorkshire. Despite the relatively flat topography of Holderness there was still a considerable number of watermills, although few in the study area.

Allison noted that the mid 19th-century 1st Edition Ordnance Survey recorded around 60 watermills in the county as a whole, compared with around 150 windmills, although increasingly the former were converted to alternative forms of power or to other uses such as sawmills (Allison 1970): it could be speculated that increased domestic and industrial demand lowered the water table, making them less reliable. A small number of horsemills were also built, with two examples recorded in Flamborough, and others in Hornsea and Easington, but these also suffered through competition from windmills.

As a relatively large settlement, Bridlington was home to a concentration of mills including three watermills established along the line of the Gypsey Race stream (Brigham 2011). These comprised the mid 18th-century Anti-Monopoly Watermill (later converted to form part of Medforth & Hutchinson's manure production business), Spring Mill, and Clough Bridge Watermill (later Victoria Saw Mill), the latter located just above the exit of the stream into the harbour.

Plate 63 Brick retaining wall of the lower mill pond of the medieval to early modern Spring Mill, the middle site of three located on the Gypsey Race, Bridlington

The Anti-Monopoly mill was an 18th-century form of early co-operative, built in opposition to established firms in an attempt to bring flour prices down. By contrast, the two latter sites succeeded medieval watermills established by Bridlington Priory on sections of the Gypsey Race which were probably partly canalised, with an additional feeder drain cut from the Priory/Old Town area to enter the stream immediately above Spring Mill to boost the sporadic water supply. Both mills survived the Dissolution in private hands and although their immediate subsequent history is unclear, mills operated on both sites in the 19th century.

The flow of water in the Gypsey Race was unreliable and the three watermills were 'twinned' with nearby windmills, each operated for much of the time by the same family firms, allowing corn to be ground by either wind or water power. Spring Mill and Clough Bridge Mill were, however, both converted to steam in the 19th century, although they may have continued to use water, allowing the sites of the windmills to be sold off for housing. Although Spring Mill continued to operate until 1914, Clough Mill became Victoria Saw Mill by 1882 and was subsequently powered by electricity generated in a turbine house built over the bypass weir, supplying sufficient excess current for new lighting on the Promenade.

Plate 64 Clough Bridge Mill, Bridlington, later Victoria Saw Mill, with mill pond below car park and mill channel entering building to left, the lowest of three medieval to early modern watermills

There were several further windmills elsewhere in the extended parish from Marton in the north to the abandoned medieval village of Hilderthorpe in the south, but of all Bridlington's mills, only Clough Bridge/Victoria Mill and its later turbine house survive above ground, although part of the brick retaining wall of the tail race of Spring Mill is extant and there are undoubtedly below-ground

traces on both sites, quite possibly including medieval remains.

Plate 65 Victorian turbine house attached to west end of former Victoria Mill, Bridlington, overlying culverted section of Gypsey Race

Medforth & Hutchinson's Bone Mill (later Hilderthorpe Steam Mill) was also established at the junction of Hilderthorpe Road and Station Road, crushing bone for fertiliser, and there was a neighbouring Roman Cement Works in the mid 19th-century. This included kilns for calcining limestone nodules, but they operated for only a short time until artificial Portland Cement manufacture replaced the demand for 'Roman Cement', which was a natural material produced from crushed limestone containing marl, or calcareous septarian nodules collected from sites such as Speeton Cliff and burnt in a process patented in 1796 by the clergyman James Parker. The Speeton Cliff site was certainly exploited by quarrymen supplying Hull manufacturers (see section on quarrying above) but may also have supplied other centres, including Hessle.

Elsewhere in the coastal area, many later mill towers had been constructed on traditional sites occupied by medieval or earlier post-medieval predecessors; of the recorded early mills which did not continue, the sites of a large number are not precisely known, although some linger on as placenames of fields or lanes.

Several medieval and post-medieval mills were built in Flamborough, at least one of which was rebuilt in the 19th century; another was built in Barmston at the deserted medieval settlement of Hartburn, giving its name to modern Watermill Grounds. Early windmills were also built in Little Cowden, Great Cowden, Hornsea Burton, Owthorne, Out Newton and the port of *Ravenserodd*, all settlements which have now been lost to coastal erosion. Several mills were also built in Roos, including one at Tunstall. Another at Ringbrough in Aldbrough parish was recorded as early as 1351 but only survives today in the placename Mill Hill. A modern windfarm has been built close to the lost site of Out Newton, a testament to the virtues of this very windy, exposed site with regard to wind power.

The increasing centralisation of milling into large modern plants located in towns, usually with good road and rail links, ensured that most of the windmills in the study area were increasingly redundant from the later 19th century onwards. By 1939, as elsewhere in the country, the vast majority had either been demolished or simply abandoned. Of the sites which survived to the end of milling, the brick tower of the late 18th- or early 19th-century Owthorne Mill, Rimswell, remains in a derelict condition. A late 18th-century windmill in South Field, Mappleton and used until 1905 has recently been converted into a dwelling with an ogee cap. At Mill Hill, Skipsea, the medieval mill — one of several in the parish — had been rebuilt by c 1550, and there was still a working example in 1895. The former Black Mill in Withernsea survived to be used as an observation tower or watch office in the First World War; this and several other mills in the parish were subsequently demolished. At Mill Lane, Hornsea; the first postmill was recorded in 1584, and other post-medieval examples are both known from documentary records and shown on maps of 1663 and 1864, the latter at the site of a brickworks occupied later by Hornsea Pottery, while the Old Mill in North Field, Aldbrough was rebuilt in 1685, a mill surviving there until 1905. A late 18th-/early 19th-century Midlands-type post mill built at Atwick was assisted by steam from 1889, but the expense of operation and the impact of competition presumably drove it out of use c 1900.

North-East Lincolnshire/Lincolnshire *(Fig 6)*

Lincolnshire was, and remains largely an agricultural county with less industry; originally producing food for its own population, in the post-medieval and modern periods the county produced large quantities of grain, root vegetables and other foodstuffs to supply growing markets outside the area, including London and the industrial towns of the Midlands (Wright 2000, 3). Certainly in the study area, modern industry has mainly been concentrated in Grimsby and Boston, historically major ports with international trading links and good connections with the national road and rail networks.

Largely because of the presence of a substantial agricultural hinterland and a formerly thriving fishing industry, food processing formed a

significant part of the local industrial base, including canning, smoking and freezing, with expertise in frozen food production a direct result of experience in preserving fish products. An important ice factory built in 1901 survives in Grimsby, derelict but complete with rare icemaking machinery; community efforts are being made to restore it as part of the regeneration of an area which formed the centre of the fishing industry.

Salt production

For millennia before freezing became the most common method of preservation, salt was the principal method of ensuring that fish and meat could be stored for long journeys and through the winter months, although drying and smoking were also practised (Went 2011). In the medieval and post-medieval periods, salt was also used as a mordant (fixative) in cloth dyeing and as a glaze in saltglazed pottery production. Although the coastal margin has primarily been used for agricultural purposes, the low-lying coast of Lincolnshire with its extensive areas of saltmarsh, mudflats and tidal creeks has proved ideal for salt production from the forced evaporation of brine at intervals from the later Bronze Age to the 17th century.

On the Lincolnshire coast, seawater may sometimes have been collected in shallow 'sunpans' to allow the sun to concentrate the brine through evaporation, moving it into further pans of increasing concentration until it could be tapped off and stored before being placed in small, shallow evaporating pans. These were of clay in the Iron Age and Romano-British periods, supported on clay stilts or cylinders over a heat source, although lead was introduced by the Romans, and used in the medieval period until replaced by iron. This may have been the principal method employed along the North Sea coast in the early period of production, where a number of sites have been identified (see below).

Alternatively, salt-rich silt or sand was collected and placed in trenches or ditches with seawater added to wash out the salt, a process known in the medieval period as *muldefang*, a term which is referred to in a 1375 probate inventory in Marshchapel (Maybury 2011, 208), and probably derives from the Middle English *molde*, 'earth' or 'soil' + *fange*, 'seize' or 'capture'. The desalinised silt was then heaped nearby in mounds while the concentrated brine was again tapped off and stored; this process was adopted in the late medieval industry in the Wash, where large silt mounds are present from Wainfleet to Wrangle (see below).

Elements of the salt industry have been investigated archaeologically, including the remains of saltern mounds, collection pits and channels of different periods, accompanied by the recovery of artefacts, including the remains of clay evaporation pans, supporting stilts and other items (collectively known as *briquetage*). A number of sites were uncovered naturally by wind and waves along the North Sea shore prior to the adoption of beach replenishment to protect the coast; deposition between Mablethorpe and Skegness has covered all of the sites in the intertidal zone between these settlements, together with monuments of later periods. It is doubtful if these sites will be exposed again unless the cycle of beach maintenance is abandoned as a sea defence strategy.

On the North Sea coast, the two main areas associated with the salt industry in the study area between the Humber and Gibraltar Point were the medieval sites located between Humberston and Saltfleet in the north-east and the Iron Age and later Iron Age/Romano-British saltmaking area further south around Ingoldmelds and Chapel St Leonards.

The evidence for the earlier production period included both structural and artefactual remains (briquetage), while artefactual evidence alone has also been recovered from Skegness. This is, however, not an accurate representation of the original extent of the industry, but has been artifically skewed by the proximity of the Iron Age and Romano-British coastline in the south to the present alignment, leading to the exposure of sites on the foreshore or during groundworks. In the northern area and the Wash, where there has been considerable post-Roman reclamation and natural deposition, evidence for the salt industry is certainly present, but lies outside the study area boundary. A late Bronze Age/early Iron Age site has been identified at Newton Marsh, Tetney, for example, while Iron Age/Romano-British sites are present in the Immingham/South Killingholme areas and north of Wrangle in Low Ground. Other early saltern sites probably remain to be discovered along the former coastline in the northern fen district between Wainfleet and Friskney, although it is likely that some salt production also took place on the intertidal sand banks to the south, such as Long Sands and Toft Sands (McAvoy 1994, 136).

Relatively few early saltern sites were recorded outside Ingoldmells; the area has, however, been identified as that referred to as *Salinae* by the Roman geographer Claudius Ptolemy c AD 122 (Strang 1997, 23). A substantial example of a saltern has been examined in Chapel St

Leonards, but within the main concentration in Ingoldmells, several sites of Iron Age through to Roman date have been noted. Most of these were located in the intertidal zone, but several were located inland near Ingoldmells and Skegness on the site of presumed former tidal creeks; some were only recognised through the discovery of briquetage, often through the cutting or cleaning of drainage ditches or construction work.

There are also a large number of other sites of the period from Ingoldmells, including ditches, occupation sites, as well as undated cropmarks and earthworks, which on balance are likely to be of the same general date range, although some examples may be earlier Iron Age or medieval. Romano-British pottery, coins and other artefacts have also been recovered. A 'prehistoric' site consisting of possible hut circles was identified on the foreshore in 1907 at Ingoldmells Point, and this may represent the site of a settlement occupied by salt production workers: the industry was probably seasonal, however, and the inhabitants were probably also engaged in farming and fishing, in common with other locals not engaged in salt manufacture.

Further discoveries, or a programme of active investigation, may enable reconstruction of the coastline during the Iron Age and Roman periods; it is clear from the saltern locations that it would have included a series of tidal inlets stretching at least 1km inland in some instances, similar to the coastline which has been revealed in North Lincolnshire in the Immingham area (Buglass & Bradley 2006).

There was a continuation or resumption of salt production in the medieval period, its importance reflected in the placenames Saltfleet and Saltfleetby, with salterns identified in Skidbrooke, Chapel St Leonards, and Ingoldmells. In the north, the early medieval coastline was set well back between Tetney and Cockerington, with the area to the east still being being saltmarsh, but this was where saltmaking initially took place; 25 saltpans mentioned at Fulstow in 1086 were actually located on saltmarsh which subsequently became part of the daughter parish of Marshchapel, an important local saltmaking centre (Maybury 2011, 21), although a 10th-century saltern was identified south of Fulstow church in 2011 (ibid, 204), considerably to the west of the main concentration. This presumably reflects the nature of the deeply indented coastline, with creeks extending some distance inland before sequences of more extensive seabanks were constructed to protect the land on a larger scale than previously, rationalising the line marking the boundary between established dry land and salt marsh.

Plate 66 Site of ploughed out medieval salterns Tetney

Saltmaking was an important industry, with the National Mapping Progamme identifying c 200 waste mounds (*holmes* or *maures*) between Humberston and Saltfleet (Grady 1998), some of which were still of considerable size in the mid 20th century, demonstrating that the *muldefang* process was in use. Saltfleet Haven was an important exportation centre for the finished product; local saltmaking had begun at least as early as the 12th century at Holmes Hill north-west of Saltfleet village and salterns probably extended around the haven basin, with the silt waste-product almos certainly contributing to its slow shrinkage. Further south, a saltern at Chapel St Leonards included 13th-century pottery, the remains of five evaporation pans and brine channels. Another site at Ingoldmells consisted of an undated evaporation pan which overlay an Iron Age saltworks, while a second site included saltpans visible at low tide until it was covered as a result of the beach replenishment process adopted in the 1990s. Although the current state of archaeological knowledge suggests that the industry did not reach the extent it enjoyed during the Iron Age, further sites almost certainly remain to be investigated or correctly identified; a site at Huttoft was undated, for example, but was located on the seaward side of the medieval/post-medieval seabank.

Salt production on the North Sea coast had largely ceased by the 15th century, although '…salte cotes, where the chiefe and finest salte was made…' were reportedly destroyed in the great storm of 1571, which included the almost entire loss of the settlement of Mumby Chapel. Further north, production continued at Marshchapel until the early 17th century: a 1595 map of Fulstow and Marshchapel by the surveyor William Hayward showed the location of local salt production areas, while an accompanying text stated that:

> ‘The round groundes at the easte end of Marshchappell are called maures and are first framed by layinge together of great quantities of moulde for the making of salte.
>
> When the maures grow greate the salt makers remove more easte and come nearer to the sea and then the former maures become in some fewe years good pasture groundes. Those that have cotages upon them are at this presente in use for salt.’ (Maybury 2011, 26).

This clearly suggests that the process was entwined with the reclamation of land, with the silt mounds (*maures*) successively turned over to agriculture as they were abandoned, while those nearest to the sea and the active *salt cotes* were the location of the saltmakers’ cottages. The filtration units and evaporation pans were presumably also moved seaward on a regular basis: probate evidence suggests that each site only had one evaporation pan, as these were expensive items, averaging 25–30 stones of lead (Maybury 2011, 224). Among the items commonly listed in the probate inventories of the Marshchapel saltmakers, such as carts, harrows, lead pans, and other paraphernalia, unused stores of *mould* (unfiltered silt) and *turves* (peat blocks used for fuel brought by boat from the Humberhead Levels) were also considered of sufficient value to be included.

The 1595 survey, though, came at the end of the industry in Marshchapel, which itself was the last North Sea coast production site: saltpans are recorded in a Marshchapel will dated 1607, but the last three salters, the Ramsley brothers, appear to have given over by 1618, at which time all three were left money, suggesting they were poor: all three had been in debt a decade before, as had several other salt producers. Salt production had been concentrated into fewer hands during the course of the 16th century, with the saltmaking process relying on a few individuals or families, as numbers dwindled through mortality and either the failure of male lines, or the reluctance of heirs to continue with what appears to have been an increasingly unprofitable exercise as competition from Cheshire, Scotland and elsewhere intensified (ibid, 213, 237–8).

By the end of the period, reclaimed areas used for farmland were worth far more than saltmarsh used for salt production, and the economic benefit probably persuaded most landowners to maximise their profits. The salt producers, who only rented the land, would have had no say in the decision. Increased silting on the coast would also have been a perennial problem, and it may have become increasingly difficult to move eastward as saltmarsh rapidly accumulated. This was not just a problem affecting the saltmakers: havens such as Saltfleet were also increasingly suffering from silting (Section 6).

In the Wash, a large number of salterns were established during the later medieval period, perhaps reflecting a gradual shift in production from the North Sea coast (Buglass & Brigham 2007). Such a shift may have been the result of rising sea levels or climatic change: the later medieval and early post-medieval periods certainly saw dramatic losses of land along the Humber and North Sea coast of Lincolnshire, with a number of settlements lost, including Old Skegness. The intertidal location of the saltmaking industry ensured that it was particularly at the mercy of changing conditions, and it perhaps eventually became uneconomical to continue in its old location. The Wash, by comparison, was more sheltered from direct storm damage, although siltation caused the incremental expansion of the saltmarsh and the eventual blocking of important harbours such as Wrangle and Wainfleet Havens, affecting both salt production and transportation, certainly by the 17th century.

The establishment of an important area of medieval salt production along the north shore of the Wash probably assisted Boston to develop as a substantial exporter of Lincolnshire salt by the early 14th century. The presence of 31 taxable saltmaking sites in Wainfleet is referred to in the Domesday survey (1086), while both Wainfleet and Wrangle had significant havens based around tidal creeks leading from the Wash.

Wrangle Haven and Boston were handling salt as early as the 14th century, with Boston probably also receiving products from sites located on the North Sea coast for onward shipment. Salt from Wrangle was shipped to Yarmouth for use during the Michaelmas herring fair during this period; one of a number of saltern sites recorded at Wrangle may have had a medieval origin, as both early and later medieval pottery were present, although this could simply reflect the presence of a pre-existing settlement close to a later production site. The centre of another local early salt production district producing salt by the 11th century lay outside the study area to the south of the Wash around Bicker Haven, served by an important inland harbour at Surfleet.

None of the early medieval sites has been located in the Wainfleet and Wrangle areas, but there is plentiful evidence for a later medieval/early post-

medieval industry, with an important area of small preserved linear mounds surviving north of the A52 at Wainfleet St Mary and Friskney. The industry was located on the inland edge of the growing saltmarsh which formed in front of a contemporary seabank; this has subsequently been ploughed away, and the location of the salterns therefore reflect the position of a lost late medieval/early post-medieval shoreline, some distance in front of a better-preserved earlier medieval bank. The lost bank would have continued north of the present A52 before trending south-west beyond Friskney to return inland along the line of an inlet on the boundary between Wrangle and Old Leake, which led to Wrangle Haven.

Detailed investigation of an area of salterns at Wainfleet has revealed that seawater was collected in ponds at high tide and run from there in pipes to wells or sumps close to the salterns. Dried sand and silt containing concentated salt was raked from the foreshore and salt extraction ('sleeching') was undertaken by washing through the sand/silt mixture with the collected seawater through peat blocks laid in clay-lined tanks cut into the ground surface. The concentrated brine ran from there directly into deeper circular collection vats; the brine was then allowed to settle out final impurities and removed for evaporation in heated lead vats. The salterns were often in pairs, with the waste sand and silt shovelled out to form the mounds (McAvoy 1994, 140–1).

Plate 67 Area of red soil (rear) on site of one of many late medieval/early post-medieval salterns in, Wrangle and neighbouring parishes

The ploughed-out remains of larger mounds mark a second concentration at Wrangle Tofts; more isolated examples have also been identified in neighbouring Old Leake and Benington. These former spoilheaps, consisting of silt and sand from which the salt has been extracted in the repetitive *muldefang* process were later ploughed out to fertilise the fields after the area had been reclaimed for agriculture, just as many of those on the North Sea coast were levelled. Although the production process was probably the same as at Wainfleet, the large mounds in these areas are more usual than the small spoilheaps which characterise Wainfleet, closely resembling those located elsewhere in the fens at sites like Quadring in Bicker Haven and on the east coast at Tetney and Marshchapel. On the surface, the ploughed-out sites consist simply of soilmarks and/or spreads of briquetage, ash and clinker although several have been investigated. Among the production sites, areas of possible settlement have been identified; although these may represent the habitations of salt workers, this would almost certainly have been a seasonal or part-time activity and the inhabitants are likely to have been involved in other occupations, principally fishing and farming.

Those sites which have been examined or fieldwalked near Wainfleet and Wrangle have generally shown evidence for use in the 15th/16th century. Although the industry continued in the Wash longer than it had on the coast, the rapid build up of silt as a result of rising sea levels closed off Wrangle Haven and presumably choked the water supply to the salterns, making it uneconomical to carry on. Ironically, the deposition of silt in the area benefited landowners by giving them the opportunity to reclaim land for agricultural use.

Several of the salterns at Wrangle may have remained in use just into the 17th century, but they were all abandoned some time before 1641 when the construction of a new seabank further to the south closed off the area completely, and the area was divided onto fields after the mounds of waste silt had been ploughed out. After this date, salt was probably brought mainly by land from Cheshire or by sea from Scotland, ending millennia of saltmaking in Lincolnshire; the later post-medieval/early modern herring industry used salt from the Cheshire works before freezing was introduced. The line of the former waste heaps can clearly be seen from the air as a broad band of reddened soil crossing the modern ploughed fields at an angle.

An important aspect of the dispersed salt production industry would have been the transportation of the finished product to a suitable market from a number of locations and the transport of turf cut from the surrounding fens for use as a fuel and for filtering brine. The remote nature of the Lincolnshire coastline in relation to land routes may have made the use of navigable drainage dikes and inshore waters one possible

choice for transportation, but there were frequent lanes and tracks extending back from the seabanks. A medieval saltern site identified at Chapel St Leonards was, for example, located at the point where a road (Trunch Lane) reached the seabank, suggesting that land-based distribution was also possible, with the salt loaded onto carts and transported to more local markets: 'salt carts' are frequently mentioned in probate inventories from Marshchapel, which were certainly used to collect the raked up dry finished product, and may also have been used for local distribution.

Salters from medieval Fulstow may also have traded at least as far inland as Gainsborough, and *Salters Way* (now Fire Beacon Lane), which follows the boundary with Grainthorpe may well have been the initial part of the route they followed (Maybury 2011, 236).

The will of Christopher Dawson (1591), however, also mentions a 'sea card (chart)', suggesting the possibility that some was transported by sea (Maybury 2011, 101). In the medieval and early post-medieval period, and possibly earlier, much of the salt was probably collected by small coastal vessels from the various sites along the coast and then transported to larger harbours such as Boston and Grimsby, either to tranship it for export or for inland distribution through the road system radiating from the major harbour towns.

Landing places were located around the mouths of streams cutting through the seabank, although beaching may also have been an option (see Section 6). In addition to Saltfleet Haven, other suitable sites may have been located to the north at Tetney Haven and Mare Haven, further south at Huttoft (where an undated saltern site was located) and as discussed earlier, in the Wash at Wrangle and Wainfleet Havens.

Quarrying

Plate 68 Area of former clay pits, Skegness

Although Lincolnshire as a whole has resources of ironstone, coal, and good quality building stone, as well as sand, gravel and clay, extractive industries do not feature greatly in the study area, largely because of the lack of comparable extractable materials in commercially viable quantities along the coastal strip. A large number of post-medieval or early modern clay pits on the foreshore at Mablethorpe, Sutton-on-Sea, Huttoft, Ingoldmells and Skegness, some associated with trackways, could have been cut to remove clay for a variety of purposes, including the construction or repair of sea defences, or, less likely, for use in brick or tile production. There is a possibility that they were created for shellfish storage, in which case the clay was a by-product, but they were clearly deliberately located on clay outcrops.

Brick and tile production

Brickmaking, widely practised in the Roman period, reappeared in the 14th century and had become a substantial industry in the county by the late medieval/early post-medieval period, with sites mainly located along the Humber shore where suitable clay was plentiful and the products — brick and pantiles — could easily be exported. Along the North Sea coast, however, production appears to have been limited, with only six 19th-century brickworks appearing in the Phase 1 and Phase 2 gazetteers. The number of brickworks had already begun to reduce by the end of the 19th century, with the remainder closing in large numbers before 1914 and most of the remainder by 1939. The decline was largely due to competition from the great Midlands brickfields of Peterborough and Bedfordshire, producing 'flettons' from clay containing carbon and hence requiring less fuel to achieve a thorough firing.

Like most of the later brickworks, those located in eastern Lincolnshire used permanent 'Scotch' kilns with their, characteristic brick arches, rather than more primitive clamp kilns. Four of these sites were in Cleethorpes, using coal brought by train, the others were at Theddlethorpe St Helens (closed by 1906) and Anderby (closed by 1951), although there may have been more which have not been recorded.

The westernmost Cleethorpes works, now partly beneath the Blundell Avenue ground of Grimsby Town FC, and the brickworks in Brickyard Lane, Theddlethorpe St Helens, both included a windpump to clear water from the quarries, and this would have been an essential feature in an area with a high water table based on impermeable clay. Parts of the claypits at the Blundell Avenue brickworks and two sites on Grimsby Road (Beaconthorpe North and

Beaconthorpe South) were still visible well into the 20th century, while a pair of Scotch kilns and a chimney still stood at the Beaconthorpe South site until the 1970s. The fourth Cleethorpes site, in Mill Road, included a tramway, but the area of all four brickworks has now been built over leaving no visible trace, although Chapman's Pond hides part of the claypit of Beaconthorpe North.

The production site in Anderby may have been established by the 1830s and operated until the middle of the 20th century, although only a clay extraction pit remains as a feature of a modern housing estate. Bricks were still handmade in the 1930s.

Other brickworks were located just outside the study area, at Sutton-on-Sea, Skegness and Friskney, for example. The first of these sites, at the junction of Brickyard Lane and Alford Road, has a well-preserved Scotch kiln, wind pump and the remains of a clay pit, now a lake within a permanent caravan park. This site worked between the 1860s and 1930s, engaged in producing bricks for the expanding coastal settlements of Mablethorpe and Sutton.

A large number of clay pits were recorded on the foreshore; these were particularly common in Mablethorpe, but examples occurred in Ingoldmells, Huttoft and Skegness. These may have been 'borrow pits' excavated for repairing the seabanks, although they may have been quarries for brick- or tilemaking.

Milling

As an agricultural county, Lincolnshire historically had a large number of flour mills, with around 500 known windmills dispersed around the county, and a smaller number originally powered by water located mainly in the west and on the Wolds; some of the watermills were engaged in cloth fulling and paper manufacture rather than flour production (Wright 2000, 8). Although small-scale local milling generally collapsed in the years between c 1900–39 in favour of centralised industrial-scale processing at sites such as the Victoria Flour Mills, Grimsby, the county still has a large number of restored working mills with their distinctive white-painted ogee caps, and many derelict or converted towers also survive.

As the coastal strip originally consisted mainly of large areas of grazing marsh and saltmarsh, particularly in the north-east and along the shores of the Wash, mills constructed before the late 18th century were naturally dispersed in inland areas which were either unreclaimed or had been reclaimed much earlier and had time to settle. Mills were therefore located closer to the grain producing centres as was to be expected. Despite this, some mills were constructed inside the study area boundary including areas which had been reclaimed; those which remain include examples at Saltfleet, Trusthorpe, Mablethorpe, Wrangle, Freiston and Gedney, with several demolished sites in Cleethorpes, Mablethorpe and Freiston.

Plate 69 Disused windmill, Freiston

Saltfleet Mill was originally of late 18th-century date, but was rebuilt and added to in the 19th century; unusually, it remained in operation until 1951 before conversion to a dwelling.

The surviving mill at Mablethorpe, now part of a house, was the final replacement of a post mill which stood on the site and operated until 1935. Other surviving mills lie immediately outside the study area in Addlethorpe, Sutton-on-Sea, Huttoft, Croft, Wainfleet All Saints, Wainfleet St Mary, Butterwick and Friskney.

5 FISHING

Fishing vessels

North Yorkshire/East Riding of Yorkshire

The history and development of traditional fishing vessels in the Yorkshire region is a complex subject, with little surviving archaeological evidence for earlier types of vessel, although pictorial and documentary sources, including early eyewitness accounts, do supply much useful information from the 17th century onwards. A particularly useful series of articles has been produced by D.E. Whittaker of the Yorkshire Coast, Sealife, Fisheries & Maritime Archive & Museum (yorkshirecoastmaritimearchive.co.uk), while there has been considerable interest in the development of the coble (notably McKee (ed) 1978).

From at least the 16th century, and probably for a much longer period before that, the Yorkshire fishing industry used variations of the distinctive 'Northumbrian' coble for general all-year work and larger two- or three-masted boats for offshore and long-distance fishing. Reasonable, but dwindling numbers of the principal types of coble still survive, including several restored to sailing condition.

The coble was a much smaller open vessel than the offshore boats of the 'first class fleet' (see below), although larger types were already appearing in the early 19th century (McKee (ed) 1978). Several versions were developed, including double-ended designs, but all had common principal constructional features, reflecting a single ancestor. Although mostly used for fishing, slimmer and faster black-painted pilot boats and 'foys' (tenders) were developed from the same basic design north of the study area in the ports of the Tees, Tyne and Wear. Most of the variants probably date to no earlier than the late 18th/19th century when a revival in fishing encouraged investment, while the 20th century saw adaptations for motorisation.

Cobles are often considered to have developed from early Anglo-Scandiavian ('Nordic') shipbuilding traditions, although there are aspects in common with later Dutch construction. The generic name first occurs in the form *caupallum* in the late 7th-century *Life of St Columba* (2:28), written by Adamnan, Irish-born bishop of Iona, who appears to have used the word deliberately to distinguish it from other types of boat referred to elsewhere in his text as *navicula* (Latin 'small ship'). The next surviving occurrence appears c AD 950 as *cuople* in glosses to an Old English translation of the Lindisfarne Gospels (Matthew viii.23). *Caupallum*/*cuople* is not an Anglo-Saxon formation but is almost certainly either one of a very short list of loanwords derived from Latin, in this instance, *caupulus*, 'small boat' (Griffiths 2008, 15–64), or from a latinised spelling of an Old Irish/Old British cognate: McKee drew attention to the Welsh *ceubal* and Breton *caubal*, meaning 'ferry' or 'skiff' (McKee (ed) 1978, 4), linguistically identical to *caupallum*. but also with the meaning 'hollow' in modern Welsh. The probably related Latin *cupula*, 'small cup', suggests the same general sense in both the native British languages and Latin, that of a small cup-shaped boat.

The name appears more frequently in the medieval and early post-medieval period, particularly in Scotland, but it is unclear whether these references were to a boat resembling the modern coble at this stage. On the east coast of Scotland, 'cobles' are still used for riverine salmon fishing; these have some common structural characteristics to the Yorkshire/Northumbrian coble, but are of quite different appearance (McKee (ed) 1978, iv). This suggests a common ancestral class of small boats to which the name was applied, with divergent later development as the two geographically separate regions pursued different fishing traditions and adopted local boatbuilding technologies and materials.

The first reference from the study area was to a coble based at Hornsea in 1528; other references exist from the second half of the 16th century, including wills and probate inventories, clearly demonstrating that the name was in common official usage by that time. A letter to Sir Thomas Chaloner of Guisborough from c 1600, signed 'H. Tr' by an unknown correspondent (British Library Cottonian MSS Julius F.vi, folio 433b), describes a coble as *'…*built of wainscotte…two men will easily carry yt on lande betweene them....'.

The term 'wainscot', from the medieval Dutch *wagenschot*, was eventually applied to quarter-sawn oak boards and panels, used to decorate the interiors of buildings. Crucially, however, wainscotting was originally riven (radially split) oak boarding, and medieval clinker-built boats were built using this material. Radially-split timber was strong, rot resistant and dimensionally stable as well as thinner and lighter compared to sawn or tangentially split boards, which were also prone to rot and warping. Although large quantities of iron nails were required, less precise carpenty was needed, as there was considerable overlap between the strakes which could be waterproofed using 'luting', usually twisted horsehair soaked in

pitch or resin. Clinker planking had the added advantage of catching some of the spray moving up the hull sides.

The 'H. Tr' reference could therefore give a clue to the construction of the early coble at a crucial point in its development. Using radially-cleft planking would certainly explain why boats of the period could easily be carried by two men, which would not be the case with later boats, built of thick, sawn larch planks on oak frames.

Plate 70 Earliest known accurate drawing of small coble being manoeuvred on a wheeled trolley, probably at Whitby, R & D Havell for 'Costumes of Yorkshire', 1814

Plate 71 Drawing of coble made during Yarmouth fishing fair, William Cooke, for 'Fifty Plates of Shipping and Craft', 1828

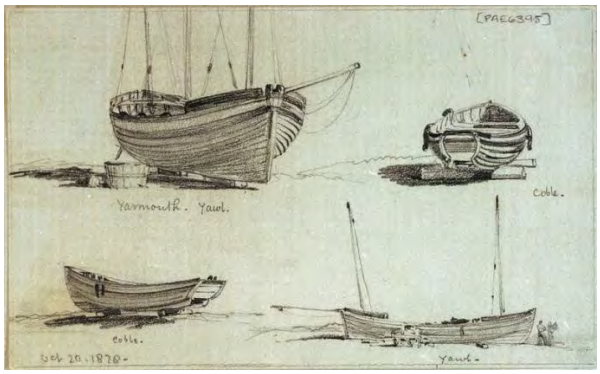


Plate 72 Drawing of cobles and other vessels, including a possible herring coble (bottom right) and a lugger (top left), William Cooke, for 'Fifty Plates of Shipping and Craft', 1828

A clinker-built hull built in the traditional way would be classed today as a flexible semi-monocoque ('stressed skin'), with the ribs added later to hold the shape under pressure rather than primarily to provide strength; the ribs could therefore be widely spaced as long as they were braced across the top to hold the hull sides apart. Semi-monocoque hulls lose strength when cut, however, and it is quite likely that the earlier cobles were double-ended as a strong joint between a square stern and the cut ends of the thin and flexible boards of the hull sides would have been difficult to achieve. The square stern familiar in modern cobles was probably only adopted following the introduction of more rigid hulls built of thicker sawn planking, which would have allowed a stronger joint to be made between the plank ends and the stern frame. The changeover probably occurred not long after the 'H. Tr' letter when cheaply produced sawn softwood began to be imported in large quantities to remedy the increasing scarcity and expense of suitable homegrown oak from the late 16th century.

The remains of a small mid 18th-century coble were recorded in a dry dock excavated in Church Street Whitby in 1998 and had clearly already reached something like the modern form, although only the bottom planks survived (Buglass 1999). The first to be illustrated in detail appeared in a coloured aquatint drawn in 1813 by George Walker for *The Costume of Yorkshire* (1814), which shows a small square-sterned coble on a wheeled carriage being manoeuvred along a beach by three fishermen, possibly at Whitby. The first accurate depictions, however, are contained in several detailed etchings of Yarmouth foreshore at low tide in Edward William Cooke's *Fifty Plates of Shipping and Craft* (1828). A number of labelled 'cobles' are shown beached alongside two and three-masted 'yawls' and other boats: the late October date of the drawings indicates that these vessels were in use during the annual Michaelmas to Martinmas herring fishery, and that their characteristic features have remained unchanged. Cooke also confirms that cobles were in use well beyond their home area, since one illustrated boat has what appears to be 'YARM' on its stern, presumably an abbreviation.

Sailing cobles may originally have been square rigged with the sail carried on a long yard which could be braced from side-to-side or nearly fore-and-aft, although by the 19th century they used a modified form, the lugger rig. This consisted of a square dipping lug sail carried on the foremast, which was well forward, although it could also be

rowed, and there was usually a shorter spar for use as a bowsprit with a foresail or jib, or as a shorter mast when less sail was needed. The yard carrying the sail was usually orientated broadly fore-and-aft, although could be braced round, and it was set off-centre with the longer and higher end aft of the mast to carry a large asymmetrical four-sided sail, with no boom at the foot.

The lines of the hull clearly varied slightly between boatbuilders, the requirements of clients and fishing stations, based on the varying characteristics of local waters and different tasks, although over such a large region, these were surprisingly small, and boats were frequently transferred without apparent difficulty.

The clinker-built hull had only three or four larch side strakes, although later boats tended to be larger and deeper, with more strakes. The wide planks were not easy to bend to the very complex hull shape fore and aft and the hull therefore had an angular appearance in section, particularly when viewed from the bow, which was pronouncedly concave below the waterline and convex above. The earlier 'wainscotted' hull almost certainly consisted of a larger number of narrower and more flexible strakes which made the curvature easier to achieve, suggesting that the shape had been adopted unchanged when thicker sawn larch was introduced. McKee and other researchers have suggested that the coble ultimately derived from a skin boat design similar to the Irish *curragh*, although this is not necessarily the case (McKee (ed) 1978, 4–6). After the oak frames were added the resulting hull was stiff and strong rather than flexible, designed to take a considerable amount of battering both at sea and when landing in places such as Filey, Flamborough and Robin Hood's Bay, where the boats were beach launched.

In plan, the hull was at its broadest immediately to the rear of the midships section, tapering gradually to the transom stern, while the floor was quite flat, normally with two bottom strakes either side of a central keel plank or 'ram'. These features created a more generous space for the crew to work than a double-ended design allowed, which may have been one reason why the square stern was adopted, although it was also useful during beaching. The extra space and flat floor also allowed sailing cobles to be converted to carry engines with relative ease in the 20th century, which greatly increased the longevity of the design; later boats built to accommodate engines tended to be beamier to provide even more room, but the hull otherwise required little alteration.

In profile there was usually a considerable degree of 'sheer': the ends, particularly the bow, were upswept from the lower midship section to provide protection against high seas, although some, such as the preserved Bridlington sailing coble *Three Brothers*, have a much flatter profile, perhaps because those operating out of harbours were not required to cope with beach surf. The upper gunwale strakes carried the 'tholes' (pins) for the oars and sloped inwards ('tumblehome') to reduce the width at the top, partly to help keep the boat dry by keeping spray out, but also to reduce the distance between tholes for the oarsman, and perhaps to make it easier to haul pots and nets over the side.

The coble lacked a true full-length keel but the stempost curved round to terminate in a deep forefoot or short keel which extended just aft of amidships. Aft of this point, the floor sloped up so that the hull was only around half the depth compared with the bow, giving a characteristic 'wedge' shape in side profile. Twin 'draft' keels or 'skegs' were attached to the planking to either side and extended from the stern to amidships, slightly overlapping the rear end of the forefoot keel; these protected the bottom (and in later vessels the propeller) during beaching stern first, when the wedge shape of the aft hull enabled waves to lift it onto a simple wheeled axle. Attachment points at the end of the draft keels allowed lines to be attached for hauling the boats, although these were not universal.

In the standard coble the strongly raked square transom stern was given a tulip shape by the incurving 'tumblehome' of the upper strakes. The potentially weak junction with the sides was strengthened by a pair of horizontal plank braces or 'scutboards', the upper one being nailed over the gunwale. A long narrow rudder extending up to 1.2m below the bottom and balanced by a long tiller was hung from a pintle hole in the upper scutboard, with a lower pintle dropped into a gudgeon at the bottom of the transom; this system was designed to allow the vulnerable rudder to be unshipped quickly immediately before beaching. The elongated shape of the blade suggests a descent from a side rudder which was simply moved to a position at the stern, possibly before the square stern was introduced.

In the absence of a true keel, the rudder acted with the deep forefoot, assisted by the draft keels, to provide a grip against leeway and hold the boat on course both while sailing and when stationary during longlining or lobster potting. Extending the rudder below the bottom of the boat increased its aspect ratio (length in relation to width) which reduced drag and moved any turbulence to a

position behind the rudder blade, as well as improving the overall ability to turn (Mott 1997, 61).

Shorter, lighter cobles and double-ended versions ('mules') which could be handled by two men were built for summer salmon or shell fishing, or for general inshore work. The salmon coble had the same basic shape as the larger sailing versions, with a single mast but no bowsprit; this may have been the original form of the coble in the 17th and 18th centuries, as the trend in the 19th century was towards larger vessels. Under oars, the mule was considered to be more manoeuvrable close to the shore and was therefore ideal for working near cliffs and reefs, as well as being easier to beach, lacking the deep rudder of the sailing coble.

As the 19th century progressed, larger cobles ('ploshers') were developed in the 19th century for inshore trawling, and in Bridlington these could use the spar as a mizzen mast, as could the smaller winter cobles based there (McKee (ed) 1978, 26–8). The crew was often of three in a standard coble, four in the big cobles, with a steersman at the tiller when sailing, but when rowing, he used a pair of short oars, while the other crewmen each operated a single long sweep, made in two pieces. The big cobles generally carried a much smaller auxiliary boat called a 'calf' when long-lining (dialect pronunciation 'cawf', commonly spelled 'corf'). This appears to have been effectively a small coble, being c 10ft (3.0m) in length, capable of carrying two men, and could either be rowed or carry a mast and sail.

Plate 73 Scarborough herring coble 'Dora Ann', Ernest Dade, c 1900

Elsewhere, large double-ended cobles were also built to take part in the local herring fishery. As competition from smacks took hold, these were increasingly used as general purpose boats which could stay at sea for several days, while the large yawls of the first-class fleet, which required larger crews, could be laid up for maintenance or used for other purposes (see below). The herring cobles were the same size as the big cobles in Bridlington, between 30–35ft (9.1–10.7m) in length and of 8–12 tons, and were also worked by a crew of four. The hull could accommodate a second mast, although this was not usually stepped. Most were probably originally open, but many were eventually fitted with a short foredeck over a crew shelter for use on longer journeys or during bad weather. Pairs of long sweeps could be used to manoeuvre the vessel when the sails were not in use or there was no wind. Cooke's 1828 drawings from Yarmouth, if interpreted correctly, may show an early herring coble with both masts stepped (see below).

The double-ended design of the herring cobles probably made them difficult and uneconomical to motorise in the interwar period as more compact, affordable diesel engines began to appear, and they quickly disappeared. A few do appear to have been converted, including the Scarborough boat *Geoffrey*, used with an auxiliary corfe by the 'big game' fisherman Fred Taylor when tunny fishing was briefly popular off Scarborough and Filey in the late 1920s/early 1930s. Many of the smaller cobles were converted while new boats began to be built with adaptations to take a propellor shaft, usually by creating a tunnel between the draft keels, which helped to protect the blades when beaching. Mules also survived in considerable numbers as small workboats, and most of these were eventually motorised, although some smaller examples were left as rowing boats for purely inshore work. The propellor shaft was usually tunnelled through at the base of the sternpost, with the leading edge of the rudder shaped to pass immediately behind.

Unlike the yawls and herring cobles, therefore, smaller cobles and mules survived in relatively large but diminishing numbers through the 20th century. They have become increasingly rare as the ability to repair and build traditional wooden hulls has dwindled; modern replacement vessels tend to be of artificial materials such as glass-reinforced plastic, fibreglass or aluminium. The process was artificially accelerated when European Union payments were offered to reduced the overall size of fishing fleets. The first scheme, introduced in 1983, allowed decommissioned vessels to be either scrapped, used for other purposes or transferred outside EU waters, but the 1993 scheme which replaced it required the destruction of hulls or permanent disablement to prevent the vessel from going to sea, which precluded many heritage vessels from being preserved for other uses such as leisure, although a number were 'reassigned' for

preservation on shore or activities outside commercial fishing, such as carrying tourists or non-commercial fishing parties. Some ended their days in children's play areas or parks.

Ranked above the cobles of the inshore fisheries was the 'first class fleet' of larger boats which were capable of staying at sea for weeks or months at a time. These were often referred to in pre-1800 documentary sources as 'five-man cobles' or 'large cobles' (colloquially 'farman [five-man] boats'), suggesting a common ancestral link with their smaller counterparts (see below). This appears to be borne out by an early 19th-century model of a lugger from Staithes which is now in the Science Museum and clearly resembled a large coble in the shape of the hull.

The earliest reference to these boats is perhaps the 'H. Tr' letter to Sir Thomas Chaloner of c 1600, which referred to a 'five-man coble' from Redcar, north of the study area. Daniel Defoe's description of the annual Great Yarmouth Michaelmas to Martinmas herring fair in 1726 (Defoe 1927 edn) similarly referred to visiting 'cobles' from Scarborough and Whitby as open (undecked) boats capable of carrying 2–3 *lasts*, a traditional Dutch measurement for herring, which Defoe equates to 10 barrels (*crans*) of 1000 fish apiece. By contrast, the south coast vessels which traditionally visited Yarmouth from the Cinque Ports could carry 10 lasts although the latter were larger boats which stayed at sea away from home for extended periods and were paid by the number of fish caught, while the Yorkshire crews were hired by merchants and were paid a fixed fee for the whole season.

Defoe's description of the 'cobles' as open boats suggests that decks were a late addition, although this was not unusual: in the following century, the East Anglian yawls and other comparable types, such as the redesigned Scarborough yawls of the 1830s and the early Scottish 'fifies', were still deckless, with the crew presumably provided at most with a shelter under a short foredeck. In Scarborough the larger boats were increasingly referred to in registration records from the 1780s onwards as 'luggers' rather than 'cobles', reflecting the sail rig. There is no evidence that the actual design altered greatly despite the change in name, although the boats were becoming larger and may well have been decked by this time. To add to the confusion, the term 'yawl' was also occasionally used for boats built for the first class fleet, with an early occurrence in the town's regstration records in 1787, but this did not come into common local parlance until the 1830s when a new type of vessel was developed in Scarborough as an alternative to the older luggers (see below).

Plate 74 Science Museum postcard of early 19th-century Staithes lugger model

The early 19th-century Science Museum model, which presumably represents a contemporary original, is the only accurate surviving representation of one of these vessels. One of Cooke's 1828 illustrations of 'yawls' and cobles from Yarmouth may actually represent a visiting Yorkshire lugger, although it is perhaps more likely to have been a double-ended vessel from elsewhere, possibly Lincolnshire (see below). The model shows that by the time it was made the boats were fully decked over a bow cable locker, with a central hold and aft cabin, and with a flaring wineglass-shaped 'lute' stern (see below).

The large mainmast and slightly smaller foremast were fitted with fore-and-aft yards carrying large 'loose-footed' sails (without booms). The mizzen mast was much smaller and set far back, stepped against the port or starboard stern quarter to avoid the tiller and the mainmast when the latter was lowered onto a rest on the opposite quarter during some fishing operations. The Science Museum model suggests that the base of the small mizzen sail was stretched by a boom extending from the stern rather than the mast, and that all three masts had a topmast which could be used for additional sails. The extensive area of canvas, particularly the mainsail, required a large crew to handle, but provided considerable driving power, making these fast boats.

One or two small auxiliary cobles were carried on deck to undertake long-line fishing, check nets, retrieve fishing gear and land catches, and the function of the small mizzen sail seems to have been chiefly to hold the boat on course at times when the crew were otherwise engaged, whether

carrying long lines out on cobles or while drift nets were being hauled in. At these times the bows could be turned into the waves with the mainmast lowered, leaving the mizzen to keep the boat in position with little or no assistance needed from the rudder, while the skipper and an assistant baited new lines or attended to other duties. The boats might carry 30–40 long lines, each fitted with thousands of hooks which had to be individually baited.

As in the sailing coble, there was a considerable rise in the hull ('sheer'), particularly at the bows, to cope with heavy seas while sailing and beaching, with a deep forefoot designed to 'grip' the sea and act with the rudder and keel to prevent leeward movement. The main difference between the lugger and the standard coble, apart from size, was that while the latter had only a short keel at the forefoot and twin 'draft keels' to either side of the stern for beaching, the lugger had a full-length keel. A photograph of the model suggests that there were also bilge keels attached amidships, similar to the draft keels at the stern of the smaller cobles.

The aft end of the keel terminated in a sternpost which was attached to the transom and carried the rudder at c 30°, which although it was not at the rakish c 45° angle of a coble was still a long way from vertical. A wineglass-shaped false 'lute' stern was cantilevered aft of the transom by continuing the rear framing of the upper hull and deck, with a vertical slot for the rudder and sternpost to pass through. This arrangement increased the working space by extending the deck and also allowed waves to lift the stern when the boat was turned end on for beaching: the lute stern was adopted for the same purpose on some of the traditional south coast beach boats including those from the Hastings area of Sussex.

Plate 75 Filey yawl 'Amity', Ernest Dade, 1893

The hull planking covering the angle between the aft end of the keel and the sternpost formed a streamlined fin under the curve of the aft bilges and projecting stern. As well as helping the overall grip, this gave a fine 'run' towards the rudder, where the water was able to move smoothly along the aft end of the lower hull and pass the rudder without eddying, permitting a smaller blade area to be used (Mott 1997). On boats where the hull was full bodied in front of the rudder, a much larger blade was required to counter the resulting water turbulence. The balanced sail plan provided by the lugger rig and mast layout would in any case have required less reliance on the rudder, since the sails could be used to hold the desired course. The actual rudder shape was effectively a scaled-up version of that used on the smaller cobles and as discussed, this may betray its descent from a side rudder.

Like the cobles, the lugger hulls were clinker-built and constructed shell-first to around deck level before the frames were added. For structural reasons, they are likely to have been double-ended originally like the smaller cobles (see above) but any difficulty would have disappeared when sawn planks were substituted for split boards. Evidence from the Baltic region suggests sawn planks were being introduced into clinker building in the later 16th century, although they had been used for larger carvel-built ships for several centuries, leading to some clinker hulls being overplanked using the carvel technique (Nielsen 2010). Some of the last Scarborough yawls were treated in this way in the late 19th century, by which time East Anglian beach yawls and Northumbrian 'keelboats' were being carvel built from new.

Despite the name 'five man coble' or 'farmanboat', the crew of a lugger was often of six or seven, including a dedicated cook for long trips, and with one or two boys as assistants. The boats were substantial, and appear to have been getting larger: Scarborough 'cobles' like *Good Intent* (1765), 42 tons were increasingly replaced by vessels such as *Elizabeth* (1792), 64 tons, with the last recorded as a 'coble' being the *Xorphy* (1801), 60 tons. The change of name to 'lugger' began to be used interchangeably from c 1788 by which time the tonnage appears to have peaked, the boats being between c 45–60ft (13.7–18.3m) and of 50–65 tons displacement, expensive to build, crew and maintain.

The early distribution of the larger vessels is uncertain, although their presence in Redcar c 1600 suggests that they may have had a similar distribution to the smaller types of coble. However, the expense of operating these large

vessels and a potential reduction in the profitability of fishing as a Government 'bounty' (incentive) scheme for the herring fishery came to an end in 1830 led to the development of a smaller and more economical speculative design by the Scarborough shipbuilder Robert Skelton, adopted by others in the town in the following decade. Skelton's brother, John, was building smaller 'yawls' as early as 1830, starting with *Vigilant*, 17 tons, presumably to his brother's design: in common with other builders, however, he was still building large boats referred to as luggers, including *Integrity*, 64 tons, three years later.

Skelton was influenced by aspects of the East Anglian yawls visiting Scarborough for the local herring fishery; renowned for their speed and sailing capabilities, they would already have been familiar to Yorkshire fishermen engaged in the Yarmouth herring fishery. Several of Cooke's 1828 etchings from Yarmouth show two types of 'yawl' beached alongside smaller and clearly identifiable cobles. Cooke was a very accurate artist and his yawls bear little resemblance to the East Anglian type: close examination suggests that one illustration may actually show a a two-masted herring coble and a three-masted Yorkshire or Lincolnshire lugger (see discussion of Lincolnshire vessels below).

Although there is little surviving evidence to determine the exact characteristics of Skelton's design, it is known that the boats had just two masts. The presence of a central mainmast was generally considered an obstacle to fishing by the 19th century, particularly while hauling nets. The mainmast was replaced by a fixed mizzen, while reducing the overall size of the boats to a more economical c 30–40ft (9.1–12.2m) and c 17–23 tons. The original lute stern was also replaced by a cheaper double-ended layout while the hull was also deckless, both design features present in the East Anglian yawls.

Probably with reference to this, the boats were increasingly referred to as 'yawls', from the Dutch *jol*, rather than luggers, although the term had appeared occasionally from at least 1787. The name was used across the country for a variety of unrelated fishing vessels, which were usually, but not universally, two-masted: in a yawl rig, the foremast was usually placed far forward and the mizzen correspondingly far to the aft behind the rudder, carrying a much smaller sail which allowed control of the boat's direction through sail control rather than relying on the rudder.

Although initially popular, incremental changes to Skelton's original design began to appear within a few years, possibly because the expected recession following the end of the bounty payments did not bite as deeply as expected and larger boats were again a more attractive proposition. The small size of Skelton's yawls and the lack of a deck and crew facilities had limitations, particularly on longer trips. The boats also lacked a capstan to assist in hauling full nets. Larger hulls with holds, decks, capstans and lute sterns were reintroduced, with the construction of *Faith*, 46 tons and *Sarah*, 51 tons as early as 1840. John Skelton's *Three Brothers*, 58 tons, of 1843 demonstrates that these vessels had attained pre-1830 dimensions, although the larger area of clear deck and improved handling of the two-masted yawl rig were a clear advantage, the third mast was not restored, and the new name was retained.

By 1850, the redesigned yawls had reached 64 tons and by the 1860s, an overall length of 60ft, in an attempt to counter competition from cutter-rigged or ketch-rigged smacks of southern origin which had begun to appear in the 1830s–40s (see below).

Other local variants of the yawl appeared around this time including the Marshall lugger, a Whitby design of c 1850, named after its originator, and the Staithes 'yacker', a lighter version of the yawl, built mainly in Scarborough for work in shallower waters around the eponymous small but important fishing station.

In further response to the competition, the tried-and-tested lugger rig of the yawls was replaced from the 1870s, with the sails now carried on yards ('gaffs') set entirely aft of the mast. The large mainsail was effectively split in two as the upper part could be set separately as a topsail above the gaff. The reduced size of the individual sails was better suited to handling large boats with a small crew, an increasingly important factor as competition squeezed profit margins, although several crucial knots of speed were sacrificed as the canvas area of the driving sails decreased.

By the later 19th century, quite distinct types of carvel-built lugger were used in the Northumbrian part of the coble distribution area, where they were referred to as 'keelboats' to distinguish them from cobles, which lacked a true keel. End sections of three of these vessels were used as fishermen's sheds on Lindisfarne in the early 20th century, although only one survives. They were perhaps influenced by lugger-rigged 19th-century Scottish keelboats such as the small early single-masted double-ended 'scaffie', which was designed with a strongly raking stern to be beached like a coble, the larger mid 19th-century

straight-sterned two-masted ‘fifie’, and the ‘zulu’, introduced in 1879 which combined elements of the others. The first two vessels were clinker-built, but there was a switch to carvel in the 1870s, part of a general trend.

A few trawling smacks began to appear in the early 1830s; these were a southern design operated by crews hailing from ports between Essex and Devon, including Barking and Brixham. Trawling in northern waters began as a speculative exercise but smacks eventually spread up the east and west coasts into Scotland. The first boats to appear outside their home area on the east coast were attracted by the rich fishing grounds of Dogger Bank and other areas of the North Sea, including the ‘Silver Pit’ (part of a submerged post-glacial river system), where large numbers of sole were found c 1835 and subsequently exploited on an industrial scale.

Plate 76 Hull smack ‘Rising Sun’, subsequently wrecked near Easington, 1883, Hull Museums

The smacks, their incomer crews and what were seen as rapacious beam trawling methods were extremely unpopular in the North Sea fishing towns with their tradition of long-lining, although there had been isolated experiments with trawl nets in the area before by local men. The boats were, however, welcomed in Hull and Grimsby, neither of which had large indigenous fishing communities at the time, but were looking to expand, particularly after the railways arrived. Boston and King’s Lynn also adopted the smack design for shell fishing, shrimping and inshore fishing (see below). All four of these towns quickly began building their own fleets to the original southern design, with Grimsby and Hull owning c 800 between them by the 1870s. Further south, Yarmouth also adopted trawling and retained its role as a major fishing centre by building up a total of 700 smacks by the late 1870s. To operate such large numbers of vessels, Yarmouth owners adopted the practice of ‘fleeting’ originated in Barking, where groups of several dozen vessels stayed at sea for weeks, systematically trawling areas tgoether while the catches were taken ashore in fast cutters or steam vessels. Fleeting was adopted in Hull and Grimsby, with Scarborough eventually sending vessels to join boats from the larger ports in a belated effort to save its first-class fleet.

Plate 77 Line fishing for cod from the deck of a Grimsby smack, 1883 (‘Illustrated London News’)

Smacks (from the Dutch *smak*) were originally relatively small one-masted cutter-rigged boats used for for inshore whitefishing and shellfishing in southern estuaries and coastal waters. Ultimately, smack design probably evolved from Dutch prototypes before the middle of the 18th century, starting in the south-east where the oldest still in sail (*Boadicea*, Essex) dates from 1808. The rapid spread along the south, east and west coasts reflects the strength, adaptability and economy of the basic design.

The mainsail was hung between a gaff (yard) and a long boom, with foresails and jibs set on a long bowsprit. As larger smacks were introduced during the course of the 19th century to move further afield to the North Sea and Icelandic fisheries, a larger sail area was required to drive the boats. The mainsail boom was, however, approaching its length limit while the increasing sail size was becoming difficult to handle without a large crew. Smacks involved in offshore fishing therefore adopted two masts with a ketch rig, and it was in this form that most of the boats were deployed in Yorkshire. In the ketch or ‘dandy’ rig, the mizzen mast was set further forward than in the yawls, restricting the length of the main boom; the mainsail was therefore narrower than before but a topsail carried above the gaff increased the area of canvas, effectively splitting the sail into two, which was easier to handle with a smaller crew. The boats sacrificed a few knots compared to a lugger of the same size with its larger mainsail, but the forward position of the mizzen mast meant that it could carry a longer boom than a lugger-rigged yawl and therefore supported a larger sail which acted to drive as well as control the boat. During trawling, the mainsail could be stowed and the boom raised to clear the deck while the mizzen together with foresails or jibs in

front of the mainmast were used to hold the vessel into the waves and drive it forward. The hull form was standard and simply constructed, with a straight vertical stempost, considerable sheer curving up to the bow, a transom stern, and uncomplicated lines, allowing it to be scaled up or down easily. The oldest surviving smack still sailing, the Essex-built *Boadicea* was originally clinker-built, suggesting that the type was initially built by that method, but they were carvel-built from around the middle of the century. As in the yawls, there was a bow locker, central hold and rear cabin, and the larger smacks could carry a small auxiliary boat.

Long distance vessels involved in the North Sea and Icelandic fisheries were fitted with a central well to hold seawater for storing live fish after their swim bladders had been punctured. Holes bored through the tanks and the hull sides allowed water to circulate, replenishing oxygen. In the later 19th century, many of these vessels were converted to carry ice rather than water; possibly only one English well smack survives, the restored *Pioneer* (1864), built in Rowhedge, Essex, although a wrecked double-ended vessel from Mablethorpe was similarly-equipped (see below).

The smacks employed in catching demersal 'whitefish' were operated with beam trawl nets rather than traditional line fishing. In trawling, the mouth of the net was held open by an elm beam c 36ft (11m) long, increasing in length later and replaced in iron, while the net was dragged along the seabed, catching everything in its path. The gear was stowed on the port side, taking up a lot of deck space, and was also difficult to 'shoot' and heavier still to recover until steam capstans came into use, just before smacks were supplanted by steamers. 'Otter trawling' appeared at the end of the 19th century, where the beam was replaced by two 'otter boards' arranged either side of the net mouth to keep it open as the boat moved forward; this arrangement took up far less room on deck and was pioneered by the early Scarborough steamer *Otter*, built in South Shields in 1888, and lost to enemy action in 1916.

The catches brought in by trawling could be so lucrative that competition led some of the surviving yawl owners in Scarborough to fit trawling gear, and the method was eventually adapted to catch pelagic herring using nets which were designed to float 'midwater' rather than drag along the seabed. Smaller smacks were also used in inland waters and estuaries to trawl for fish, shellfish, shrimps and prawns, prompting coble owners in Bridlington to adapt some of their vessels to carry smaller versions of trawl nets for inshore trawling, but this was banned in 1890 as the impact on fish stocks quickly became apparent.

With the industry expanding rapidly, Hull became a major builder as well as an innovator, building the first iron-hulled smack in the 1870s. Within a few years, however, both the smacks and yawls were facing competition from steam paddle trawlers, which arrived in Scarborough and Grimsby in 1881. Initially at least, these were tugs which began to fish when not required for their primary purpose, which ironically included hauling sailing boats out to the fisheries. They were not designed for lengthy offshore work and stayed fairly near the coast which also helped to conserve coal, but the real expansion of the powered fishing fleet began when screw propellers appeared. A few of the iron or steel smacks were converted to steam power, but this was not really an option for the majority, which were still wooden and two small to hold engines, boilers and coal bunkers as well as a fish hold large enough to make trips viable. One of the few late innovations adopted, as mentioned above, was the introduction of steam capstans on both the smacks and yawls, which took a lot of effort out of handling the nets and trawl gear. The later yawls also appear to have been carvel-built like the smacks in an effort to add extra speed, although in reality they were probably 'double-hulled' with the original strakes retained and covered in an outer sheath of edge-to-edge planks over a series of levelling fillets. Although laborious, this was easier than complete replanking.

Iron hulls and powered propulsion were clearly the future, and Hull had already begun to sell off its wooden smacks as early as 1888. The smack *City of Edinboro* (1884) is the last survivor of Hull's home-built fleet of smacks, trawling in the North Sea until 1897, when she was sold to Iceland; she is currently being restored in Norfolk by the Excelsior Trust. The *Bacchante* (1885), now *Sigurfari*, is the last surviving boat built in Burton Stather for the Hull fleet, she was also sold to Iceland in 1897.

The coastal towns were slow to adapt to the new method of propulsion, with Scarborough's last paddle steamer carrying on until she sank in 1910, while the last yawl was not laid up until 1917. The new generation of boats required specialist engineering yards to build, install and maintain them. Most of the traditional boatbuilders were unable to make the difficult transition from wooden to iron hull construction and either stopped production or concentrated on coble building. Large centres like Hull and Grimsby were able to develop a full range of facilities, but on the North Sea coast, only Turnbull's Whitehall

shipyard in Whitby carried on building large boats into the new era.
The appearance of new hull materials and screw propulsion led to the appearance of 'keelboats', a name already applied in Northumberland and eastern Scotland to larger sailing luggers to differentiate them from cobles, which did not have a true keel. Some of the early keel boats were converted smacks and were still two-masted, carrying auxiliary sails to hold the boat in position during fishing operations which did not require the engine; although eventually only a small triangular mizzen was carried, the foremast was retained. A small wheelhouse was also built over the crew quarters near the stern between the mizzen mast and central hold, which on larger vessels contained cabins to allow more room below deck for the engine room and boilers, an overall layout which remained unchanged through most of the 20th century until the arrival of stern trawlers in the 1960s, where the cabin was moved to the bow.

The finer lines of sailing boats and their deeper keel, designed to prevent sideways movement, were not as critical in powered vessels. As iron and steel began to replace timber, the lines of the hull became much fuller across the beam, as it now had to accommodate the steam plant, boilers and bunkered coal, but this also allowed a larger fish hold. Modern computer modelling has, however, enabled efficiency of hull shape to come to the fore once again to improve seakeeping qualities and fuel economy.

North-East Lincolnshire/Lincolnshire

There is relatively little available evidence for the earliest traditional types of fishing vessels used along the Lincolnshire coast. A 1565 survey by the Exchequer Commissioners found 49 undifferentiated ferries and fishing boats located in two clusters, the first between Ingoldmells and the shores of the Wash and the second in the Grimsby/Humber area. Most vessels in the northern area seem to have been between c 0.5–3.0 tons with crews of two or three at most, although those in the Wash and at Ingoldmells were larger, with two boats at 5–6 tons, and probably with crews of three (Public Record Office SP12/38/23; Pawley 1984, 168). These small boats could only have been involved in inshore fishing and a muster of fishermen and vessels compiled in 1628 as part of a defence review suggests that the industry had hardly grown and still depended on small boats (Public Record Office SP/16/138/61).

The dangerous but lucrative Icelandic cod fisheries, which included boats from Boston and Grimsby from the 15th century onwards, would have required larger vessels. *Doggers*, which gave their name to the Dogger Bank, were recorded at Yarmouth as early as 1300 and were probably used elsewhere along the coast. There are few details of these early vessels, but they are thought to have originated as single-masted Dutch boats of perhaps no more than c 15 tons, but the type was enlarged by English builders for the Icelandic fishing grounds over a period of several centuries of development to carry two or three masts by the 17th century. The foremasts were perhaps originally square-rigged, but later ketch-rigged with a lateen-type lugsail on the mizzen. The largest were probably 40–60 tons with a crew of ten, carrying c 30 tons of fish (Gardiner & Mehler 2007, 405), which were worth a significant proportion of the value of the vessel, making the trade very attractive, especially as the doggers also engaged in trade and the outbound vessels could therefore travel loaded with a cargo on the outward journey, supplanting the merchantmen used previously (Marcus 1980, 144–9).

It is uncertain what types of vessels were operated locally in the post-medieval period to compare with the Yorkshire five-man cobles. Excavations at Sutton-on-Sea and Mablethorpe in 1997, however, revealed the remains of two mid to late 19th-century double-ended carvel-built boats which may have been characteristic of the Lincolnshire coast in earlier periods (Buglass 1997a, b).

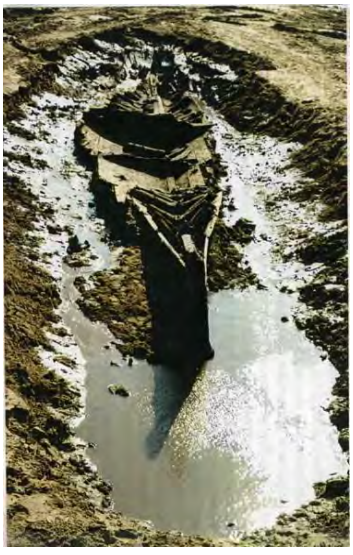


Plate 78 Wreck of a probable 19th-century double-ended carvel-built yawl or lugger with a central 'wet' hold, viewed from the stern, Mablethorpe, 1997

One of these vessels was at least 55ft (16.5m) long, 10ft (3.3m wide), and entirely of oak, with one definite mast position forward of a bulkhead which

marked the fore end of the hold; in a boat this size, a second mast is a possibility, although not inevitable. The hull sides in the hold section had a regular pattern of holes, indicating that it functioned as a wet well, a feature also seen in some contemporary smacks (discussed above). The stem was absent but the sternpost was raked at c 20° to the vertical and had the lower gudgeon for a rudder. The second vessel consisted of a c 31ft (9.5m) long, 9.8ft (3m) wide section from the bow to the first bulkhead, but the entire vessel would have been between 2–3 times the surviving length and broader across the top. A single mast position survived, but a vessel this length was likely to have had two. Some softwood replacement timbers were present, including the keelson, but otherwise the vessel was of oak.

The upper hulls and decks were missing, but as mentioned in the Yorkshire section (above), a series of 1828 etchings from Cooke's *Fifty Plates of Shipping and Craft* show double-ended two- and three-masted 'yawls' at Yarmouth alongside cobles which may give an indication of the appearance of the Mablethorpe vessels. The boats Cooke depicts differ from local yawls in having a considerable sheer and a closer resemblance to the cobles, particularly in the bows, and it is likely that Cooke had unwittingly illustrated visiting vessels: the date of the drawings, the 19th, 20th and 22nd October, was the middle of the Michaelmas to Martinmas herring fair. The boats may represent a two-masted herring coble while the three-masted boat may have been a Mablethorpe-type lugger; as the Yorkshire luggers were lute-sterned until c 1830.

By comparison, East Anglian yawls were fast open boats sometimes over 50ft (15.2m) in length with vertical stem and sternposts, and large rudders. Mid and late 19th-century illustrations, scale drawings, and models suggest that there was little sheer and the boats were long and narrow, resembling large open canoes, convex in cross-section at the bow with narrow clinker strakes.

Until around the middle of the 19th century, the East Anglian boats had three masts (later two), all lugger-rigged, with a smaller mizzen, with a bowsprit carrying a foresail, although in the late 19th century as the boats and sails increased in size, the sail was often split so that the portion forward of the mast took the form of a small staysail, while the much larger main body of the sail was reduced in size and therefore easier to handle in strong winds.

A smaller boat with similar characteristics to the Yorkshire coble would have been required for the beach-launched inshore fishery along the North Sea coast of Lincolnshire, and as Cooke records cobles apparently based at as far south as Yarmouth in 1828, these boats may once have been used for the purpose.

Plate 79 Coble-like boat beached at Mablethorpe in front of beached vessel possibly awaiting dismantling, c 1907

Plate 80 Coble-like boat with bowsprit and mast mounted being used for passengers, with the larger vessel possibly the same as in the other image, Mablethorpe, c 1907

A tinted postcard purporting to be of Sutton-on-Sea (actually Mablethorpe) from c 1907 (Peacock Stylochrom M.C.1406) shows what appears to be a double-ended boat very similar to a coble beached near a partly dismasted trading vessel. A contemporary card from Mablethorpe shows a similar small boat, mounting a raked mast and short bowsprit, and being held stern on to the beach to pick up passengers, suggesting it operated in the same way as a coble; a beached ship behind this may be the same as in the first card, as both lie in a similar position close to a modern fairground, and it was presumably awaiting breaking up as mentioned earlier. Cooke, again, shows two small open clinker-built boats at Yarmouth with blocks for a bowsprit which may represent a similar type used in East Anglia. Another representative of a local type of boat which operated in the Wash is the last King's Lynn

'cockler', *Baden Powell* (1900), currently under restoration and a product of the yard of the Yorkshire-born Walter Worfolk. The *Baden Powell* was built as a flat-bottomed double-ended carvel-built sailing boat, 34ft (10.3m) in length, with oak frames and larch planking. The boat was fully decked with a central hold. The bow had a strong curve to avoid digging into the Wash mudflats as the shallow draft was designed to allow the boat to beach so that the fishermen could collect cockles by raking them into bags before the returning tide lifted them off. A 'crabber' of the same length, *Rock of Ages* (1905) built by Gostelow's of Boston has been fully restored to sailing condition. She was also double-ended but unusually for the late date was clinker-built, of narrow larch planking on oak frames. The boat was single-masted and rigged as a gaff cutter with a bowsprit for a foresail or jibs; the bow had a more prominent curvature and the hull had finer lines than *Baden Powell*, suggesting possible kinship with the coastal yawls.

For half a century before these two boats were built, fishing in Grimsby and the Wash had been increasingly dominated by smacks of southern design, mostly fitted out for beam trawling. The first boats based in the town came with their crews from southern ports, mainly on the Thames, including Barking, but including Brixham, Plymouth and Kent, although local yards were soon building their own versions as the popularity of the design grew. As has already been described, the smacks were initially single-masted and cutter-rigged, with the mainmast carrying a topmast, and with a foresail carried on a bowsprit,.

By the late 18th and early 19th century, larger 'wet well' smacks were being built for the North Sea and Icelandic fisheries, capable of keeping live fish. The boats became larger in the 19th century and usually had a mizzen mast added to carry a smaller sail; they were ketch-rigged, with the sails carried on gaffs (yards hung entirely to the rear of the masts). The stem was vertical, lacking the curve of the Yorkshire and East Anglian yawls, with a transom or, occasionally, counter stern, and the hulls appear to have been mainly carvel-built, at least by the later 19th century. By that time, many had been converted to 'dry' boats, with the perforated wet wells replaced by watertight holds containing ice.

A considerable number of these vessels survive, although no well smacks remain from this area, and only one is known from elsewhere, the *Pioneer* (1864) of Rowhedge, Essex: one of two double-ended boat wrecks recorded at Mablethorpe had a wet well, however (see above). The remaining boats have mostly been returned to sailing condition, although some have either been converted as houseboats or await restoration. There are few survivors of the large Grimsby fleet and those remain because many were sold to Iceland and the Faroes which continued to operate smacks into the second half of the 20th century. The Grimsby-built smack *Esther* (1888) is believed to be one of the last two vessels surviving of the hundreds which were actually built in the town, returning after a long career in Iceland and the Faroes. In 2012 she sank at her moorings in Alexandra Dock metres away from the yard where she was built at Riverhead. Restoration is planned subject to fundraising and the condition of the wreck. The second boat, *Westward Ho* (1884) is still in sailing condition in the Faroes. A similar smack briefly based in Grimsby in 1894 but built in Rye, Sussex was *Oxfordshire* (1884), now *Johanna*, also currently in the Faroes.

A larger number of smacks built for use in and around the Wash area still remain, mainly from the Boston firm of Gostelow, and Worfolk's King's Lynn yard. These were mostly smaller single-masted vessels rigged as gaff cutters, some designed for trawling, others used for catching pink shrimps, prawns, and shellfish in the Wash. The relatively high survival rate probably reflects the later date of construction of the small inshore type, with many continuing to be built in the first three decades of the 20th century.

Plate 81 1994 wreck of modern trawler 'Saab-J', Ness Point, Fylingdales

The Boston-built smack *Albert* (1906) is currently being entirely rebuilt to new condition; this was a 'prawner', with a copper boiler for boiling shrimps and prawns. A similar craft, *Nellie & Leslie* (1911) was built in King's Lynn, based in Boston; this has been restored to sailing condition, as have the Boston-built *Mermaid* (1904), *Telegraph* (1906) and *Unity of Lynn* (1906). A sister vessel of *Unity of Lynn*, *Perseverance* (1914) is preserved in

Grimsby Fishing Museum. The King's Lynn smacks *Lily May* (1912), *Shamrock* (1900), *Victorious* (1902), the whelk trawler *Spirit of Britannia* (1915) and the 'shrimper' *Rob Pete* (1924) are still in sailing condition, while *Activity* (1904), built by the carpentry firm of Hornigold, has been restored at True's Yard Museum, King's Lynn. Worfolk's *Queen Alexandra* (1907), once the fastest of her class locally, is in poor condition, but restorable.

North Yorkshire fishing stations *(Fig 7)*

The original maritime role of the coastal settlements can conveniently be divided between fishing and trade, although the facilities used by both sometimes coincide, particularly in the port towns, Whitby and Scarborough *(Figs 10, 11)*. The extent and importance of the fishing trade from the medieval period onwards can be clearly seen in documentary sources (e.g. Barker 2007, Pearson 2005), although its subsequent decline over the 20th century has meant that it is now much less significant, with tourism and the service industries forming a larger part of the coastal economy in the main towns and the two smaller fishing settlements, Robin Hood's Bay and Filey.

The physical remains of the industry, particularly in Whitby and Scarborough include the more obvious elements such as moorings, wharves, fish markets, icemaking plants, and the boats themselves, but there are other features on the foreshore at sites such as Saltwick, Robin Hood's Bay and Filey which are easy to overlook, including rock-cut tanks or pits ('hullies'), sometimes surrounded by postholes, and used for keeping live catches.

Whitby

The fishing industry has historically been important to Whitby, both through the level of employment it gave to the boatyards and in the numbers engaged directly and indirectly in the industry. Fishing probably acounted for most of the activity in the harbour during the medieval and early post-medieval periods and continued to be significant even after the alum and coal trades began to play a part in the ecomony from the 17th century. Leland's Itinerary, written c 1536, referred to Whitby as a '…great fischar toune.' Whitby's fish market was established by the Abbey on the east side, but had moved to a site on the west bank after the Dissolution. It was re-established on the east side next to the town's main market by Sir Hugh Cholmley (1st Baronet) in 1632 and a new Fish Pier was constructed there c 1790.

Although only small numbers of fishermen are reported in the town in the early 19th century, with just 13 cobles licensed in 1818, an estimated c 400 full- and part-time fishermen were employed for much of the 19th century, with others involved in bait collection, curing, and processing, with number rising in the early 20th century. Fishing boats accounted for up to c 10% of the total tonnage of vessels in the town in 1772, far higher than the national average, and even more impressive given the small size of most fishing boats compared with commercial vessels (Jones 1982, 313–4).

Plate 82 Whitby Lower Harbour, east side, general view of north side of late 18th-century Fish Pier, and site of post-medieval Fish Market

Despite this, Whitby does not seem to have participated greatly in the long distance fisheries, maintaining around 140 cobles in 1828 but only 28 boats in the first-class fleet (luggers), of which perhaps seven or eight went to Yarmouth, none in some years. Whitby fishermen seem to have been more interested in participating in the local herring fishery and the overall number of boats (inshore and offshore) had risen to 244 by the 1840s, possibly as a result of the decline of whaling, which had freed many experienced hands. There were still 123 cobles in 1869. To take advantage of the trade, the Whitby Herring Company was founded in 1833 and opened a large Herring House next to Tate Hill Pier the following year for smoking and processing fish. Approximately half the catches were processed there, while much of the rest was exported.

Around 1860 a 750ft (228m) fish quay (the 'New Quay') was built upstream of the bridge on the west bank, mainly for the herring fishery, extending southward from the bridge into an inlet formed at the mouth of Bagdale Beck next to Barry's by then defunct shipyard; from here, the fish could be transferred directly onto the rail network at the adjacent railway station. This

remained in use well into the 20th century, although the inlet had been reduced in area significantly by 1938. By 1888, Whitby still had 150–200 boats, including yawls and cobles, many of which took part in the local herring fair and there were large numbers of vessels from other ports, including as far afield as Cornwall: the town played host to 928 boats in 1887. From this high point, the state of the harbour appears to have led to a rapid decline in visiting numbers, with larger vessels unable or unwilling to enter because of sand banks at the entrance; receipts from landings fell dramatically, and fewer fish were processed, with Scarborough becoming a popular alternative local destination, although the Herring House remained in use into the early 20th century.

Despite the fact that trawling was increasingly recognised as the most efficient and lucrative fishing method, and steam propulsion was being adopted elsewhere, Whitby was slow to take either innovation onboard and continued to operate sail drifters, with few trawlers or steam fishing vessels introduced until after the First World War. Several southern trawling smacks had briefly operated from the port in the later 1840s and 1850s, but none remained by 1869. The smack owners do not appear to have considered the port suitable, possibly because of problems of silting, but there was also local hostility to trawling because of its effects on fish stocks and the deliberate or accidental tendency of trawlers to cut through drift nets and long lines, to the extent that they were banned from approaching within three miles of a herring boat.

Diesel-engined keelboats were introduced in the interwar period and joined the surviving motorised cobles as the mainstay of the 20th-century fleet. Despite a decline in post-war whitefish trawling, Whitby continued to invest in the industry, providing new facilities. A new openwork Fish Quay was built in 1957 on the west side of the lower harbour along Pier Road, complete with a fish shed for auctioning catches and offices, and an ice plant added in 1965. Part of the 19th-century inlet at the previous fish wharf, New Quay, was subsequently incorporated into the commercial Endeavour Wharf and leisure moorings, the wharf itself having become New Quay Road.

A new fish market was constructed in 1995 and a replacement ice house in 2000. Nearly 50 fishing vessels, chiefly keelboats, cobles and salmon cobles, were still based in Whitby in 2003, although fish landings have dwindled. The boats are chiefly involved in inshore fishing for crabs and lobsters as well as cod, haddock and other fish species. Salmon is also present in the Esk between May and August, with small boats licensed to catch them. Fishermen are also engaged in providing boats for angling parties.

Plate 83 Whitby Lower Harbour, west side, general view of 20th-century Fish Quay and modern Fish Market

With no shipbuilding left in the town following the early 20th-century closure of Whitehall shipyard (Section 6), only cobles were locally built, and although some post-war trawlers seem to have been built at Whitehall, this also ended c 1965. The shipbuilding and repair firm Parkol Marine was however established in the 1980s on part of the neighbouring former Abraham's Quay, constructing new trawlers and other vessels.

The town participated in whaling between Greenland and Spitzbergen from at least as early as 1753 until 1837, building its own vessels as well as supplying other ports. The earliest whalers may have been converted from other uses, while most probably functioned as traders outside the whaling season. The design became more specialised as experience grew, with strongly-built double-skinned hulls able to withstand the pressure of the ice and high seas, and with iron ice plates at the bows under the waterline to cut through floes without damaging the planking and stempost.

Fifty-eight Whitby whaling vessels are known by name; landing a total of 2761 whales, c 25000 seals and 55 polar bears (some at least of the latter intended as pets or live zoo exhibits). On longer voyages, the whale blubber was rendered at sea in large boilers to produce oil, but the rest was returned to port for processing in one of Whitby's four whale-oil factories ('tryworks'). A considerable quantity was used to light the town in the early 19th century by the Whitby Whale Oil & Gas Company, but it had many other commercial uses. The whalebone (actually the bristles or

'baleen' which whales used to filter seawater for food) was used extensively in women's corsetry for c 300 years.

The main problem with the whaling industry was its extreme unpredictability, more so than in fishing. Catches fluctuated for a variety of reasons, including altering migratory patterns and periodic overexploitation, while the waters off Greenland and Spitzbergen were an extreme environment. Where boats were engaged on long voyages and had rendered oil on board, the value of the oil made a captured whaler a lucrative prize during wartime; in the 18th century, whaling was suspended for several years as a result of the Seven Years War with France and the American War of Independence. During the Napoleonic Wars, some whalers left the trade to take part in general transport activities, for which there were good, steady prices, but those who continued made some of the best individual catches for single boats. The *Resolution* alone caught 28 whales in 1814 containing 230 tons of oil, a year when the town's fleet of eight ships caught 172 whales. Beginning in 1803, *Resolution* caught 249 whales over ten voyages, producing 2034 tons of oil and a large quantity of whalebone. The smaller number of ships taking part during the war period may have had some bearing on improved stocks, encouraging a temporary increase in participants after 1815.

The size of Whitby's whaling fleet was at its greatest between 1786–9 and c 1815–22, but individual catches were declining sharply against a background of increasing competition from other ports and nationalities, including the rapidly expanding American fleet: more boats meant lower average catches per ship and lower profits for the owners, investors and crews. There were some extremely poor years from c 1819, with substantial overcapacity in the fleet, and ships began to be laid up or sold off. The commodity price of whale oil, high in the later 18th century, also declined significantly in the 1820s, as did the price of whalebone for corsetry, which was out of fashion for several decades. Only one vessel, *Phoenix*, remained in the Whitby fleet by 1831; her last voyage was in 1837, when she returned empty. Although the demand for oil remained, even after petroleum began to be exploited, and there was a rising demand for whalebone as fashions changed, Whitby did not continue whaling but concentrated entirely on fishing. British ships from Hull, London and elsewhere continued to hunt whales, but by the 1830s, emphasis had shifted from the depleted Greenland fisheries to the more distant Antarctic and Pacific, where sperm whales were hunted for the more desirable spermaceti in voyages which could last several years.

Plate 84 Coble and several mules moored below lobster pots on eastern side of Upper Harbour, Whitby

Saltwick Bay

Saltwick Bay itself was not a fishing station, and is better known for its alumworks which were provided with a dock, piers and breakwaters. The bay and some of its facilities may, however, have been used by visiting Whitby boats involved in inshore fishing and shellfishing. Two pits have been recorded cut into the foreshore platform at the west end of the bay with water inlets and possible sluice gates, each surrounded by pits. A short distance to the north is a closely-spaced group of 29 postholes, perhaps designed to support a platform. One outlying posthole may have been for a mooring post or a marker. The pits may have been hullies similar to examples recorded in Robin Hood's Bay, and also used at Filey (see below) to contain live shellfish catches or bait fish. Other features survive in the bay, but these are more clearly related to the alumworks.

Robin Hood's Bay

Robin Hood's Bay, despite its relatively small size, was an important fishing centre. Leland' writing c 1536, referred to the village as already being a '…fischar tounlet of 20 bootes.' By the early 18th century, the village was said to be:

> '…the most celebrated for the Fishing Trade of any in these Parts; for there are caught great Quantities of all Sorts Fish in all their several Seasons, by which the City of York is not only supplied but all the adjacent Country. In this Place it is a Thing peculiar, that they keep hard by the Shore a little Hully (as they call it) which is in Shape like a great Chest bored full of Holes to let in the Sea, which at high

> water always overflows it. In it are kept vast Quantities of Crabs and Lobsters, which they put in and take out all the Season, according to the Quickness and Slowness off the Markets. They also get great Quantities of Herrings in their Season' (Cox *et al* 1738, 641).

By the 1820s, the village supported around 130 fishermen who owned 5 large luggers and 35 cobles, with the larger boats kept in Scarborough or Whitby when not in use. Numbers had, however, dwindled to a handful by the early 20th century as a lack of harbour facilities encouraged young fishermen to move away to Whitby and Scarborough where they could live near their boats. The village did not take up trawling, preferring to continue with traditional long-lining and as a result abandoned its yawls in the 1870s, concentrating solely on maintaining a small coble fleet for indoor fishing and shellfishing. Fishing ceased before the Second World War, but it has revived in recent decades, based on shellfish, particularly crabs, which can command high prices, while lobsters are popular with the export market and as a result of the increasing interest from restaurants in fresh local produce.

Plate 85 Painting of Robin Hood's Bay, showing luggers beached in front of the village and smaller cobles at the Landing Scar, Edward Finden, 1842

In the area in front of the village, there is clear evidence for its fishing past. The most obvious sign is a large cut into the rocky foreshore known as 'The Landing'; this was kept clear of rocks and as the name suggests was intended to allow fishing vessels to approach the cliff safely for loading or unloading, as 19th- and early 20th-century drawings and photographs show, including 19th-century illustrations by the engravers Nathaniel Whittock (1791–1860) and Edward Finden (1791–1857). A posthole on the adjacent rock platform known as the Landing Scar has been identified as the remains of one of several landing marker positions formerly located in the area to guide boats into The Landing at high water.

Plate 86 Example of rock-cut hully for keeping wet catches or bait on the Landing Scar, Robin Hood's Bay

Plate 87 Line of three postholes for possible navigation markers ,south side of Landing Scar, Robin Hood's Bay

On the southern side of the Landing Scar, the rocky reef or scar that runs north-east in front of the settlement contains a series of rock-cut chambers cut into the edge of the reef, the remains of hullies of varying sizes which echo examples at Saltwick Bay (above). As Cox's description makes clear, each hully originally contained a wooden chest or box which would have been fitted with a hinged lid secured with a padlock, like another documented example at Filey (see below). The boxes were drilled with numerous holes to allow the tide to flow freely through them to replenish the water, allowing them to be used to keep bait (mainly in the form of limpets) and shellfish live and therefore fresh until they were required.

Although many of them are now badly eroded and the area is covered in seaweed, the Phase 2 RCZAS survey identified the remains of eight examples along with five discrete areas of rock-cut postholes and three areas of rectangular cuts. All of these features appear to be closely related and in their entirety they form an unusual and rare structure relating to the post-medieval and early modern fishing industry. When hullies began to be used is unclear, but it is likely that they were originally baskets similar to lobster pots (creels) before more elaborate wooden crates were built; the practice of hullying was widely known along the north-east coast, and at its simplest consisted of storing creels or crates containing catches and bait below the high water level in harbours until required, allowing the current to flow through. Shellfish could be kept indefinitely using this method. Where there was no deep harbour and only a rock foreshore, the method adopted at Robin Hood's Bay, Saltwick Bay and Filey was the only alternative, and the laboriously-cut chambers would remain usable for generations.

Scarborough

From the medieval period onwards, Scarborough had traditionally fished locally offshore for herring from about the middle of August until November (Cox *et al* 1738, 631), but boats also caught ling, haddock, cod, hake, whiting and mackerel. Turbot, halibut and haddock could be sold fresh on the quay, but much of the catch was dried or pickled and sent to York. Cod and ling which were not sold immediately were dried or sent for salting, while skate was cured to a leather-like consistency. Herring was traditionally smoked to produce kippers.

The town started the 19th century with a relatively small fishing fleet based on lug-rigged boats with just a handful of cobles, concentrating more on shipbuilding and trading. Around this time, the town sent only three luggers to Yarmouth for the September season compared with eight from Filey, although the coming of the railway from York in 1845 made Scarborough a much more important fishing port in the middle of the 19th century and the number of large vessels increased. This suggests that Scarborough, like Whitby, had traditionally concentrated more on the local herring and other fisheries. The town's fishermen also caught crabs and lobsters using 'trunks'; these were effectively bag-shaped nets suspended below a baited iron ring and connected in lines of up to twenty-four, marked by cork floats. The trunks had to be checked frequently in turn by rapidly pulling them to the surface, as there was nothing to stop catches escaping while they rested on the seabed. As the demand from the growing urban middle classes for fresh crabs and lobsters rose rapidly in the mid 19th century, fuelled by the spread of the railway system, trunks were replaced by 'creels', which were net-covered baskets with funnel-shaped entrances from which nothing could escape. These caught crabs and lobsters efficiently but took all sizes, leaving fishermen with a conscience to discard immature animals, a practice enforced by law after 1863.

Around 1830, Robert Skelton's yawl design began to influence shipbuilding in the town, replacing the earlier luggers, and developing over the course of the decade to produce a larger boat, probably partly in response to the first few southern fishing smacks which began to appear in Scarborough at the same time. The smack crews were initially itinerant, returning home at the end of a fishing season which lasted several months, but in the 1840s small numbers began to settle, with their families living in lodgings in the Foreshore Road area. Beam trawling was unpopular in the local fishery, however, and opposition led to most of the first smacks moving to Hull and Grimsby, where they werewelcomed, although they returned in larger numbers in the 1850s. From c 1855, locally-operated smacks began to appear, and from 1867–8, these were also built in the town alongside the local yawls, becoming larger and capable of carrying longer beams for the trawl nets, up to 48ft (14.6m); some earlier smacks were lengthened by cutting them in half and adding a new mid-section to increase their capacity. Many yawls were also either converted or built as beam trawlers fitted with gaff rigs similar to those used on the smacks, reducing the number of crew required and improving their competitiveness at the expense of speed.

There was also a boom in the herring fishery in the 1850s, with Scarborough, Whitby and Staithes particularly benefitting; the two larger centres built many new yawls for the offshore fleet during this period, as well as large herring cobles which operated inshore up to c 14 miles. The introduction of finer mass-produced cotton nets in the 1840s to replace the older home-made hemp versions allowed boats to carry larger nets and increase their catching capabilities while allowing more space for storing fish; in the 1840s, yawls carried 50 or 60 nets, by the early 1860s this had risen to 120–30 (Robinson 1987, 57).

The yawls were also still engaged in long-lining for cod and other demersal species, becoming all-year-round vessels rather than being laid up over the winter season (Robinson 1987, 52–3), with the first 65ft (19.8m) iron-hulled three-masted lugger *Contrast* completed for long-lining in Hull for a

Scarborough owner in 1862. However, long-line catches fell during the 1870s, possibly as a result of trawling, which caught fish of different ages and species indiscriminately, although there were also bait shortages; boats were increasingly converted to trawling, including *Contrast*.

Scarborough also became a significant stopping-off point for the visiting herring fleet from Scotland, East Anglia, and later, Cornwall, benefitting from the difficulties Whitby was having with sandbanks forming near the harbour entrance. At times the relatively small inner harbour at Scarborough was unable to cope with numbers, and although boats often dropped anchor outside the harbour and transferred their catches to cobles, Bridlington became an alternative haven.

The home fleet of cobles involved in local fishing had also grown to around 40 by the 1870s although the inshore herring fishery began to decline around this time, with the large double-ended herring cobles increasingly employed for other purposes. In common with other towns, the port authority bought a steam paddle tug to tow fishing and trading vessels to the fishing grounds when the winds were light or adverse (Robinson 1987, 61–2). Tugs began to fish when not employed and this began a process which eventually replaced the yawls and smacks, accelerating following the introduction of screw-driven vessels in the early 20th century, but for a time, the yawls being built by Scarborough yards were larger than ever. The heyday of these vessels was short, however, and the last yawl was laid up in 1917, seven years after the last paddle trawler, *Constance*, had been lost at sea.

By this time, almost unregulated trawling had begun to decimate whitefish stocks around the UK coast in a bid to meet the growing demand for fresh cod, haddock, and other species, and fleets began to contract as the larger catches reduced prices. By 1914, the fleet consisted of around fifteen trawlers, but several were lost to shelling while eleven were sunk in 1916 by a single German submarine, *U-57*, including the *Otter* (1888) which had pioneered the use of trawling using Otter boards instead of beams. Three more trawlers were lost to unswept mines in 1920.

Fishing was greatly reduced nationally during the Second World War with Scarborough's active trawler fleet falling from just seven vessels in 1939 to three in 1943; over 1000 trawlers and drifters were requisitioned by the Admiralty for minesweeping and convoy duties and were lost on active service. Fish stocks in the North Sea and Atlantic recovered dramatically. As a result, the industry recovered in the post-war period, and there was something of a boom with much larger vessels being built, including stern trawlers, increasingly equipped with radar which could locate shoals, enabling catches to be made on an industrial scale.

Plate 88 Motorised mule moored in outer harbour, Scarborough

Plate 89 Array of small modern stern trawlers moored at North Wharf, Scarborough

Scarborough's vessels, however, remained small, consisting of small trawlers, keelboats and cobles mainly for inshore work and the town was unable to compete with larger vessels from home ports such as Hull and Grimsby, as well as increasing EU competition from factory fishing.

Visiting Scottish herring trawlers continued to fill the harbour, but increasingly used the facilities as a stopping-off point rather than landing fish for processing: overfishing led to the collapse of the fishery in the 1970s. The imposition of EU fish quotas also drove down the numbers of active fishermen, with cod and other fisheries also collapsing in the last decades of the 20th century. Global catches of Atlantic cod peaked at almost 4m tonnes in the late 1960s, but today have fallen

to less than 1m tonnes, although there are recent signs of stocks recovering.

Plate 90 West Pier, Scarborough, 1990 fish market (left), inter-war and late 19th-century fish seller's offices, and a group of fishing boats, including a coble

Many Scarborough fishermen, as elsewhere, took advantage of the EU decommissioning scheme. The present fishing fleet consists of a handful of vessels catching whitefish, with smaller cobles and other boats mainly landing shellfish. The industry may have stabilised despite fluctuations in the tonnage of whitefish, supported by investment in new facilities on the West Pier, where there is still a refrigerated fish market, although profitability depends on fish landed by EU vessels and the refrigeration plant is larger than required for the present or future markets.

Filey

Filey was traditionally located just within the East Riding of Yorkshire until the local government reorganisation of 1974, and the fishing industry there linked Bridlington and Flamborough to the south with Scarborough, where it had the closest connections. There had long been a significant fishing industry based at Filey, with fishermen from the town (then a small village) recorded as early as the 12th century working as far away as Grimsby and Whitby. The town's fishing community supported a small first-class fleet of around seven three-masted luggers in the 1780s, augmented by cobles, sending eight to the Yarmouth fishery in 1815; a similar number were still registered in 1830 with the boats mainly built in Scarborough. As in many other fishing centres, however, the number of boats rose substantially through the 19th century as the demand for fresh fish grew to supply the expanding West Riding industrial and mill towns by rail, with 100 boats (30 yawls, 70 cobles) crewed by 400 men in 1870, falling to 250 in the early 20th century as the yawls of the first-class fleet were replaced by steam trawlers based elsewhere. Cobles were built in the town by several families, the last being constructed as late as 1949.

Filey, together with Staithes, grew to become the largest long-line fishing stations on the Yorkshire coast for much of the century, maintaining their yawl fleets after Bridlington, Flamborough and Robin Hood's Bay had given over their long-distance trade to Hull, Grimsby and elsewhere and reverted largely to inshore coble fishing.The last Filey yawl, the 'Susie', was sunk by shellfire from a German submarine in 1917.

Plate 91 Cobles parked at Coble Landing, Filey, with wheeled cradles for further boats in the distance

A contemporary description of early 19th-century fishing from Filey referred to four different seasons, which were broadly followed in other fishing stations in the area (Cole 1828, 3–8). The first season involved long-lining with luggers leaving for the south from mid–late January to Easter to land fish at Hull, Boston and King's Lynn, each carrying two smaller cobles on deck. On reaching the fishing grounds, the cobles would be launched in different directions, travelling for up to nine miles before shooting long fishing lines, each armed with hundreds of baited hooks to catch demersal species living near the seabed, such as cod, hake, halibut, haddock, whiting, ling and the flatfish species; the ends of the lines were buoyed and weighted with stones. After several hours wait, the lines were hauled in and the catches were returned to the anchored parent lugger, where the skipper and boys on board were preparing bait for the next foray. The fish would be sold at the nearest port, with some being sold directly onto waiting southern boats for transporting directly to London.

At Easter, the boats returned to prepare for the long summer season, fishing from home in local waters for herring and other fish from midsummer

onwards. For catching pelagic fish which swam near the surface, particularly herring, the fishermen used a series of long drift nets suspended from lines floated from the main vessel which were supported by empty casks acting as floats. The lines were then hauled back in using the deck capstan, although cobles were sometimes used to inspect the nets first to ensure they were full. The catches were mostly landed and sold across the quay at Scarborough, although the luggers could be beached for unloading in Filey.

Plate 92 Detail of posthole of possible hully or landing marker on south side of Filey Brigg close to the Spittal Rocks landing place

In late September, most of the luggers from Filey departed for Yarmouth for the open 'fishing fair' where they were hired by merchants on a fixed fee to take part in herring fishing for about seven weeks, traditionally from Michaelmas (29th September) until Martinmas (11th November). Here they joined others from Staithes, Scarborough, Runswick Bay, Robin Hood's Bay, and Flamborough, as well as southern and continental ports. This was a longstanding tradition with roots in the medieval period, with the writer Daniel Defoe describing it as early as 1726 (Defoe 1927 edn).

At the end of this period, the luggers returned home and in the absence of a harbour at Filey, most were laid up at Scarborough while the cobles engaged in winter fishing up to 10–15 miles from land.

Crabs and lobsters were (and remain) an important and lucrative local catch, with older fishermen no longer fit for long spells at sea catching these inshore as well as line fishing from the north side of the Brigg. A significant early 19th-century reference (Cole 1828, 120) describes how Filey's fishermen had formerly constructed a large plank-built chest ('lobster-hully') located 2¼ furlongs (c 450m) along the Brigg between high and low water for keeping live lobsters, although it was no longer extant in the writer's time. The hully was 2½ft (0.76m) high and consisted of several lidded and lockable partitioned chambers supported by nine strong oak posts. The sockets of posts found near the small harbour enclosed by the Spittals during an inspection of the Brigg as part of the RCZAS might well have formed part of this or a similar structure, several still containing the stumps of posts as they did in Cole's day.

As mentioned earlier, rock-cut tanks and postholes have also been recorded further north near Saltwick and Robin Hood's Bay, with an 18th-century reference to the use of a similar hully in the latter location, suggesting that this was a widespread practice. Sources from Scotland and the east coast have suggested that rock pits were the earliest form of hully (which may therefore be a dialect form of 'hollow'), followed by wicker baskets and then boxes, but retaining the original name: used as a verb, 'to hully' a crab or lobster was to store it. In practice, however, the method adopted is more likely to have depended on the nature of the foreshore and whether deep water was available rather than date, with baskets or boxes preferentially used where possible as involving less effort. Clay pits identified from aerial photography along the North Sea coast of Lincolnshire may be a local variant.

The Queen Street area was the traditional home of Filey's fishing community, and an excavation on the east side at No 34 by Scarborough Archaeological and Historical Society in 1976 revealed the remains of an 18th-century bait shed at the rear of one of the properties, containing a drainage gutter heading towards Church Ravine, and large quantities of opened mussels. A reconstruction of a similar shed can be seen nearby behind Filey Museum, Queen Street, which opened in 1971 in a pair of 17th-century cottages. Beneath the shed were medieval and pre-Conquest features, reflecting the longevity of occupation on the same site.

The stone-paved slope of the Coble Landing has been used since the late 19th century for standing the cobles on single-axled wheeled carriages, formerly pulled into the sea by horse power, but since the mid 20th century by tractors funded by the fishermen. Smaller cobles and double-ended vessels ('mules') for salmon and crab/shellfish fishing were pulled to a flat area at the top of the slope in front of the lifeboat station.

The significant reduction in the number of boats over recent years to less than 20 by the 1970s

meant increasing difficulty in funding the maintenance of the second-hand tractors and driver needed to land and recover vessels. Recent storms have stripped sand from the beach for long periods to reveal the underlying till platform and a number of obstacles (including Second World War landing obstructions), making movement even more difficult. Several fishermen moved their base to Scarborough as a result and by the start of the 2013 summer season there were only one or two active cobles on the Coble Landing, with a number of smaller boats and pleasure boats. The last boats were expected to move or be sold by the end of the summer season unless better access across the beach, such as the provision of a surfaced causeway, could be provided (Yorkshire Post 31/08/13 'Out at sea with Filey's last fishermen'); this had not materialised by October and it is therefore likely that commercial fishing may cease at Filey, bringing an end to centuries of tradition.

East Riding of Yorkshire fishing stations *(Fig 7)*

For much of the medieval to modern period, fishing in East Yorkshire was mainly based in Bridlington and, perhaps surprisingly, Flamborough. Other fishing stations located along the Holderness coast were also used but all the original medieval/early post-medieval sites were gradually lost to erosion. The centres which replaced them at sites like Hornsea in the 19th and early 20th century failed to thrive, leaving only a small, dispersed industry outside Bridlington.

Flamborough

Flamborough was an important fishing station in the medieval and post-medieval periods, with the first reference to fishing dating from 1209 (Brigham & Frazer 2013, 12); a number of beach-launched boats were presumably already operating from the North Landing and the late medieval tidal harbour at South Landing (Section 6; *Fig 12*). The lack of harbour facilities after the destruction of the stone piers in the 1560s meant that any larger vessels such as five-man cobles would have been based in Bridlington or Scarborough when not fishing, although they would have been able to beach at South Landing with relative safely for short periods, provided areas of the chalk foreshore platform were cleared of loose erratics emanating from the cliff and ruined piers.

Before the demise of the harbour, some of the Flamborough-based merchants with trading vessels operating from the South Landing also owned fishing boats, and some continued solely as fishermen, including the Emmerson family, recorded as merchants in 1544–7 and still fishing in the village in the 21st century. Non-resident merchants using Flamborough purely as a haven presumably moved their centre of operations elsewhere, including nearby Bridlington.

The village already had 49 cobles by 1817, rising dramatically to 169 by 1869, a remarkable number for such a small settlement, although fishermen often kept boats at both landings to enable them to venture out more-or-less regardless of the wind direction. Lifeboats were maintained at both landings in the 19th and 20th centuries for the same reason. Half of the population were involved with the fishing industry, either as crew or in processing, baiting and other supporting activities, and although fishing peaked in 1870, there were still 114 cobles reportedly fishing from the North and South Landings as late as 1912, catching demersal species as well as salmon and sea trout. Many of the fish caught were sold directly off the beach to visiting merchants because of the remoteness of the North and South Landings.

Plate 93 Cobles with lifeboat station and engine house for winding returning boats up slipway, North Landing, Flamborough

Just as remarkably, Flamborough built many of its own cobles to a particularly robust design capable of coping with the tough conditions of the North Landing, with the Hopwood family building an estimated 600 cobles between 1862–1939, a small number of which are still extant. The village also maintained a small number of luggers, later yawls, which were kept in Bridlington harbour; some were sent to join the annual Yarmouth fishing fair. The first-class fleet had, however, gone by the 1870s.

The village steadfastly opposed the introduction of trawling and was unable to maintain larger boats purely for long-lining. Local fishermen also caught

crabs and lobsters, but refused to use creels, preferring to stick to the older method of trunking. In the later 20th century, the inshore fishing industry declined even more dramatically than it had grown and Flamborough now only has two or three active commercial cobles at North and South Landing, some of them worked single-handed, chiefly for crabs and lobsters, with the boats carrying small shellfish boilers, although long-lining was still practised for cod, haddock and other species. The difficulties of beach launching in a period of considerable difficulties for the fishing industry and the proximity of the harbour at Bridlington with its improved facilities have perhaps combined to make the site less attractive than it once was.

Bridlington

In Bridlington the decline in the number of trading vessels being built and operating from the harbour meant that the town turned its attention to fishing in the latter half of the 19th century, just as other centres were also growing. At the beginning of the century, the fishing fleet consisted of just 16 cobles, a very small number for a reasonably sized port, but numbers had expanded rapidly to 49 cobles and mules by 1869 (Robinson 1987, 65).

Plate 94 Small double-ended mule, Bridlington

These concentrated on crab and lobster potting from cobles, with the new South Pier the focus of the industry. Unusually, no less than 42 of the 49 cobles were involved in inshore trawling, pulling nets across the sandy seabed of the bay held open by especially short beams in emulation of the offshore industry. Bridlington was one of the few centres to take part in this, putting the town in opposition to Flamborough, which was vehemently anti-trawling because of the detrimental effects on fish stocks; this practice was banned in 1890 as fish stocks collapsed, but Bridlington and Scarborough cobles were both caught illegally trawling after that date in an effort to make a living.
A small number of luggers and later, yawls, also joined Scarborough and Whitby boats in the offshore herring fishery, as well as sending boats to Yarmouth in early winter, although Bridlington never operated a large first-class fleet, and was quick to dispose of it, reverting to cobles and smaller mules.

Plate 95 Modern fish dock and fish market, South Pier, Bridlington

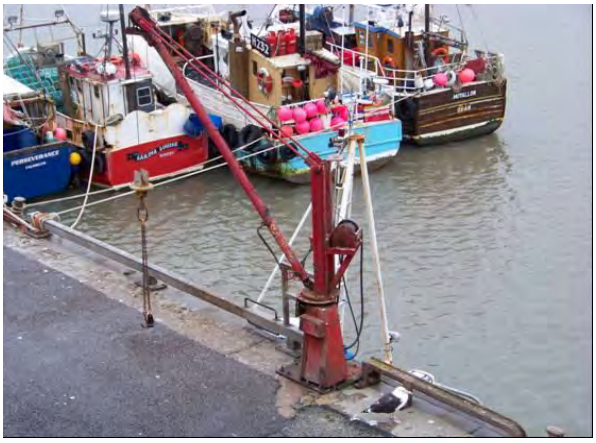


Plate 96 Fish market derrick and modern trawlers, South Pier, Bridlington

In the 20th century, the fishing industry remained important in terms of the economic life of the harbour. There were around 84 fishing boats registered in the town in 1902, mostly cobles, but including the last few yawls and smacks, while elements of the Scottish herring fleet also called in August to take part in the local fishery, bypassing Whitby and Scarborough.

Bridlington benefitted from the construction of a new fish market in 1932 on an expanded 'fish pier' section of the South Pier which was built after 1929, enlarged in 1949–51 and altered in 1963. Other additions to the harbour were chiefly for the

benefit of fishing, including the the building of the Fishermen's Steps next to the North Pier c 1900, and the rebuilding of the long jetty of Crane Wharf in 1932 and again in 1950–1, when the present Chicken Run Jetty was also built. The town was still a designated herring port in the early 1960s and after the fishery collapsed, sprats were landed for a time. The fish market was rebuilt to its present conformation in 1976.

Plate 97 Crab and lobster pots with moored fishing boats along Chicken Run Jetty and South Pier, Bridlington

Plate 98 Fishermen's Steps, Bridlington, former landing stage for fishing cobles and boats carrying passengers

Although the last traditional boatbuilding, by the Siddall family firm, ended in 1972, the fishing industry was assisted by the construction of a boat repair yard in 1998–9 on an infilled section of harbour at Clough Hole. After a steep decline, the industry has achieved a renaissance and is based now on lucrative shellfishing, mainly crabs and lobsters, although codling and plaice are still caught.

The *Three Brothers*, the last surviving example of a sailing coble built in the town in 1912 by Baker and Percy Siddall, was fully restored in 2013 as a symbol of the town's fishing and boatbuilding heritage.

Hornsea

Between Bridlington and the Humber, traditional boat-based fishing is now largely restricted to small numbers of boats located at a few centres including Hornsea *(Fig 7)*.

The sale of fish at the medieval port of Hornsea, *Hornsea Beck* (Section 6) is mentioned in 1357, but was probably established at least a century earlier when the settlement was also mentioned as engaging in trade. A ship (presumably a trading vessel), two small boats and fishing nets were referred to in a will of c 1390, with further mentions of fishermen in the following two centuries, including a 1528 reference to a coble.

Fishing fees ('doles') were made to St Mary's Abbey, lords of the manor, to go towards repair of a pier at Hornsea Beck; after the Dissolution these were paid until at least 1578 to the fee farmers of the rectorial manor which succeeded the abbey. Houses were already being lost by that time and the pier, in constant need of repair, was also destroyed some time in the later 16th/early 17th century. The fishing industry presumably dwindled and collapsed, with no further references until the 19th century, by which time the coast had receded some distance from its old alignment.

The 19th century saw a re-establishment of fishing, supplying the growing local community and visitors, encouraged by the arrival of the railway in 1864, the building of a new seawall and resort. A landing place for a fishery had already been allotted during enclosure in 1809, although it is unclear if this was much used until 1844 when tentative salmon fishing began. With the lack of a quay, however, the fishermen found the tides caused operational problems and only three fishermen were working in 1851. Numbers increased with the expansion of tourism, however, and 10–15 fishermen operated from c 1871 until 1894, when 20 men and 12 cobles were recorded.

The First and Second World Wars appear to have had a significant impact on the small industry, as only two or three boats were still operating from the 1920s, predominantly landing crabs with much smaller quantities of fish, lobsters and shellfish, while only three cobles still operated from Hornsea in 1990.

At present there are only c 7 tractor-launched commercial boats operating from a compound south of the town, catching whitefish and lobster.

The boats are mainly modern glass-reinforced plastic designs, including the small increasingly popular catamarans, although some recent vessels appear to have been based on the coble hull form.

Smaller fishing stations

Fishing was undoubtedly operated in the medieval period from a number of smaller centres, wherever there was a settlement with beach access *(Fig 7)*. However, the Holderness coast has lost its entire 'front line' of medieval and early post-medieval settlements south of Bridlington and those which now lie on the coast have effectively gained a coastline, with relatively few having a suitable access point.

Many of the 'second line' villages were formerly involved in inland fishing in meres and streams, including Skipsea, Barmston and Aldbrough, where it had begun by the 13th century and it may also have developed a sea fishing industry as the coastline receded. Aldbrough was recorded as a port in 1565 (Section 6) and may have operated fishing boats: in the interwar period there were a few boats remaining there, with more than 13,000 crabs and nearly 400 lobsters being caught in 1930. No boats remain, possibly because of continuing problems in maintaining access and a lack of safe places to draw the boats off the beach.

Withernsea and probably neighbouring Owthorne would have been engaged in fishing in the medieval period, but rapid coastal erosion would have disrupted the industry as the settlements were relocated. In addition, the Lords of Holderness (Counts of Aumale) had fishing rights in Withernsea Mere until the late 13th century. Withernsea maintained a small fishing industry in the 19th and 20th centuries.

Recent investment in a £960K replacement boat compound with full repair and welfare facilities and a commercial fishing slipway at the south end of the seafront at Withernsea should provide a future for the industry there. The small fleet of c 9 boats mainly catches lobster and shellfish. Boats at the site have traditionally been tractor launched and in the late 20th century still included several traditional cobles and coble-styled boats in modern materials, but catamaran designs are increasingly popular.

One or two small boats also operate from sites at Tunstall, Easington and Spurn. At Easington and Tunstall, there are boat compounds with several vessels, which has recently included one or two cobles at Tunstall; these are launched as elsewhere on the coast by tractor.

North-East Lincolnshire/Lincolnshire fishing stations *(Fig 7)*

South of the Humber, fishing was split from the medieval period onwards between larger coastal harbours, including Grimsby, Skegness and Boston, smaller havens, usually based around the mouths of streams or drains, and beach-launched vessels operating wherever there was access *(Fig 7)*. There were also a number of inland ports reached by river from the Wash and the Humber. Most of these sites were shared with trading vessels, and it is clear that local fishing families were involved in mercantile as well as other activities, including trapping fish and eels without the use of boats.

Grimsby

Fishing became an important industry in Grimsby at least as early as the 12th century, with activity centred around the Haven close to modern Riverhead. The town had an important fish market by the middle of the 13th century which probably obtained most of its fish from catches landed by boats from Bridlington, Scarborough, Filey, Cleethorpes, Tetney, Saltfleet and Stallingborough and elsewhere rather than from a home-based fleet, as it does not appear to have supported large numbers of fishermen or vessels. During this period, Grimsby suffered increasingly as a result of competition from the Yorkshire port of *Ravenserodd*, located to seaward at the end of the contemporary Spurn peninsula, until its final destruction by the sea in the 1360s (Pawley 1984, 163–4).

Most of the fish landed at Grimsby were cured and transported to markets along the coast and the Humber. Probably from the early 15th century onwards, the town became a major local contributor to the Icelandic cod fisheries, which had begun in East Anglia. Fishing boats, accompanied by government 'pilots' mustered off the mouth of the Humber where vessels from Hull, Grimsby, Boston and the East Anglian ports set sail for months at a time.

The fortunes of the town suffered significantly in the post-medieval period as the result of silting in the Haven, and in 1697, a plan was drawn up to divert the Freshney into the channel to cleanse it, although this had little impact and the fishing industry seems to have declined to a very low base during this period.

The first half of the 19th century finally saw the development of the dock estate which laid the foundation for the modern economic development of Grimsby with the construction of the Old Dock in 1800 and the Royal Dock in 1852 (Section 6). The home-based fishing industry remained small during the first half of the century, with the number of fishermen actually falling from 1.3–0.6% of the active male population between the censuses of 1841 and 1851 (Gerrish 1993, 39–40). The change in the fortunes of Grimsby and nearby Hull came with the arrival of the first southern fishing smacks into the area in any numbers in the 1840s. The crews found the North Sea ports, particularly Scarborough and Whitby, to be hostile both to outsiders and their trawling methods, until competition eventually forced most centres to convert their yawls for beam trawling.

First Hull, then Grimsby, made efforts to attract southern trawlermen, with the arrival of the railway at Grimsby Docks making the town a good business proposition, accompanied by the building of a fish dock, ice house, and, importantly, accommodation for the fishermen and their families, which enabled them to make a permanent move to the north. Hull had already started building up a trawling fleet from c 1845, when 29 vessels were registered there, mainly by attracting trawlermen already operating out of the North Sea ports. Hull, however,was some distance from the sea and at that stage had few facilities for landing and processing catches.

Assisted by its position further down the estuary and more direct rail links with the south, Grimsby deliberately attempted to follow the example of Hull by attracting vessels operating from the rival port and operating elsewhere. The Alwards, originally from the Isle of Wight, had settled briefly in Scarborough in 1850, but by 1855 had moved to Grimsby where they became one of the leading fishing families, citing the difficulties of using Scarborough harbour in winter and the opposition of local residents as the reasons for moving (Robinson 1987, 50–1).

Despite this, in 1857, Grimsby still only operated 21 fishing boats, of which only 5 were trawlers, the others being traditional line fishing craft (Gerrish 1993, 49). By 1861, 12% of the population were involved in fishing as owners, crewmen and apprentices. Almost half the adult males (43.5%) came from the Thames area, with smaller numbers from Kent, Devon, elsewhere in Lincolnshire, and Yorkshire. The 1861 census shows, however, that few children had been born in Grimsby to fishing families of southern origin before 1859, compared to Hull, where a significant number of children with parents from Devon and Kent (over 50%) were born there between 1845–59, and a few in Scarborough, while those from the Thames mainly moved directly to Grimsby. This reflects the local migration of southern families to Hull and Scarborough first and then Grimsby, with 1857–9 the likely start date for the main migration, perhaps initially by the males, followed later by their families (ibid, 44).

The main Thames fishing port, Barking, had been an important fishing station since the 14th century, and had been steadily increasing the size of its vessels as it became involved in fishing off Iceland and the Dogger Bank. The substantial Barking smack owner Samuel Hewett invented the practice of ‘fleeting’ before moving to Yarmouth in the 1860s: this allowed groups of smacks to stay at sea for weeks, co-operating with one another to trawl large areas while the catches were transferred at sea (‘boxing’) and run to shore by steamers or fast cutters. Fleeting was adopted by all the main fishing ports, including Grimsby, with steam vessels carrying a ‘fleet admiral’ to direct operations.

The arrival of the railway at Grimsby and other main ports allowed catches to be landed almost anywhere for fast overland transportation to markets like Billingsgate, while the introduction of ice also meant that catches could be kept for longer periods without traditional curing methods being required. This was particularly important for herring, an oily fish which deteriorated a few days after it was caught. Ironically, the railways made inland centres like Barking and the other Thames-based fishing communities redundant, as a fast rail journey now replaced the long voyage up the Thames: Barking had ceased to be a fishing port by the end of the 19th century, and this decline may have already been apparent mid century, spurring the northward migration of Thames-based families (Gerrish 1993, 42).

Plate 99 Blocked 19th-century lock entrance to No 1 Fish Dock, Grimsby

The rapid expansion of Grimsby's trawling fleet followed the construction of the purpose-built No.1 Fish Dock in 1857, which was located in a reclaimed area to the east of the Royal Dock. The census evidence that the Grimsby-based fishing community began to grow after the construction of the dock rather than before shows that it was partly a speculative development rather than entirely a response to existing growing demand for facilities, but the risk was based on a clear indication that it would pay dividends. Many of the southern fishermen who moved to the town had already had some years of experience as itinerant crews visiting the port while fishing on the Dogger Bank, the 'Silver Pit' and other lucrative North Sea fishing grounds, and had realised that it had some natural advantages over other North Sea centres, including its welcoming attitude and the new facilities.

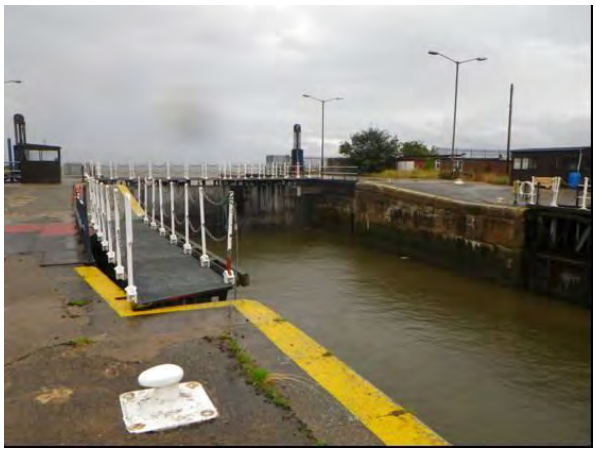


Plate 100 Present entrance lock entrance to No 2 Fish Dock, Grimsby

Plate 101 No 2 Fish Dock, Grimsby, now partly a marina

No.2 Fish Dock was created to the south of No.1 in 1877–8, by which time the industry had expanded dramatically, with Hull and Grimsby operating 800 smacks between them. The first iron smack was built in the 1870s in Hull, although wooden vessels remained in the majority until the 1880s. By that time, steam paddle trawlers had begun to appear and some of the iron-hulled smacks were converted to steam plant. They did not survive, however, and both Hull and Grimsby quickly paid off their fleets, with many sold to other fisheries at home and abroad, while others were converted in desperation to alternative uses, such as 'coopering', where the smacks were fitted to carry spirits and tobacco for bartering with passing ships' crews. The smacks were replaced by much larger steam trawlers driven by screw propellors, which were capable of deep-sea trawling.

With a large fleet based on steam, and later, diesel, the town's fishing industry was revived after the hiatus of the First World War and continued to thrive well into the 20th century, with No.3 Fish Dock built in 1934 as a large eastward expansion of No.1. As elsewhere, the 1970s saw a dramatic downturn in the fortunes of the fishing industry, with the Icelandic 'Cod War', new EU fishing policies, falling fish stocks and quotas all playing a part.

Plate 102 Group of fish curing houses, Riby Street, Grimsby

Despite an almost total collapse of the local fishing industry from the 1970s, a new Fish Market building was completed in 1996 on an extended reclaimed area at the west side of No.3 Fish Dock. This was upgraded in 2012 following the ending of fish auctions in Hull and the transfer to Grimsby of Icelandic landings, which now supply the bulk of sea products to the local industry.

As well as the Fish Docks and market, Grimsby was home to a large number of structures relating to the fishing industry, with a whole self-contained community concentrated mainly in the 'Kasbah'

area along Fish Dock Road, and particularly centred around Surtees Street, Sidebottom Street, Brown Street and Smith Street. The Kasbah included shops, banks, public houses, chandlers, coopers, blacksmiths and smoking houses. Although there has been considerable clearance, the area still includes much of interest and significance including boat repair yards, fish curing and smoking houses of 19th- and 20th-century date, and many other buildings forming part of the old community.

Alongside buildings representing older fish curing methods is a rare example of an ice factory dating originally from 1900–01 and built by the Great Grimsby Ice Company. Before the factory was built, fast ships, such as the *Acorn* (Dundee, 1855; the wreck is located at Mablethorpe) were despatched by the Grimsby Ice Company to Norway to collect ice, returning before it melted. The factory was capable of producing immense quantities of ice by ammonia compression using steam plant, and from c 1930, electricity, expanding its capacity in the 1950s. From 1976, however, production began to decline along with the fortunes of the fishing industry, and the plant closed in 1990. Now derelict, the Grade II* listed factory awaits funding for restoration, although the size and general condition of the buildings and their remaining plant make this an enormous task.

The factory and the Kasbah have both been put on the 2014 World Monuments Fund Watch list, while in 2009, the EU awarded 'Traditional Grimsby Smoked Fish' Protected Geographical Indication Status, a clear indication that the part the town has played in the country's fishing heritage is still recognised and valued.

Boston & King's Lynn

Although outside the study area, the early medieval ports of Boston and King's Lynn exerted a considerable influence on the development of the east coast fishing industry. Initially the industry was probably entirely local, dealing with fish and shellfish caught in the Wash and along the Lincolnshire coast, but both towns also landed catches from the highly seasonal offshore herring fisheries and imported fish from Icelandic waters, a trade which began in the 15th century, following in the 17th century by the start of whaling. The 14th century saw a dramatic rise in the amount of fish being landed by local and overseas boats; for example in 1390–1, 400,000 fish were landed at Boston, mostly imported in Hanseatic shipping (Starkey *et al* 2000, 34). This trade was a major source of revenue in the area throughout the 14th and early 15th centuries.

In the post-medieval period, fishing remained important, but the 19th century brought a period of rapid expansion, with both centres building large fleets of vessels. Trawling smacks, cocklers and shrimpers were built from the mid 19th century with production continued into the early 20th century by Gostelow (Boston) and Worfolk (King's Lynn). Both centres still retain fishing fleets, catching mainly shrimp, cockles, mussels and scallops, with around 20 boats based in Lynn.

Smaller fishing stations

The absence of high cliffs allowed Lincolnshire to develop many more smaller coastal fishing stations than Yorkshire *(Fig 7)*, as well as a series of inland centres made accessible by an extensive network of natural and artificial waterways, particularly those connected directly or indirectly to the Humber and Wash estuaries.

A number of inlets in use by medieval/early post-medieval trading vessels in Tetney, Saltfleet, Somercotes, and Theddlethorpe St Helen on the North Sea coast (see Section 6) were also fishing sites, with North Cotes, North Somercotes and Saltfleet all active in the 1460s, when boats from these stations are reported, with Grimsby, as supplying fish to a manor in Covenham.

The Exchequer Commissioners estimated in 1565 that there were 34 vessels either engaged in fishing or working as ferries in Lincolnshire, although surprisingly of those in the north and Humber area only *Clee* (a constituent of later Cleethorpes) is recorded as having boats (7), the remaining sites recorded by the Commissioners as lying further up the Humber beyond Grimsby, from Immingham and Killingholme onwards.

Further south and in the Wash, Ingoldmells, Wyberton, Frampton, Fishtoft, Freiston, and Friskney were listed in 1565 as having 15 fishing boats between them (ibid, 135–6), some almost certainly based in *Toft Haven* between the two latter villages, which was still engaged in fishing in the 18th century.

A 1628 muster of fishermen reveals the distribution of their domiciles, which added additional settlements, including Boston, Wainfleet, Friskney, Croft, Winthorpe, Ingoldmells, Hogsthorpe, Mumby Chapel, Anderby, Huttoft, Trusthorpe, Sutton, Mablethorpe, Theddlethorpe, Saltfleetby, Skidbrooke, Wragholme, North Somercotes, North Cotes, Tetney, Humberston, Clee, and several settlements along the Humber shore and its hinterland. Some of these men lived near known harbours or havens, but others probably either crewed beach-launched vessels

operating from smaller centres located between the havens and harbours or worked away from home on boats based elsewhere.
A number of the landing sites listed were inlets, while others were reached by lanes which crossed the existing seabank at intervals and which were extended as the sea defences were replaced further to the east. These 'pullovers' were presumably used almost exclusively by beach-landing fishing boats, possibly similar to two 19th-century double-ended vessels whose wrecks were recorded at Mablethorpe, although smaller boats similar to Yorkshire cobles would also have been used for inshore work.

Most fishermen probably engaged in catching demersal species inshore such as cod, haddock, whiting, ling and flatfish. Some boats from the area may also have taken part in the seasonal offshore herring fishery, although only the larger centres such as Grimsby, Boston and Saltfleet are likely to have been capable of supporting the larger vessels required to participate in lengthy trips away from home to the annual Yarmouth herring fishery, which by the 15th century had supplanted the supply of salted 'easterling' herring previously imported from the Baltic to places like Boston. Salt from Wrangle was certainly being sent to Yarmouth in the 14th century for seasoning fish caught during the Michaelmas fair, with Wainfleet and Saltfleet presumably also supplying this natural preservative from an earlier date. In some areas, saltmaking and fishing are likely to have been seasonal activities undertaken by members of the same families; fishermen would also have been engaged in trading, farming or other activities as a way of overcoming the seasonal nature and unreliability of the industry and spreading the financial risk. Few would have been full-time 'professional' fishermen, although skills were handed down for several centuries as a study of several generations of Skidbrooke and Saltfleet families by Pawley has demonstrated (Pawley 1984, 244–67).

Local fishermen would also have potted for crabs and lobsters in summer as well as collecting oysters and other shellfish. Possible oyster or shellfish storage pits have been identified on the foreshore in Huttoft, Chapel St Leonards and Ingoldmells, with oyster beds suggested at Skegness, although these were all undated. A few pits may simply represent temporary clay exposures where the overlying shingle had been lost as in some instances they were visible as dark outlines on aerial photographs, although in the case of Huttoft, the pit was sufficiently prominent to be recorded on Ordnance Survey maps, suggesting that some, at least, dated from the late post-medieval/early modern period. These pits would have been similar in purpose to the North Yorkshire 'hullies', perhaps consisting of wicker- or timber-lined tanks cut through the clay. In the Wash the extensive mudbanks meant that shellfish were particularly important; cockles, mussels and shrimps were caught by trawling and are still exploited in the area today. Toft Haven at Fishtoft was still reportedly partly navigable in the 18th century, with fishermen traditionally drying their nets on the wall of the village churchyard, but any remaining elements of the industry presumably transferred to Boston as the Haven went out of use following the construction of Hobhole Drain in the first decade of the 19th century. Part of the channel is still visible.

As well as fishing from boats, weirs consisting of lines of stakes or hurdles supporting nets or baskets ('kettle nets', Domesday *heia maris*, 'sea hedges') were also built along the low tide mark to trap shoals; currently undated examples still survive at Cleethorpes and are occasionally visible. 'Fishstakes' mentioned in a reference to Ingoldmells in 1803 may be part of a fish trap, while there are early 17th-century references from Wrangle to 'Fyshinges' which were let on the sand banks (Pawley 1984, 157–8).

Eeltraps ('eelgarths') and dams with gaps left for nets ('kiddles' or 'fishgarths') were also set in the local dykes and fens for eels and inshore fish as a traditional way of augmenting the local diet, paying feudal rents, or selling on as a cash crop. Eels were particularly common in autumn following the spawning season. The inland fisheries were extremely important and poaching was widespread: fines were imposed on residents for trespassing on the fishery in Saltfleet Haven and surrounding drains with nets and traps in the 1530s–40s, for example (Pawley 1984, 320).

In the 19th century, the fishing industry became increasingly concentrated in the larger centres of Grimsby, Boston and King's Lynn, which were capable of providing dredged moorings, boatbuilding and repair facilities, ice houses and a range of facilities not available elsewhere. As has already been noted, in the middle of the 19th century, fishing smacks of southern design began to appear using trawling methods distinct from local long-lining and drift netting. The three main centres built large fleets of these vessels for their own use and for sale elsewhere, while smaller single-masted smacks were also built in Boston and King's Lynn for shell fishing in the Wash, with some carrying boilers for prawns and shrimps.

The introduction of vessels with deep iron hulls and steam engines in the last two decades of the 19th century meant the disappearance of many of

the smaller fishing stations which depended on shallow-draughted boats, although a small fishing fleet remained at Saltfleet Haven, where there were reasonable moorings, and several fishing boats are still based there. Other boats survived at Skegness, with the town adopting a fisherman in its holiday advertising from 1908, while a small number of boats still operate from Wainfleet Haven immediately west of Gibraltar Point.

The small surviving inshore industry has reverted to a pattern similar to that which obtained in the medieval period, catching cod, rays and other demersal species, as well as potting for crabs and lobsters in summer, with cockles, mussels and shrimps also still caught in the Wash. The cockles are often dredged by suction, while mussels are normally collected in large bag-shaped nets dragged along the seabed, but hand collection using rakes and nets from boats beached on the mudflats is also practised. Shrimp are caught by lightweight trawling gear. Providing fishing stocks and boat numbers remain in balance, and prices remain at viable levels, a small industry at pre 19th-century boom levels is likely to survive regionally, as it has elsewhere.

6 PORTS, HARBOURS AND SHIPBUILDING

North Yorkshire *(Figs 8–10)*

As has been outlined in Section 3, the topography of the coastal region of North Yorkshire ensured the creation of a dispersed pattern of small rural settlements and farmsteads from the early medieval period onwards, with only limited locations for safe harbours. A 1565 list of English havens, creeks and landing places compiled to ensure accurate collection of customs dues (*Acts of the Privy Council 1558–70*, 289) only included *Whitbye*, *Robyn Hode Baye*, *Stanton*, *Scarboroughe*, and *Fyleye (Fig 8)*. Of these, Whitby and Scarborough were the only centres in the coastal study area which had developed beyond fishing or farming villages by the 19th century. Even there, the harbours were highly vulnerable to storms sweeping across the North Sea and required substantial investment to maintain, let alone develop and improve.

Whitby, of course, was an important harbour from the medieval period onwards, with possible Roman and early medieval facilities in the same area, near the mouth of the Esk.

Further south, the small village of Robin Hood's Bay had become an important centre for fishing long before it became a centre for tourism but did not develop a substantial harbour for a variety of reasons. 'The Landing' appears to be an artificially-cut inlet across the rock foreshore platform, and its use was probably restricted mainly to fishing vessels although coastal traders, such as small brigs or colliers, could have beached there safely between tides to land cargoes such as fuel for local use.

The position of Stainton (*Stanton*) on the list strongly suggests it should be identified as the small inlet of Cloughton Wyke at the foot of Salt Pans Road, Cloughton, where a possible harbour was suggested in the Phase 2 report for the area. Here, there is relatively good beach access, with the ends of what appear to be several hollow-ways leading to the cliff around the head of the Wyke. On the foreshore below is an area cleared of obstructions flanked by breakwater-like formations in the foreshore rock strata. There may have been salt pans there unless the name of the adjacent trackway is apocryphal, while a windlass shown on the cliff above on the 1893 1:2500 Ordnance Survey may have been used to haul boats in. Another feature of the Wyke is its petrifying and freshwater springs; the latter would have allowed boats to fill their water kegs on the beach.

Plate 103 Cleared area of rock foreshore platform in post-medieval harbour at Cloughton Wyke

Scarborough, like Whitby, had an important medieval and post-medieval harbour with possible earlier use, although both declined as trading ports in the late 20th century.

Like Robin Hood's Bay, the medieval village of Filey became an important fishing station, but the bay also acted as a haven, sheltering large numbers of vessels during storms or adverse winds. Although coastal traders landed goods and coal, the town did not develop a harbour, although various plans were put forward during the course of the 19th century (see below). The Spittals at the end of Filey Brigg was developed at some point to remove stone from the extensive Brigg quarries, but was too remote from the town and too exposed to function as a harbour in the accepted sense.

Plate 104 The Spittals, extending from Filey Brigg

Other landing places are likely to have existed, but like The Spittals, these were generally temporary, largely related to local industry. This included alum working, including the extensive

drystone quays, platforms and other features at Saltwick Bay and to a lesser extent, the south end of Robin Hood's Bay, and other quarrying, sites, possibly including Johnny Flinton's Harbour in Cayton Bay. At the latter site, a large rectangular area of rocky foreshore has been cleared and probably partially excavated to create a landing place for small boats. Immediately to the south of this potential landing place, a long arc of boulders and rocks presumably represent the cleared material, dumped to act as a breakwater. A similar feature exists at Flat Scar, Burniston.

Plate 105 Johnny Flinton's Harbour, Cayton Bay, Osgodby

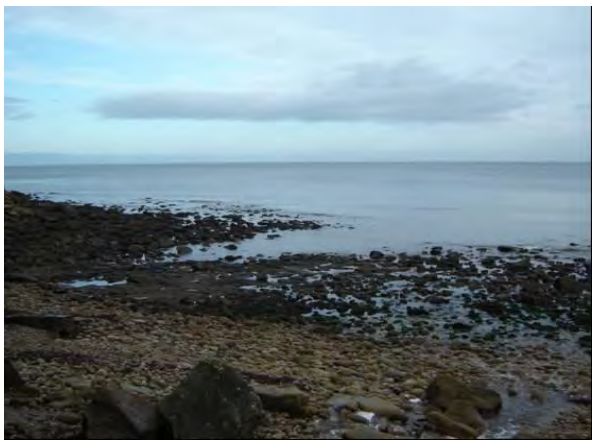


Plate 106 Possible landing place, Flat Scar, Burniston

At the south end of Filey Bay under Reighton cliffs was the 19th-century Dulcey Dock, consisting of a small inlet cut into the chalk foreshore platform with some brickwork, perhaps a form of lining or loading platform. According to local sources, the dock was built specifically to hold the coaster *Dulcey* while it was loaded with chalk for the mill at Hessle foreshore which produced 'whiting' or 'Paris White' (purified crushed chalk) as a base in paint, putty and other products. Later Ordnance Survey maps suggest that the dock had been more precisely cut some time before the 1890s, implying that it remained in use at least into the second half of the century, although Roman Cement had largely been replaced by artificial Portland Cement by the 1850s (Section 4).

Whitby

It is quite possible that there were harbour facilities in the Whitby area during the Roman period, as the mouth of the Esk is one of the few sheltered locations between the Tees and the Humber (the possibility that a military station existed here is discussed in Section 7). There are traces of Roman occupation in the area of the town, but no direct evidence for the existence, location and extent of any settlement remains or harbour facilities. A location on the east bank under the lee of the Abbey cliff is the most likely site for any early activity: this is where the medieval settlement and the core of the present harbour were created, probably close to a fording point which preceded the construction of the first bridge (in place before 1351).

There is a distinct possibility that the early Abbey (AD 657–870) maintained a landing place below the East Cliff, possibly simply an area of foreshore cleared of fallen rocks suitable for small fishing vessels providing food for the community and for boats to land visitors. Two recorded Viking raids in AD 867 and AD 870 show that such landings were possible. Whitby and the settlement of *Prestby* on the plain above the East Cliff were both in existence before 1066 and traces of medieval settlement dating from the 12th century onwards have been identified on both sides of the river. The Abbey, which was re-established in 1078, and was granted the manor, including the harbour in 1091–6, probably constructed a landing place to serve its own purposes as well as that of the riverside settlement (Buglass & Brigham 2013b).

Medieval masonry and timber revetments have been examined archaeologically on both banks, at New Quay Road (2004) and Church Street car park (1998), the former dating to the 12th–14th centuries, the latter to the 14th century, but presumably with antecedents closer to Church Street. The first specific documentary reference to the waterfront arose during this period, with the Abbot granted quayage tolls for three years in 1306–7 to pay for the construction of a new wharf. There are several further references to grants of quayage and the existence of a pier from the 14th–16th centuries, including complaints about its poor condition and the constant need for repair. The term 'pier' could be used interchangeably to refer to either a wharf or a jetty, although could incorporate both elements.

In 1632 Sir Hugh Cholmley (1st Baronet) raised sums to build a new pier which may have consisted of a stretch of waterfront between Tate Hill and the junction of Grape Lane and Church Street. One purpose appears to have been to protect the town from storms but it was undoubtedly Cholmley's intention to improve the town's fortunes by providing a decent quay for commercial purposes, including the newly developing alum industry. The main section of the present Tate Hill Pier and a short stretch of the adjacent quay wall may well represent extant portions of Cholmley's work: the junction between the original pier masonry and a short extension of 1766 are clearly visible as a change in construction beyond a vertical joint *(Fig 9)*.

Plate 107 Late 17th-/18th-century Tate Hill Pier, Whitby and contemporary adjacent section of waterfront

The work was halted by the Civil War, Cholmley's temporary exile for his part in it, and the subsequent death of himself and the next two heirs to the title and manor in the short period between 1657–65. The eventual heir and 4th Baronet, Cholmley's youngest son (also Sir Hugh) was responsible for maintaining and extending his father's work. Although not normally visible, the foundations of a 150m sandstone wall and pier were discovered and recorded in 1999 during sewerage works along the foreshore between Tate Hill and the present East Pier. These structures do not appear on the maps of the area, available from 1740 onwards, and they were not included in works specified in a Harbour Act of 1702. This implies that they were, therefore, built in Cholmley's time. Richard Blome's *Britannia* (1673) stated that Whitby's quay was unfinished and it is likely that this referred to Cholmley's work; the Baronet by this time spent most of his time either in London or in the new colony of Tangier, where he held various posts in the 1660s and 1670s, including commissioner, surveyor-general and governor. The area to the rear, *Haglathe*, was almost completely undeveloped until the 1760s, and there was probably little pressing need or incentive to complete the work beyond Tate Hill. The present East Pier, constructed following an Act of Parliament passed in 1702, was built on an entirely new site much further east, suggesting that Cholmley's pier site was considered insufficiently close to the river mouth to protect the harbour entrance.

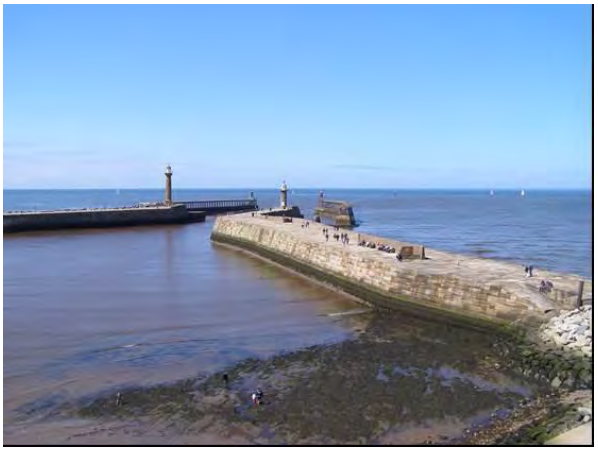


Plate 108 Entrance to Lower Harbour, Whitby, 18th-/19th-century East and West Piers, with early 20th-century extensions in background

The main sections of the East and West Piers, and the original core of Scotch Head were constructed following the 1702 Act which allowed duty to be raised for their construction, chiefly from coal transported from Newcastle and Sunderland, but includings other goods landed in the port. Initially enacted for nine years, a further extension was granted to 1723 when it became apparent that the sums being raised were insufficient. In 1720, the duties, except on the Newcastle coals, were made perpetual to ensure the wharves and piers were maintained, but in 1734 the Newcastle duties were again included, allowing the further extension of the West Pier and the construction of artillery batteries on the pier end itself, at the foot of the pier on what became Battery Parade, and on the east cliff above the East Pier at Haglathe, the area now occupied by Henrietta Street.

Further rebuilding was undertaken after a renewal of the Act in 1749, including the extension of the East Pier and (although not started until c 1780) the construction of a causeway (now Pier Road) between Scotch Head and the end of the main built up area on the waterfront at Haggersgate to link the West Pier properly to the town and protect Haggersgate from storm surges. Two short piers were added to the north end of the causeway, with a third at the junction with Haggersgate (Coffee House End).

A seawall was finally built to approximately halfway between Tate Hill and the new East Pier, probably in the 1760s, allowing the construction of buildings along Sandside, including a large Herring House and higher up the cliff in Haglathe. Unfortunately the cliff in this area was — and remains — notoriously unstable and the seawall suffered a catastrophic collapse in 1787, with the loss of many newly-built houses including the northern section of Henrietta Street. The sandstone ashlar blocks of the seawall next to Tate Hill Pier may represent the remains of the collapsed pre-1787 seawall although the construction material of the remainder of the wall is a mix of ashlar, stone rubble, brick and concrete blocks.

The present wall is of mixed construction, the older parts probably dating to the late 18th and 19th centuries, but some of it modern terracing, supporting Sandside, a group of 20th-century buildings replacing earlier structures, including the Herring House. The eastern section between the last houses and the East Pier consists of unsupported till cliff although it is possible that the seawall originally continued along this area.

Alterations to the main piers continued through the later 18th and early 19th centuries, including the extension of Tate Hill Pier in 1766, the widening and raising of the East Pier and alterations to Scotch Head. The main new addition was the Fish Pier, built between the swing bridge and Tate Hill Pier in 1790, with a new Fish House (covered market) nearby. The West Pier was rebuilt by 1814, with the lighthouse added in 1830. Repairs to the East Pier after 1845 included the erection of a similar but simpler lighthouse there in 1854.

Along the river, the area between the swing bridge and Coffee House End was given an entirely new seawall after 1842, creating a new promenade and roadway along St Ann's Staith, and the wall along Pier Road was probably also rebuilt around the same time, although this stretch is obscured by the openwork Fish Quay, built between Coffe House End and Scotch Head in 1957 to house a new Fish Market and provide moorings for boats.

The piers and seawalls still retain much original masonry, representing the various phases of reconstruction, including the parapet of the West Pier Battery. The East and West Piers are also home to a series of bollards, capstans and rope rollers used to warp vessels into harbour. Lines of capstans were shown along the centre of the piers on late 18th-century maps and the present versions probably represent 19th-century or later replacements of similar form to the prototypes, while the cast iron pulley wheels of the rope rollers could in some cases be original.

Plate 109 Capstan of late 18th-/19th-century type East Pier, Whitby

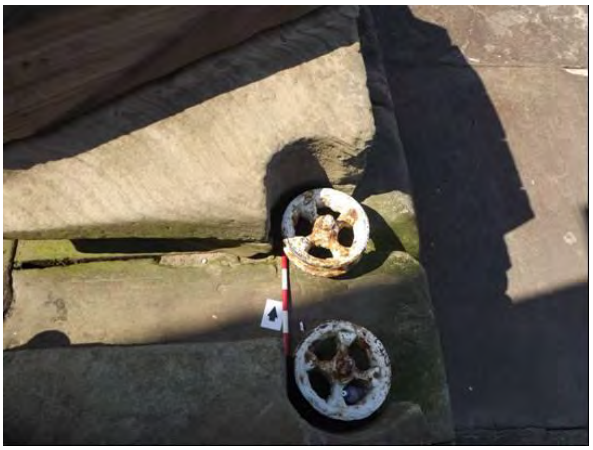


Plate 110 Cable guide pulleys within 18th-century gun embrasure forming part of 19th-century shiphandling system, West Pier, Whitby

All of the piers retain stone surfacing, with the different phases of the East Pier clearly visible in the jointing. The West Pier also has several stone seats along the centreline, which were already in place by the mid 19th century and seem to have been deliberately shaped with a flaring profile to allow cables to be passed around them. The later addition of traditional cast iron railings and gas standards represents the transformation of the pier from a functional harbour facility into a promenade; the nearby Scotch Head was capped by a decorative bandstand, recently replaced by a similar structure.

Perhaps the biggest change to the area was the construction of two outer concrete extensions to the East and West Piers between 1910–13 in order to prevent waves and sediment entering the harbour mouth.

A number of buildings associated with maritime activity survive, including two formerly used as Custom Houses on either side of the river and the ground floor remains of the façade of the 19th-century Coastguard Station at Battery Parade, incorporated a little incongruously into a 1960s restaurant building.

The present bridge was opened in 1909, but replaced a swivel bridge of 1833. This itself replaced a drawbridge of 1766 and still earlier antecedents dating back to before 1351. A ford appears to have existed on the downstream side of the bridge prior to this and seems to have remained in being, as a large archway in the eastern seawall below a late 18th-century house marks one end of the route.

Upstream of the bridge, the eastern waterfront initially consists of a continuation of the 18th- and 19th-century seawall, continuing past the concreted slipway of Alder's Waste Ghaut. In the south wall of the slipway and a return marking the end of the masonry seawall a little to the south are traces of two blocked sluices which may have been related to a short-lived dry dock built there in 1755 (see below). Beyond this point, the ramped seawall is of 1960s date, constructed in front of its predecessor when the southern section of Church Street was widened.

Plate 111 Slipway at south end of former Abraham's Quay shipyards, Whitby

All of the earlier features on this side of the river were lost when this occurred, including Boulby Slip, the site of a small shipbuilding yard, and Abraham's Bosom, a long indentation which was presumably used to beach or moor vessels. The 18th- and 19th-century buildings lining the west side of the street were also demolished to facilitate the widening, leaving only a 20th-century public house, The Fleece, which was allowed to remain, in isolation among areas of car parks and storage areas for fishing gear.

Further south, sections of late 18th- or early 19th-century seawall remain at the former shipbuilding sites of Abraham's Quay (founded 1734, closed c 1884) and Whitehall Landing (probably founded c 1735, closed 1902), both now modern residential developments. Nothing remains above ground on the site of the former apart from a slipway and part of the original seawall, although the three buried 18th-century drydocks will survive.

In the river at Whitehall is the submerged timber and concrete ramp of a well-preserved late 19th-/early 20th-century 'patent slipway' where ships would have been hauled up and down using a steam donkey engine, while the outline of an earlier drydock (excavated in 2001) has been marked out with posts and a signboard. The slipway was in use for repairs from c 1945–65 by the Whitby Shipbuilding & Engineering Company.

Plate 112 Late 19th-century section of patent slipway, former Whitehall shipyard, Whitby

Plate 113 Former sail loft, Whitehall shipyard, Whitby

Above Whitehall Landing are two original houses, one probably that of the yard manager, the other a large late Georgian house, 'White Hall', built by a

former owner and giving its name to the yard. Between the yards are stone walls around the mouth of the Spital Beck where there is a substantial restored and converted former sail loft. Inland, past two phases of Spital Bridge are a converted sailcloth makers and a timber pond, used for preserving timbers for shipbuilding; there was formerly a long ropewalk along the south side of the beck, now gone, with a second nearby to the north-east along the crest of Boulby Bank (now called The Ropery). A derelict former sail loft also stands nearby at the junction of Church Street and Green Lane.

On the west bank, the waterfront running south from the swing bridge has also been entirely rebuilt, with a large modern inlet forming a dock at the former entrance to Bagdale Beck, followed by modern commercial wharfage fronting a new cargo shed. This large reclaimed area, which includes the area as far west as the railway line, covers the former Bell Island, an area of alluvial deposits and channels, behind which were three, later four separate shipyards, since the earliest, dating to c 1700, was split to form a separate yard by 1763. This possibly replaced the earlier 17th-century yard between Baxtergate (which probably followed a sand spit) and the north side of Bagdale Beck as that area was progressively reclaimed for building purposes.

Plate 114 Blocked dry dock entrance at former Boghall shipbuilding yard, Upper Harbour, Whitby

The second yard, to the south was possibly established c 1720, while the third was established on a reclaimed spit between the others c 1760. The railway began to encroach on the area from the west and south in the 1840s, although the yards remained largely intact in 1852. The whole area had been reclaimed and turned over to sidings following the last of the yards closing in 1862 and 1866. The area now includes car parks, a supermarket and goods wharf, with no indication of the former shipyards.

South of this area, sloping modern bank defences continue to the site of the former Boghall shipyard (founded 1757), where there is still a modern boatyard. Here there are surviving sections of 18th- and 19th-century riverwall including the blocked entrance to a drydock and a probable slipway. The yard closed in 1899 and was converted to a goods sidings for the adjacent railway lines.

Clearly, these structures represent a substantial and sustained investment over several centuries which could only be justified by continued demand. Documentary records testify to the importance of commerce to Whitby, particularly after the town began to benefit from the growth of the local alum industry, coal transportation, shipbuilding, fishing, and later whaling in the 17th/18th centuries, with the town seeing significant sustained growth in these areas well into the 19th century.

From c 1604, alum produced at Guisborough was being shipped out through Whitby, followed in the 17th century by the products of Peak and Saltwick. Prior to that, the town had been home to a small resident fleet of fishing boats and coastal traders, but between the early 17th and early 19th centuries, Whitby became one of the country's premier shipbuilding centres, with wharves, slipways, dry docks, and a miscellany of chandlery trades serving an industry which produced a range of sea-going trading vessels such as brigs and colliers, and fishing boats, including whalers, luggers, yawls and several types of coble.

Coal from Newcastle was being landed from c 1615, both for use in the first local alumworks and for domestic purposes in the town and surrounding area, with a small number of Whitby entrepreneurs initially hiring vessels to engage in carrying. The fluctuating alum trade and local domestic consumption, however, formed a relatively small market, and the number and carrying capacity of vessels built in the 17th century was still limited, partly because of the condition of the harbour and the lack of suitable shipyards (Jones 1982, 247). This was transformed as the town began to engage in the lucrative and expanding Newcastle to London coal trade, which joined with the rise in general coastal trading to encourage investment in shipbuilding and as a result, in harbour improvements following an Act of 1702.

From 1635 Whitby began to build her own colliers alongside those carrying alum, and by the beginning of the 18th century took a leading role

in the Newcastle to London route together with Scarborough, providing both the ships and the crews. Whitby sent 98 colliers to Newcastle each year between 1702–4, with Scarborough contributing 54, although Bridlington and Hull also provided smaller numbers of vessels. At this time, Whitby was the third largest transporter of coal from Newcastle after London and Yarmouth (Jones 1982, 43). Even Filey was involved: at one point considering building its own harbour to house its own small fleet of traders, which were otherwise moored in Scarborough. Whitby colliers were robust vessels which made them suitable for other purposes: James Cook's vessels *Endeavour* (1764) and *Resolution* (1770) were built as colliers in Thomas Fishburn's yard at Bell Island, and were chosen because of their ability to weather the expected Atlantic and Pacific storms.

Whitby's coal trade lasted well past the advent of steam propulsion, when the much larger carrying capacity of individual ships ensured profitability, provided a return cargo could be found to offset the high running costs. The latter had to take into account the quantity of coal used in powering the vessels and supplying 'bunkering' (refuelling) stations on overseas routes: bunker coal accounted for c 16% of the total tonnage carried by the 15 vessels of the Whitby company International Line in 1912–14.

The earliest shipbuilding enterprises in the town were probably located both above and below the town's central swingbridge, but the first documented yard, building colliers c 1635, was in the Upper Harbour near Baxtergate, possibly near the Angel Inn. This may have produced one or more of three ships recorded as being built in the town but registered elsewhere in 1626–7. This location was close to the site of the first of the six or seven larger yards which developed in the Upper Harbour on both sides of the River Esk from c 1700 onwards. These were referred to earlier: those on the west bank include three at Bell Island (one subsequently split to form a seventh yard), and one at Boghall, while those on the east bank include one at Abraham's Quay and another at Whitehall. Most of these remained in use through much of the 18th and 19th centuries.

Several minor sites were in use at various times, mostly specialising in fishing vessels and smaller coastal traders. Two short-lived sites were established upriver near Larpool c 1800, another example was in the Lower Harbour near the Custom House on the east bank. A 19th-century yard (Smales') is shown by the Ordnance Survey next to 'Boulby Slip' at the base of Boulby Bank. Finally, a mid 18th-century stone and timber dry dock next to a slipway and under what is now Church Street car park was examined archaeologically in some detail in 1998. The dock can be identified from documentary evidence as being built by the Simpson family; it was extremely short-lived due to groundwater problems, and it was abandoned by the Simpsons in favour of what became one of the Bell Island sites on the opposite bank. Significantly, reused timbers from a medium-sized coastal trader were incorporated into the dock while the articulated remains of a small clinker-built coble were found at the bottom, the earliest known remains of such a vessel. As the dock went out of use shortly after it was built in 1755, the boats belong to a period from which there are few remains. The potential for similar discoveries is clear, as many further infilled dock sites remain on both banks of the Esk, although the excavation of a dry dock at Whitehall Landing in 1999 did not reveal any further boat remains.

From around 1700 until the middle of the 19th century, many of the established boatyards were run for several generations by the same families, with notable names including Coates, Barry, Barrick, Fishburn, Broderick, Hobkirk, Langborne, Smales and Turnbull; several firms co-operated as the 'Dock Company' to set up the yard at Abraham's Quay, although vessels were built there under their own names.

As well as the shipyards themselves there was a support industry of anchor, mast and block makers, as well as chandlers, sailcloth manufacturers, sail lofts and ropewalks supplying fittings, rigging and anything else required for the vessels under construction and others awaiting repair and maintenance. In addition to a 300ft long ropewalk along the south side of the timber pond at Spital Beck, and another at Boulby Bank, five sailmakers are listed in a trade directory of 1784. A currently derelict building at the junction of Green Lane and Church Street was a sail loft in the mid 19th century, and there were two others at the mouth of Spital Beck, one still remaining, as well as a sailcloth manufactory on the north side of the pond, which still survives, both buildings converted to residential use. Another sail loft was located next to the river near Alder's Waste Ghaut. The Smales shipbuilding family maintained a block and mast yard next to their house and slipway (Boulby Slip), Church Street.

Most of the shipbuilding families went out of business in the first half of the 19th century or shortly afterwards due to death, illness or bankruptcy. Several firms based at the Dock Company yard at Abraham's Quay finished between 1819–29. At Bell Island, Barry and Fishburn & Broderick both ceased in 1830, while

Hobkirk's yard carried on until bankruptcy in 1862 and Barrick finished in 1866. Of the principal remaining yards Smales carried on until 1871, and Barrick until 1884 at Abraham's Quay, with Turnbull taking over from Fishburn & Brodrick at Boghall until 1899 and from Campion at Whitehall Yard until 1902. The two small yards at Larpool closed, one of them run by Turnbull before taking the other yards downstream.

The financial fragility of the yards was partly due to the fact that many of the firms had expanded their operations during the boom years of the 1790s and early 1800s, which were followed by a considerable peacetime drop in demand. The French Revolutionary/Napoleonic Wars had seen a massive growth in the construction of warships as well as support vessels used to convey goods and troops around the world to far-flung colonies as well as home ports. The sheer volume of shipping required ensured that surplus production work was devolved to small yards around the country, both on the coast and in the tidal estuaries: Hull, Hessle and Paull on the Humber estuary all produced a variety of warships and mechantmen for example. In Whitby, the Larpool yards of Lacey and Wake had both opened c 1800, presumably to take advantage of the boom. Whitby had sometimes exceeded the larger ports of Liverpool, Hull and Bristol in aggregate tonnage produced: in some years this reached nearly 6000 tons, with only London and Newcastle exceeding this total in 1792 and 1793 respectively (Jones 1982, 29–32). Between 1786–1815, 599 vessels registered at Whitby were home-built, with a tonnage of just under 130,000 tons, of a total 881 vessels, and an aggregate of 161,000 tons.

The end of the war in 1815 saw a downturn in the numbers of vessels built across the country as existing vessels were released from war work. Demand fell, not just for warships, but for merchantmen and coastal traders formerly engaged in transporting war materials, troops and supplies, with the result that many yards closed within a few years. Although Whitby's yards did not depend entirely on vessels produced for the purposes of the war and were able to carry on, the subsequent decline of the whaling and alum industries also had an impact on the number of vessels required; Whitby was affected as its yards built whalers for other ports, including Hull, as well as for the home fleet.

Local shipbuilders also suffered from the tradition that Whitby built ships to last, with vessels launched as early as 1717 still in regular use in the 1780s, while in 1876, two 18th-century ships remained in the home fleet. Builders used expensive and increasingly scarce local oak for the keels and frames, while competing East Coast shipbuilding towns used cheaper and less durable Baltic, American and Canadian softwoods and hardwoods and charged less for the finished products (Jones 1982, 100). Not only were Whitby firms unable to compete on price, which in a declining market was problematic enough for long-term survival, but ironically the quality of their products meant that the demand for replacements was lower than elsewhere.

Despite this, there was a reviving mid-century market for the smaller number of firms which survived the 1820s–1840s, with nearly 75,000 tons of shipping registered in the port in 1866 compared with 43,000 tons at the earlier peak of 1815. However, 1866 was the last peak year, followed by a long decline. The Smales family built the last wooden sailing vessel, *Monkshaven*, in 1871, and only Turnbull's Whitehall Yard survived to build steam-powered iron vessels, but entered the market later than many competing ports. The yard faced a further competitive disadvantage: the swingbridge limited the size of vessels which could be built there, while the build time for individual vessels increased, reducing the capacity of this relatively small yard to complete more than one or two projects a year, although boat building continued until 1902, the yard closing the following year. There was a short-lived revival in 1914–18 with the production of two ferro-concrete vessels and some small vessels were also built and repaired there after 1945 until c 1965 by the Whitby Shipbuilding & Engineering Company. Today, the modern boatbuilding and repair yard of Parkol Marine, founded in 1988, is located on part of the former Abraham's Quay, with a smaller yard at the former Boghall site.

Plate 115 Use of Upper Harbour, Whitby, as a marina

Like shipbuilding, trade entering and leaving the port also declined though the 20th century. Just south of the bridge on the west side is a 90m quay

and a small dock about 45m square at the entrance to the former Bagdale Beck, which was formerly used as a moorings for traders, but is now occupied by small leisure vessels.

Beyond that, Endeavour Wharf, completed in 1964, has over 200m of river frontage, with 64 ships docked in the first year and by 1972 the number of cargo vessels using the port had risen to 291. A new transit shed was built on the wharf by Associated British Ports (ABP) in 1996. Timber, paper and chemicals were imported while exports included limestone, steel, grain and potash.

Despite investment in the port facilities, the volume of exports declined sharply during the 1990s, as did imports, with trade ending in 2000. Control passed from ABP to the local authority in 2002, with the hope of reviving the port, but the proximity of the Tees and Humber makes it unlikely that this will happen unless trading in the type of bulk products handled previously returns: most goods are now containerised, while Whitby also lacks both an industrial base and good transport links to a populated hinterland.

The planned opening of a large potash mine nearby is unlikely to be of much benefit to the port, as the mineral is likely to be transported underground by pipeline directly from the mining centre at Sneaton to the processing plant at Teesport (Section 4).

Scarborough

Scarborough has been extensively investigated archaeologically and the results have revealed a thriving medieval settlement. Close to the waterfront, several phases of reclamation have been identified from a study of the levelling deposits on a number of sites. The later structural development of the present harbour is also fairly well understood from documentary research, with the Old Pier/Vincent's Pier having the most complex history. The present East Pier and Vincent's Pier both consist largely of original well-preserved 18th- and 19th-century masonry, with later additions, although the landward (Old Pier) section of Vincent's Pier may also contain earlier material, while the West Pier is of late 19th- and 20th-century date.

It is possible that there was an early medieval beach market ('emporium') on the foreshore in South Bay, serving the extensive pre-Conquest manor of Falsgrave since the shallow sandy beach between what is now the Spa and the harbour would have provided an excellent landing place for the shallow craft of the period to be drawn up, with the Castle headland providing some shelter. This is also the only substantial sandy beach north of Filey, with the River Esk at Whitby the next potential haven.

A beach market would have left little or no trace archaeologically, as temporary booths are likely to have been the only structures erected, but Ramsdale Valley, at the centre of the beach, would have been an ideal access point, with a freshwater stream for reprovisioning, allowing goods to be traded directly up to Falsgrave without the need to ascend the steep cliffs to north and south. Falsgrave's watermill was sited further up the valley, in existence at least by 1200–01, so the Ramsdale Valley route did have a known connection with the manor.

With the development of larger vessels from around the early 12th century, requiring deeper water and quay facilities to moor against, a small waterfront enclave may have been established further north near West Sandgate, where traces of occupation have been found. Scarborough is certainly described as having a port prior to the present town being established in 1155, probably contemporary with a planned settlement laid out around Castle Road by William le Gros, Earl of Aumale, at the same time the first timber Castle was established in 1138 (Buglass & Brigham 2013, 25–6).

Plate 116 Overall view of Scarborough harbour from Castle Headland

This would have shifted the focus from the hypothetical earlier landing place at Ramsdale to a new spot which was only partly sheltered by the Castle headland, and would have required a pier, both to protect the moorings from the full force of westerly waves and also stop the area from silting up, a perennial problem which was never satisfactorily cured.

A pier and quay have probably existed in Scarborough since at least the later 12th century, together with a quay; the pier is likely to have been constructed in the same location as the present Vincent's Pier, the only logical place for such a structure. The pier was rebuilt and extended several times, including substantial investment in 1564–5, at which time it was likely to have been timber framed with stone infill.

Plate 117 Vincent's Pier, Scarborough, general view of 1830s Lighthouse Pier with temporary footbridge in place

A pier was built on the same site following an enabling Act of Parliament passed in 1614, and extended again by the engineer William Vincent following a further Act of 1732, which also allowed for the construction of a new East Pier outside the existing harbour area *(Fig 10)*. A section of old masonry pier found in 1816 during alteration works to the Old Pier section is quite likely to belong to the 17th-century pier.

West of Vincent's Pier were the Inner and Outer Island Piers, two unusual freestanding masonry structures of similar purpose but different date: both protected the harbour from southerly winds and provided moorings. There was a freestanding structure on the site of the Inner Island Pier by c 1538, and both were quite probably created by isolating the original ends of different versions of the Old Pier after it was extended or rebuilt on different occasions.

There is a reference in Leland's *Itinerary* (c 1535) to a 'bulwark' damaged by the sea in his time, but which had been constructed to the south-east of the town in the late 15th century by Richard III, possibly while still Duke of Gloucester; this may well refer to the Inner Island Pier.

Plate 118 Vincent's Pier, Scarborough, 19th-century water house at south end of 'Old Pier' section

Eventually, the West Pier was built to more effectively shelter the area between 1817–22; the Inner Island Pier was removed and replaced by dolphins during this process. The Port and Harbour Commissioners attempted to extend the harbour further to the west in 1877, but were prevented by Scarborough Corporation, concerned about loss of the beach area. The West Pier was extended instead, which entailed the final removal of the Outer Island Pier. This was followed by widening the west side of the pier around 1900 to create a greatly enlarged working area.

Plate 119 19th-century West Pier and Inner Harbour, Scarborough

The port was used for a variety of imports and exports; between the 12th–14th century for example, Scarborough Ware, products of kilns based in the Castle Street area of the town, was exported along the English and Scottish coastline and to inland destinations via the extensive navigable river system, but also crossed the North Sea. This aspect of the harbour provided a significant source of income for the town and by

1787 there were 1500 seamen belonging to the port, with 165 ships of all types registered at Scarborough with a combined displacement of c 25,600 tons.

Plate 120 20th-century North Wharf, Scarborough, former cargo handling area for North Sea and Baltic trading vessels

Exports included agricultural products such as grain, butter, meat and locally caught salted fish. Imports included coal from the north-eastern collieries, as well as timber, hemp, flax, and iron, much of it for use in local shipbuilding, although Baltic timber was also used in the construction industry from the medieval period onwards. The timber trade continued into the late 20th century, operating from the Corporation Quay, which was built in 1826 along the south side of Sandside and replaced in 1928 by the present North Wharf.

Plate 121 North side of Scarborough harbour from North Wharf to the West Pier slipway, location of many early shipbuilding firms

Boat construction and repair was carried out in the harbour area throughout the medieval and post-medieval periods, with several family-run yards extending along the waterfront between the Old Pier and Sandgate. From at least as early as 14th and 15th century, many of the shipyards were based on a series of naturally accumulating shingle mounds or 'sandhills' in front of the contemporary quay, which provided a relatively dry elevated platform for building or repairing vessels and for constructing slipways: the medieval name for one, *Mastus* (masthouse) *hill*, reflects its maritime connection, but in the 18th century, these early descriptive names were beginning to be replaced by those of different shipbuilding families with which they became associated. Families involved in ship construction included Bilbrough, Fowler, Cooper, Tindall, Cockerill, Wharton, Dale & Smith, Henry, Heward, Skelton and, Sheader.

Before the West Pier was built, creating a limit to the harbour area, maritime businesses continued further west along the base of Bland's Cliff between the harbour and Ramsdale Valley, with boats built in the late 18th century by the Shore, Newham and Riby families. Mastyards, timberyards and fish processing businesses were also located there before the construction of Foreshore Road in the 1870s led to their replacement by leisure facilities, often within pre-existing buildings.

By the beginning of the 19th century, Scarborough had become one of the principal shipbuilding centres on the east coast, with 209 vessels built between 1785–1810, having a combined displacement of c 35,600 tons. The Tindall family were the main builders, beginning c 1682 and ending in 1865; between 1742–1879, of c 72,000 tons of shipping built in the town, they were responsible for building c 42,000 tons. Firms appear to have specialised in different types of vessel: the Skeltons, Sheaders and Smiths concentrated on fishing vessels, while the others built cargo vessels. These included barques (generally 3–4 masts, including a mizzen carrying fore-and-aft sails), brigs or brigantines (two masts with a gaff-rigged fore-and-aft sail attached to the mainmast) and snows (two masts with a 'snowmast' immediately to the rear of the mainmast for a fore-and-aft sail instead of a gaff or separate mizzenmast). Alongside the standard output of brigs and barques they were capable of building fully-rigged ships (three or four square-rigged masts), of which the largest was the Tindalls' *Nimrod* (1853), 1002 tons.

The town's shipbuilders built vessels on stocks and launched them on slipways, but the shallow sandy harbour did not lend itself to the construction of drydocks, which was a problem when it came to the maintenance and repair of large vessels. Hull, Grimsby and Whitby were all fitted out with several drydocks and this may well

have prompted the formation in 1849 of a company to repair ships in a floating dock. This opened the following year and was capable of taking ships up to c 300 tons, the size of many of the brigs built locally.

Several shipyards remained north of the harbour along Sandside after the area containing the sandhills began to be reclaimed behind new harbour walls in the late 18th to mid 19th centuries. The last yards, among them Tindalls, had gone by the time the area was cleared in advance of the construction of the broad Sandside carriageway c 1900. As Whitby had found, the introduction of iron and steel to replace timber, and steam plant to replace sail, coupled with the general increase in the size of vessels made shipbuilding increasingly specialised and difficult to maintain in small centres such as Scarborough, although fishing yawls and cobles continued to be built. The last small boatyard and repair facility, Scarborough Marine Engineers, remained on the north side of Sandside until the late 20th century; a chandlers survives but the main workshop is now in retail use pending possible redevelopment.

A considerable number of listed buildings standing along Sandside are of late 17th- or 18th-century date, but include the late medieval King Richard III House. Although much altered, these essentially originated as houses of the merchant or shipowning classes and would have remained as such well into the 19th century, when the area became increasingly given over to the tourist trade. The construction of the Sandgate carriageway along the front of these properties to connect Foreshore Road to the new Marine Drive led to major changes along the north side of the harbour, including the demolition of a number of 18th-century buildings between Sandgate and the harbour wall. This included the addition of a new harbour wall and slipways followed by the construction of the openwork North Wharf in 1928 to expand the area of wharfage for cargohandling.

In the harbour itself, the 19th-century Grade II listed lighthouse and the late 19th-century former fishsellers' offices and lavatories on West Pier are important elements of the harbour, and the interwar office block to the south of the latter is also of historic interest; though unlisted. On Vincent's Pier, the small 19th-century Water House is of historic interest.

The minor elements of the harbour, such as bollards and capstans, help to retain an impression of a working harbour. A small number of wooden bollards remain on the East Pier and Vincent's Pier, but the majority of those on the existing piers and North Wharf represent several standard modern steel designs. All three of the main piers originally had one or more capstans at the ends, and in the case of the East Pier, at intervals along its centreline. This structure has largely been cleared of features, although it retains substantial areas of stone surfacing at the south end together with long sections of original parapet, alternating with more recent sections added when rock armour was laid along the seaward side of the pier and Marine Drive. The 19th-century West Pier also originally had a capstan at the end before and after its extension in 1877–80, but this does not survive.

Plate 122 Vincent's Pier, Scarborough, detail of decorative compass rose on cap of bollard

The Lighthouse Pier section of Vincent's Pier retains two capstans and a decorative bollard with a head cast in the form of a compass rose. The smaller of the capstans has a single row of bar sockets and a small compass rose on the head; a capstan is shown in virtually the same location on the 1852 1:1056 Ordnance Survey, with a second positioned to the west of the lighthouse, but the present version looks more recent. The larger capstan has a double row of sockets, indicating that it was a reused ships' capstan: the upper row would have been used to raise an anchor, the lower row was for general deck use. It may be one of three originally located at the end of the East Pier, as it seems to have been moved to its present location after 1892.

Although the harbour largely retains its 19th- and early 20th-century layout, the later 20th and early 21st centuries have seen many changes, including the rebuilding of the outer face of the Lighthouse Pier. More recently, extensive rock armouring has almost completely obscured the seawall of the Marine Drive and the outer face of the East Pier, although it remains intact.

Changes relating to this process included the creation of a continuous high parapet along the

length of the Marine Drive and pier, retaining existing sections of masonry where they already existed, but adding long new sections. This process was controversial, necessitating the removal of traditional railings and entailing the loss of sea views along the Marine Drive, but enhanced sea protection was considered necessary to secure the future of the harbour and the Marine Drive. In the harbour itself, new moorings have been put in place which have revitalised the marina facilities, and there have been cosmetic improvements in terms of lighting, seating and paving, particularly along Sandside.

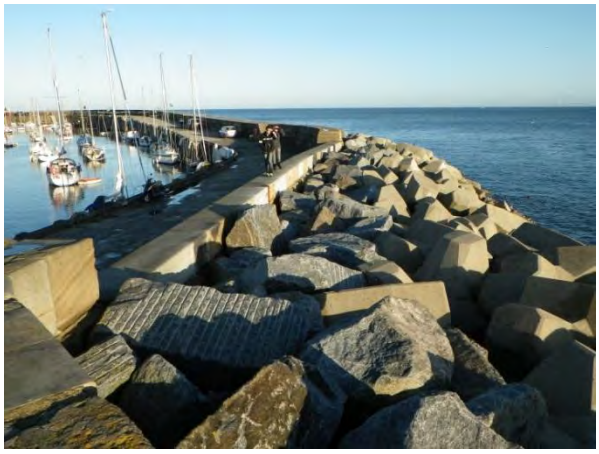


Plate 123 Modern rock armour laid against east face of East Pier, Scarborough

To summarise, the seafront and harbour represent an important concentration of buildings and installations relating to the town's history, both as a working facility and as a tourist destination. The 20th-century development of Scarborough as a tourist centre coupled with the decline in the fishing fleet has led to a widespread redevelopment of the harbour area along with many of its associated features and fittings. The resulting 'portscape' now consists of a blend of original and contemporary, with large extant areas of the late 18th- and 19th-century piers still visible alongside modern buildings and street furniture. There is little doubt that the blend has been successful, with Scarborough receiving widespread praise for reversing its recent decline through a mixture of investment and good design.

Filey

A medieval port at Filey is first mentioned in 1275/6 (Johnson 1998; Eaton 2005; Buglass 2005), but some form of beach market may have existed in the area for several centuries in the earlier medieval period, serving the small settlement of Filey as well as its extensive hinterland, which included the important market town of Hunmanby. The debate over the exact location of the port has pointed towards Old Quay Rock and the Spittals on the south side of the Brigg, although a simple landing on the soft, gently sloping sand beach between the foot of Church Ravine and Cargate Hill is a far more likely location, suitable both for early shallow-draughted clinker-built boats and later types of cargo vessel, which were quite capable of beaching safely. Not only would this have been much safer, any goods landed on the Brigg would have required further transportation by cart, sled, or pack animal before reaching the town for onward movement; the journey from the Spittals would have been particularly hazardous, following a long, rock-strewn reef.

The possibility that the Spittals were of Roman origin can almost certainly be set aside despite their proximity to the remains of the 4th-century signal station. The Filey Brigg Research Group (FBRG) has calculated that an estimated 168,000 tonnes of stone would have been required to create the structure, a considerable investment in terms of quarrying and transportation without any clear benefit. In support of a medieval or post-medieval origin for the Spittals, the results of the Phase 2 and 3 RCZAS surveys have suggested that the stockpiling of locally quarried blocks along the north side of the 'harbour' strongly suggests that it had a role connected to the quarrying process. It seems likely that unsuitable stone from the upper strata of the Brigg and other waste materials were dumped into the sea to form the harbour and allow a safe haven for boats to load stone.

The harbour could also have been in use by fishermen as a refuge after the quarrying had been completed, since they are recorded as having constructed a timber 'lobster-hully' for storing live catches in the area in the 18th century (Section 5).

Wooden posts are occasionally seen protruding from the sand beach between the north end of Filey and the Brigg after scouring episodes; these may be earlier phases of sea defences or landing stages around the mouth of a small natural ravine (Arndale), although could be related to a temporary railway constructed in the later 19th century to transport stone from the Brigg quarries for use in the new seawall.

Otherwise, there is no evidence that Filey had a harbour in the accepted sense although the bay itself provided a popular haven, since it was sheltered to north and south. The absence of rocks in front of the town also meant that it was possible to temporarily beach trading vessels for offloading coal and other commodities as well as

larger fishing boats such as yawls, which were, however kept in Scarborough when not in use for longer periods.
Despite the lack of deep water inshore, plans to construct piers and a lighthouse were made as early as 1637 by the courtier Endymion Porter, and further proposals were drawn up by the engineer Sir John Coode in 1857 for submission to the *House of Commons Select Committee on Harbours of Refuge*. Coode noted the number of vessels weathering in the bay at times (counting 240 on one occasion) and his proposal was for a 1800ft (548m) breakwater parallel to Filey Brigg with further breakwaters into the Bay, totalling 9600ft (2926m) and enclosing 427 acres (173ha) for ordinary vessels and 300 acres (121ha) for larger vessels.

An attempt was made in the House of Commons in 1871 to revive Coode's scheme on the grounds that two-thirds of returning Baltic traders aimed to reach the English coast at the major seamark of Flamborough Head before turning north and south for their home ports, while 20,000 coastal colliers carried Newcastle coal southwards for home consumption in addition to a smaller number carrying coal for export, with only the Tyne regarded as a major harbour between the Firth of Forth and the Humber.

The increase in coastal trade had resulted in an average of 250 lives being lost annually on the east coast in the 1860s, rising steadily each year, and the area accounted for 25% of the annual total of UK wrecks. The number of these had risen proportionally to the death toll from 900 to 1200 in the decade since 1858. Another concern was the lack of a strategic naval facility on the coast, with the location of Filey being considered suitable because it had vantage points facing north, south and east. The proposed harbour of refuge would cover 665 acres (269ha), using Brigg stone and convict labour to construct the breakwaters as economically as possible.

Despite strong support, the motion was defeated, partly on grounds of cost and partly because it was argued by opponents that the increasing proportion of more reliable steam vessels would quickly render the harbour redundant, as proved eventually to be the case (*Hansard* 205, 21st March 1871, House of Commons debate: 'Harbours of Refuge', 340–403).

Meanwhile, the construction of a fishing harbour and pier were proposed locally in 1863 and the newly-formed Filey Fishery Harbour Company produced an illustrated prospectus the following year which appears to have been re-released several times until 1878, with some opposition; in that year the Filey Pier and Harbour Order were passed. This seems to have culminated in the passing of a Harbour Act in 1880; in that year the FFHC was reconstituted as the Filey Harbour Company Ltd, with slightly amended proposals.

Plate 124 Former drinking well used by visiting vessels, Church Ravine, Filey

A plan of the scheme (*The Engineer*, Nov 19th 1880, 382) and description (ibid; *The London Gazette*, May 25th 1880, 3189–90) now showed a 700-yard (640m) quay running along the south side of the Brigg as far as the Spittals, the last 100 yards (91.4m) forming a long curving 'stone or concrete' pier section extending south-east into the bay, partly using the Spittals as a foundation, with a high wall to protect the harbour from waves breaking over the Brigg. A 1500-yard (1371m) pier ran parallel to the Brigg, extending eastwards straight into the bay from a point 30 yards (27.4m) north of the county boundary before curving north-east to form a protected entrance with the Spittals pier. This was furnished with 'buttresses' supporting cranes at regular intervals.

The two piers would enclose a water area of 150 acres (61ha) at high tide, somewhat smaller than the proposed harbour of refuge, but the proposal was clearly to create a commercial port which could also act as a haven. It was claimed that dredging would create a water depth of 18ft (5.5m) at the entrance at low tide, 34ft (10.4m) at high tide, making the port usable at all times in favourable comparison to Scarborough, Bridlington and other ports.

Behind the harbour on the northern and western sides the plan shows broad wharves or quays along the base of the cliffs which appear to have been intended to support rows of 'Sheds', presumably warehouses, and behind those, what may be housing along the base of the cliff. A

drydock is located in the angle between the cliff and the Brigg. The wharves and southern pier would all be served by a dockyard tramway which appears to connect to a line ascending the steep incline of Church Ravine, presumably continuing to connect with the main Hull–Whitby railway south of Scarborough Road.

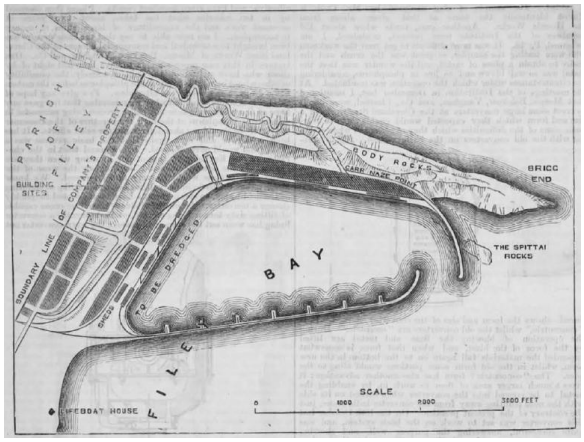


Plate 125 Proposed harbour, Filey, extending north of Church Ravine ('The Engineer', Nov 19th, 1880)

The Company also appears to have envisaged building terraces of housing on the cliff above ('Building Sites'), extending across what is now a country park from Church Ravine to the north side of the Brigg and linked to the town by a bridge across the Ravine. Shares were issued and an engineering firm appointed, but the scheme did not come to fruition despite parliamentary lobbying, partly because of the influential support for investment in rival existing ports further north.

A subsequent equally ambitious Government scheme, for a large naval base built using convict labour, also came to nothing in 1882–3; one problem would have been the large prison camp required for a period of several years during construction. Instead, a seawall was built using Brigg stone in the 1890s with the sole 'harbour' facility provided being a rebuilt Coble Landing for the use of small inshore fishing boats. In economic terms, Filey was destined to continue as a small seaside resort and fishing station which never reached its full potential.

East Riding of Yorkshire *(Figs 8, 11, 12)*

The East Yorkshire coast consists of a long sweep of glacial till cliffs of varying height extending from Flamborough Head to Spurn. The 1565 list of havens, creeks and landing places included *Flamboroughe*, *Bridlington*, *Brampston*, *Hornseye*, *Sister Kirk*, *Mapletone*, *Alborowe*, and *Kelnseye (Fig 8)*. Despite the lack of natural shelter, Bridlington developed a small port served by a settlement which was a satellite of the the main market town, located further inland. Similarly, Hornsea Beck served as the haven for the town of Hornsea, while Flamborough was purely a haven at South Landing, some distance from the settlement.

The other sites listed include Barmston (*Brampstone*), a village some distance inland, but linked to the coast by Sands Lane which passed through the settlement to form the main street. Sands Lane originally turned north-east before meeting the cliff where it joined what was then the main coast road, crossing Watermill Beck via *Dock Bridge*. The bridge and parts of the road survived into the second half of the 20th century, but the 1854 1:10560 Ordnance Survey still showed *Barmston Dock* as an almost imperceptible inlet immediately east of the bridge. The dock was mentioned in 1683 and was still used as a landing place at least as late as the 18th century, and it is almost certain that this can be identified as the 1565 port. The dock was located in the southern part of the silted basin of the formerly extensive Barmston Mere which is eroding from the cliff (Brigham & Jobling 2013c), which suggests the distinct possiblity that the port was created in the basin while some of it remained open water.

Sister Kirk was an alternative name for St Peter's church, Owthorne, located immediately north of Withernsea, but the name seems to have been in common use as the church tower was a well-known seamark, appearing, for example on Lord Burleigh's c 1560 navigation map of Yorkshire and the Humber.

Plate 126 Monument to the former 'Sister Kirkes', Withernsea

Originally there were two churches, the *Sisterkirkes*, including St Mary's, Withernsea, but this had been lost c 1444. The tower of St Peter's

was finally demolished in 1816, some years after the rest of the structure had been dismantled, while the last traces of the village were destroyed in the late 18th and early 19th centuries. Owthorne Mere, which was located between Owthorne and Withernsea, may have been the site of the 1565 haven: the silted remains of the inland portion survive and are occupied by public gardens.

The areas around Aldbrough (*Alborowe*) and Mappleton (*Mapletone*), both listed as ports in 1565, have been particularly badly affected by erosion. It is unclear where the landing place at Mappleton was located: a position at the end of Cliff Lane at the south end of the village is one possibility, another is Sea Road, some distance north of the village, which is a broad track rather than a surfaced road. Similarly the site at Aldbrough has left no trace; it may have been located at the end of Seaside Road, where a small seaside resort was established in the early 19th century, next to the old coast road, but an alternative site is a little to the south at Old Dale. There is no reference to trade other than fishing, which was taking place by the 13th century, and the removal of cobbles and shingle in the 19th century.

There may have been an inlet at Kilnsea (*Kelnseye*) on the estuary side of Spurn, extant in the 14th century, but silted up by the 17th. This was possibly a relic of the Easington or Kilnsea Fleet, a palaeochannel which had formerly flowed across the area, starting some way to the north-east in what is now the North Sea. Although the northern end was cut by coastal erosion and the central part silted up, the Humber exit probably remained extant extant into the medieval or early post-medieval period. Kilnsea had a timber jetty in 1691 somewhere on the Humber shore, and its site may still remain beneath the estuary mud, perhaps near the point where the elbow of Easington Road touches the coast.

At the south end of the coast was the medieval town and port of *Ravenserodd*, located at the tip of an earlier version of Spurn Point. More important than Kingston upon Hull for a century, and with its own representatives in Parliament, the town was destroyed in 1362 by catastrophic storms after being flooded in the previous decade.

Another early loss was *Hyde*, in the manor of Skipsea and Cleeton. The placename, from the Old English *hyþ*, 'haven', reflects the fact that this small settlement was the landing place for the important pre- and post-Conquest manor. The chronicler of Meaux Abbey, to which Hyde paid tithes, recorded that the site had been totally destroyed by the sea as early as 1396, having suffered damage from at least as early as 1344–5 (18 Edw III).

Flamborough

At South Landing, Flamborough, is the site of a medieval harbour represented by three areas of chalk blocks and large erratics which form the remains of two piers *(Fig 11)*. This haven provided a safe place to berth vessels, and was apparently more attractive than the larger harbour at nearby Bridlington .A quay is referred to in 1400–01, although the remains could well date from at least the early 14th century, since ships and shipowners from Flamborough are first mentioned at Scarborough in 1323, while Bridlington is absent from the port entries. In 1544, Flamborough manor was instructed to supply vessels for the Earl of Hertford's expedition against the Scots, and it was able to provide four vessels, two of 30 tons and two of 40 tons which, while not large, were only of slightly less overall displacement than those provided by Bridlington.

Plate 127 View of east pier of medieval harbour, South Landing, Flamborough

Apart from documentary references, which show the significance of this isolated site, the piers are represented on Lord Burleigh's 16th-century navigation chart which shows landing places, anchorages and depths of water along the East Yorkshire and Humber coasts. The end came after the piers were badly damaged in a great storm of 1551 and again in 1569, and they do not appear to have been rebuilt after the second event. This helps to assign the Burleigh chart to the 1560s, in preference to a previous suggested date of c 1595.

Following initial surveys in the 1980s, which plotted the extant areas of stone, the site was revisited and resurveyed in 2012 as part of Phase 3 of the RCZAS (Brigham & Fraser 2013). From

this, it appears that the east pier had an original length of c 90m of which the easternmost 50m had been completely robbed, although it clearly pointed towards the promontory of East Nook. The pier consisted of large erratic boulders set on on edge supporting a core which consisted mainly of chalk, but it is likely that there had also been an internal timber frame consisting of a series of loosely filled cells, since this appears to have been the standard construction method in the area until the 18th century. Two areas of displaced stone represented the west pier, which was probably c 160m long, orientated towards the east side of the ravine of South Landing is most likely, avoiding an area of soft sand to the west. The potential enclosed area would have been approximately half that of the contemporary Bridlington harbour before the latter was enlarged in the 18th and 19th centuries.

Bridlington

No structural evidence has been recovered for a Romano-British harbour at Bridlington, but there are clear traces of occupation around Bridlington Quay and one may well have existed in a substantial inlet formed at the mouth of the Gypsey Race. The inlet no longer exists, largely because while the north bank has been protected by harbour works since the medieval period and the cliffline further north was partly restored by late 19th-century reclamation, late 18th-/early 19th-century maps demonstrate that the cliff to the south of the beck continued to recede until the South Pier was rebuilt and sea defences were extended to the Spa area and beyond.

Aggravated erosion is an unfortunate side-effect of the construction of hard defences where these prevent the migration of protective sediments through longshore drift, leading to accelerating cliff recession immediately 'downstream' of the direction of drift and a build-up on the 'upstream' side: there are many current instances on the Holderness coast, including around the late 20th-century defences constructed to protect Mappleton.

The first documentary reference to Bridlington's medieval harbour was a grant of 1113 by Walter de Gant of the 'port and harbour of Bridlington with all kinds of wreck of the sea' between Earl's Dyke, Barmston, and Danes' Dyke, Flamborough, to the town's new Augustinian Priory; this was confirmed by King Stephen in 1147.

The early harbour probably consisted fairly simply of an early version of the North Pier constructed to protect the entrance to the Gypsey Race, attended by the small settlement of Bridlington Quay which lay behind a wharf extending along the north side of the stream. The opposite side of the stream was presumably also revetted, and this may gradually have become a pier as erosion caused the progressive westward recession of the cliff to the south: the later medieval/early post-medieval South Pier was certainly located in this position immediately south of the stream channel, until it was moved to its present location in the mid 19th century *(Fig 12)*.

Plate 128 John Wood's 1828 plan of Bridlington Quay and harbour, showing original line of South Pier extending from Langdales's Wharf, which may represent the eroded south bank of the Gypsey Race

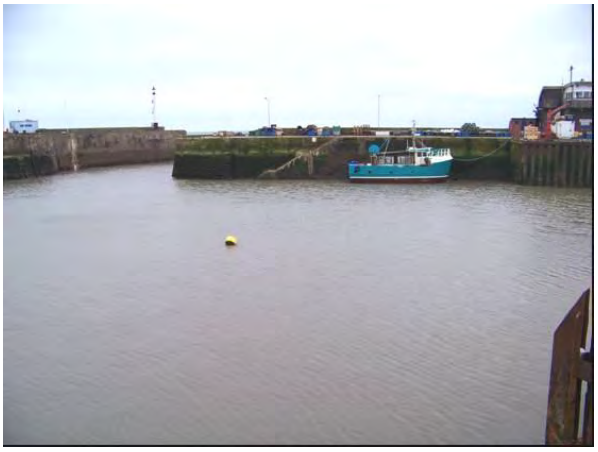


Plate 129 Bridlington harbour entrance between North and South Piers

Erosion remained a perpetual problem until the construction of the South Promenade, leading in the 18th century to the South Pier abutment being lost for a time, leaving the main section as an island. The final landward remains of the south bank were eventually enclosed by revetments in the early 19th century to become Langdale's Wharf in an attempt to protect the old South Pier abutment from further erosion.

Early stone-filled and timber-framed versions of the North and South Piers had been built by the mid 16th century, with repeated repairs and replacements recorded until the early 19th century, when more permanent replacements began to be constructed. Crane Wharf, adjoining to the west side of the North Pier, was probably also built or rebuilt in the 16th century, perhaps including a short timber jetty close to its successor, the present Crane Wharf Jetty. In support of this early date, several phases of a chalk, brick and timber wharf or pier structure encased within the masonry abutment of the present Crane Wharf Jetty were recorded during the course of RCZAS Phase 3 (Brigham & Jobling 2013b). Although undated, this is likely to represent a succession of late medieval or early post-medieval versions of the present structure, probably remaining in use until it was entirely rebuilt in 1819. The timber frame at the heart of this complex, and therefore presumably the earliest part, included clench bolts, identical to those used in medieval shipbuilding. The accidental discovery of this structure lends support to the hypothesis that more of the early harbour survives behind the present quay walls.

Plate 130 Remains of the late 18th-century addition to the earlier timber North Pier, Bridlington, east of the present pier

The earliest North Pier may have been located immediately to the east of its present site, where the timber piles and scattered stonework of a late 18th-century version were also surveyed as part of Phase 3. Work on the present pier and the integral wall of Crane Wharf began in 1816 and 1819, with the pier extended in 1866,As already mentioned, the various early incarnations of the South Pier were located immediately south of the Gypsey Race until it was rebuilt in its present location after 1843 to double the size of the harbour, its place eventually taken by the Chicken Run Jetty. The short masonry abutment of Crane Wharf Jetty also incorporates two unique tidally-flushed latrines, one accessible, the other blocked up.

Plate 131 Remains of short 18th-century jetty or breakwater east of North Pier

The 19th and 20th centuries also saw the construction of Langdale's Wharf, Gummer's Landing and the Chicken Run Jetty at the west end of the harbour, and the timber Fishermen's Steps at the east end between Crane Wharf Jetty and the North Pier.

Plate 132 View of east end of Bridlington harbour from South Pier with Crane Wharf, Fishermen's Steps and North Pier to rear

The abutment of Crane Wharf Jetty was greatly extended by means of a timber openwork structure which was rebuilt several times; the final 19th-century version was replaced in 1932 and rebuilt to its present form in 1958–9. Langdale's Wharf included boatbuilding or repair facilities as well as a limekiln and mortar mill, with the original timber Chicken Run Jetty built there c 1900 on the site of the old South Pier. Between Crane Wharf Jetty and West Pier, the timber structure known as Fishermen's Steps was also built c 1900 and was traditionally used as a mooring point for cobles, including large numbers engaged in

carrying summer day trippers. A fish market was built on the South Pier in 1929 and was enlarged in 1949–51.

Plate 133 North-west corner of Bridlington harbour centred on former Clough Hole and boat lift serving repair yard

Plate 134 Fishing boat under repair, Clough Hole, Bridlington

Later changes included the construction of a footbridge across the Gypsey Race from Langdale's Wharf to connect the area to the north side of the harbour in 1969. Part of the inner harbour in front of Clough Hole was also infilled and converted to a boat repair yard and car park in 1998–9.

A number of important 19th-century features of the North Pier remain *in situ*, including a weathervane with a cast compass rose at the base and a fish-shaped vane, a flagpole base, and a capstan located near the south end of the 1816–43 section. An ornate harbour light on the 1866 extension may have been moved from the original end. These were all related to navigation: the weathervane allowed sailors to determine wind direction, the flagpole indicated states of the tide, the harbour light marked the entrance to the harbour. The capstan formed part of the harbour's boathandling system along with an octagonal end bollard and several other early bollards. The capstan has been reused, probably salvaged from the upper deck of a ship, and is complete apart from the iron cap at the top of the drumhead. Like the larger example recorded on Vincent's Pier, Scarborough, it was in two parts, with the upper level to lift the anchor, the lower for general deck work.

Plate 135 19th-century ship's capstan, North Pier, Bridlington

A smaller capstan on the end of the South Pier is more recent, but still of interest, since it may well represent the last generation of hand-operated capstans before powered examples became common. This is a single capstan, and was of a type designed for use either on ships or in harbours.

In addition to the features noted above, the harbour has many examples of other fittings, mainly dating from the 20th century. Particularly common are various types of single and double bitt mooring pins. The South Pier also has four examples of harbour crane located around the fish market. Although not individually important, these installations combine to add texture to the picture of a working harbour which has developed over an extended period.

Along Harbour Road is the 19th-century harbourmaster's office and a nearby lamp standard, which is similar to the North Pier harbour light. New kiosks for souvenirs and snacks at the back of Crane Wharf represent the latest in a line of premises on the same site extending back into the 19th century. At the east end of the harbour is a typical late Victorian visitors' shelter, with cast iron columns, with the roof supporting the pavement of the road above.

Although there is currently no archaeological evidence for early shipbuilding, there is a documentary reference to a *balinger* (barge) being constructed at the order of Henry IV in 1401 to transport troops to Scotland. This was a type of small, sea-going vessel in general use in the 15th- and 16th-century coastal trade. Balingers had no forecastle and a single mast, and carried either a square sail or a sail extended on a sprit. They were generally less than 100 tons, with a shallow draught, and the earlier vessels carried 30 or more oars for use in sheltered areas or for close fighting. They could also be used as transports, carrying around 40 soldiers. Two years later, the *St John* was the first recorded Bridlington ship recorded as trading with the Continent, in this case collecting a small cargo of wine in Bordeaux. From this point on, the port begins to appear more often, having been eclipsed by other towns previously, as well as by the isolated haven of Flamborough.

The town was never prominent as a shipbuilding centre, probably because of the size of the harbour; it did nonetheless support a shipbuilding industry until the 20th century. From the 1760s, ships were built at a yard near Clough Hole; this is probably the yard shown at Langdale's Wharf on the 1853 1:1056 OS, which has slipways and a sawpit. Most of the 19th-century boatbuilding firms were based in streets around the harbour, and advertised other trades, particularly general carpentry and joinery, suggesting that they were mainly engaged in constructing small boats which were transported by road and launched down one of the harbour's slipways. The last boatbuilders in the town, Siddalls, had joinery workshops some distance from the harbour, and built their last cobles in the 1970s. They also built small double-ended rowing boats for hiring, which may have been based on the 'corfe' design, originally carried on herring cobles.

The Napoleonic Wars had resulted in shipbuilding being spread around the country, with small centres like Hessle and Paull also benefiting, but the years after the war ended in 1815 caused a slump as a glut of redundant merchantmen and former naval vessels came onto the market; Bridlington seems to have continued longer and the last ship, the *Queen Dowager*, was built there in 1843. The construction and repair of fishing cobles took over from shipbuilding, with the last yard, Siddalls, closing in 1972.

Smaller ports and harbours

Between the main settlements were smaller centres. In Roos, the seaward end of the mere which gave Sand le Mere its name was under constant attack from coastal erosion, and had been protected by a bank by 1622, although it is not shown on Burleigh's map of c 1560, which instead depicts a small bay usable by small boats. Withernsea Mere also seems to have survived as a large bay in the 16th century, but was eventually filled, either by marine sediment or sand bars, and the surviving inland section is still visible as slightly sunken civic gardens behind the present seafront. Withernsea retains a few fishing boats.

The settlement of Hornsea Beck was the 'port' of Hornsea, with its own mere and a pier which was first mentioned in 1537 in a complaint by the abbot of St Mary's Abbey, York, as lord of the manor, regarding the cost of maintenance. The pier was said to be ruinous in 1549 and funds were ordered to be spent in 1553, with timber from Hull Bridge used for repairs in 1556.

Hornsea Beck was still referred to a in a 1565 list of ports but the quay had apparently been lost by the 17th century when its destruction was cited as a reason for the accelerated loss of buildings. The port was first mentioned in the early 13th century when tolls on landed merchandise are mentioned, with thefts of fish and wool, and the presence of boats referred to in the late 14th century. In 1399, the settlement had almost as many poll tax payers as Hornsea itself (264 to 271), indicating its importance, and the population remained at a similar level (240) a century later. There are several references to shipowners and fishermen in the 15th and 16th centuries, with a 'coble' mentioned in 1528. More men were listed in the 1539 muster rolls than at Hornsea, but between 1547 and 1609, 38 houses had been destroyed, with more lost by 1637 and only one or two remained by 1697; a second smaller settlement, Hornsea Burton, was lost over the same period.

The present seafront was established in the 19th century following the arrival of the railway, which led to ribbon development connecting the inland market town to a new leisure and residential area with a promenade. A small beach-launched fishing industry was re-established at Hornsea but no attempt was made to rebuild a port facility.

North-East Lincolnshire/Lincolnshire *(Figs 8, 13))*

As is the case in Holderness and further south in East Anglia, Lincolnshire's low-lying and exposed coastline has changed dramatically since the medieval period.

On the North Sea coast, the Roman and Iron Age coastline broadly followed the division between the Middle and Out Marshes, although fluctuated during the course of these periods as sea levels

altered, extending further east during the late Roman period, for example. This alignment was concealed by post-Roman/early medieval silting and later medieval/post-medieval reclamation in the north, but has been eroded south of Theddlethorpe, exposing Iron Age and Roman salterns on the foreshore between Chapel St Leonard and Skegness.

The early medieval shore probably broadly followed the early Roman alignment and there are consequently few settlements in the study area, except in the south where the line of the coast at the junction with the Wash has been cut back by natural processes. As was mentioned in Section 3, although established before the Domesday survey (1086), those in the eastern part of the county are 'daughter' villages constructed on the Out Marsh as areas were reclaimed, with a line of parent settlements on the Middle Marsh to the west behind the earlier coastline. Both the earlier and later coastlines were protected by successive seabanks which allowed the areas to the rear to be drained and settled, although the Out Marsh itself largely remained as wet seasonal grazing until it was drained in the late 18th/early 19th centuries.

Although saltmarsh continued to accumulate in front of the seabanks, at least in the north, the coast was subsequently affected by erosion south of Theddlethorpe, with damage to the church of St Peter already recorded in the later 13th century at Mablethorpe and major land losses between the 14th and 17th centuries causing significant damage to a number of settlements, including Mablethorpe, Ingoldmells, Addlethorpe and Sutton on the Marsh (now Sutton-on-Sea), Mumby Chapel and Skegness. Much of the damage resulted from the loss of an offshore underwater barrier of glacial till (boulder clay) and shoals which protected the coast from the worst storms from the Humber southwards, but which appears to have been degraded into a series of smaller separate banks during the medieval period, eventually disappearing almost entirely.

In the Domesday survey, the placename Skegness does not appear, although it has been identified with *Tric*, an otherwise unidentified site in the area. It has been suggested that this unusual placename was derived from *traiectus* (Latin 'ferry'), with the implication that this was the site of a ferry service across the mouth of the Wash (Owen & Coates 2004; Cole 2011, 56). *Traiectus*, however, literally means 'crossing' and could equally refer to a ford: a Roman settlement of the name may have been located near Keynsham, Somerset, at the confulence of the Rivers Avon and Chew. Owen postulated that *Tric* could be cognate with the suffix *-trecht* or *-drecht* which appears in the names of several Dutch towns built around river crossings, including Utrecht, the Roman *Traiectum*, with the medieval Dutch prefix *uut-* ('outer' or 'downriver') added. The town appeared in 11th-century medieval Latin sources as *Ultra Traiectum* to distinguish it from Maastricht (*Mosam Traiectum*, 'crossing on the Maas/Meuse'). This interpretation of the Dutch element had already been challenged, however, with a suggested origin from *draeg*, 'pull' or 'drag', referring to the portage of vessels between channels in the Maas delta (van Osta 1996, 51–77): other examples include Sliedrecht, Zwijndrecht, Papendrecht, Barendrecht and Dordrecht. The exact Old English equivalent, *dræg*, however, appears as the modern placename element 'dray', as in Drayton, Draycot, because of the silent final 'g', and Tric is therefore unlikely to have originated in that form.

The medieval name for Skegness, however, is of Old Scandinavian origin, probably including the personal name prefix *Skeggi+ness* (promontory) which formed a protective arm around the haven and had presumably been created through longshore drift similar to the process which created Spurn. Under this name, the town first appears in a charter dated 1199, confirming lands to the Abbey of Revesby. The haven and town of (Old) Skegness were destroyed by storms in c 1526 and although it was quickly rebuilt some distance to the west of its original site, it was unable to re-establish itself as a port on its previous scale. The harbour had previously been of some significance, used, for example in the importation of timber for the construction of Tattershall Castle in the 1430s (Pawley 1984, 30). Writing around fifteen years after the event, the antiquarian John Leland wrote

> 'Skegnesse sumtyme a great haven toune a 4. or 5. miles of. Mr. Paynelle sayid onto me that he could prove that there was ons an haven and a towne waullid having also a castelle. The old toune is clene consumid, and eten up with the se, part of a chirch of it stode a late. At low waters appere yet manifest tokens of old buildinges. For old Skegnes is now buildid a pore new thing.' (*Itineraries* 7, 152).

Later in the 16th century, only 14 families are recorded in the parish, and only 150 people were resident in Skegness as late as 1821. The distinctive 'ness' was lost along with the original settlement, creating a redefined coastline which now angled back towards the Wash: Gibraltar Point subsequently formed as a replacement promontory further to the south-west.

Grimsby

The place name Grimsby is recorded in Domesday as *Grimesbi*, from the Old Scandinavian personal name *Grimrs+by*, the 'farmstead or village of Grimr' (Mills 1998, 156); *Grimr* was an alternative name for the god Odin, appearing in other placenames such as Grim's Dike', although this is probably not the intended association in this instance.

A 12th-century writer referred retrospectively to a crossing point on the River Humber here in AD 866 (Wise 1990, 220); this may be a later invention, which was common in medieval manuscripts, but two ferries are referred to operating from Grimsby in the Domesday survey some 220 years later (Knowles 1990, 361), showing the importance of the area. As the name has an Old Scandinavian origin and the settlement was already known to be in existence prior to 1086, an early medieval existence is strongly indicated, although currently there are no recorded finds or sites of this date within the area of modern Grimsby. One possible site for early activity was the haven of *Pyewipe* to the west of the study area at the natural mouth of the River Freshney but later medieval development was certainly centred further to the east around *Grimsby Haven*.

The Haven was located inland to the south of modern Alexandra Dock and the early core of the town is likely to have developed between the area known as Riverhead and St James' church to the east. The medieval port was provided with town quays at the 'river head' and a wharf for visiting merchants, including residents of Hanseatic League ports; medieval timber revetments were excavated in this area prior to the construction of the Riverhead Shopping Centre in 1967–71 and expansion during its conversion to become Freshney Place c 1990–2.

The settlement quickly developed as a port, dealing in commodities such as locally-produced grain and wool as well as fish and salt (Wise 1990, 220–5; Ambler 1990, 227–34), importing Baltic timber, continental wine, and coal from the north-east of England (Brigham & Jobling 2013a), with Grimsby becoming a borough by the late 12th century (Ambler 1990, 230).

The fortunes of the harbour and the town which depended heavily upon it were, however, precarious, with the Haven regularly blocked by silting. In an effort to resolve this, the Corporation were permitted by an act of 8 Edw I (1279–80) to divert the Freshney from Pyewipe into the Haven, although this appears to have been only partly successful, as further attempts were made in later centuries.

The town was also affected by the speculative foundation of *Ravenserodd* on land reclaimed from the sea at Spurn on the north side of the Humber estuary some time before 1250. The creation of this unusual and highly entrepreneurial port led to a trade war in the later 13th and early 14th centuries, with Grimsby justifiably complaining that ships were being diverted by persuasion or force into the rival port before reaching their harbour, which lay further upstream. A 1290 complaint by the Mayor and Corporation of Grimsby to Edward I regarding this practice of 'forestalling' led to a Royal Commission which failed to solve the problem; the fact that Ravenserodd reverted to the Crown in 1293 did not help, as the customs receipts and taxes plainly provided a source of reliable royal income, and the town appears to have continued its practices unmolested until 1321, when the men of Ravenserodd seized the crew of a Scottish vessel, and were ordered to release them.

This particular problem ended with the destruction of Ravenserodd by the sea in 1362, but Grimsby appears to have entered a cycle of decline from which it was unable to escape, exacerbated by the condition of the Haven. A late 15th-century petition of the Mayor and Corporation to the Earl of Westmoreland stated that

> '…thei fynde, by olde remembrance, that the saide towne hath bene of grete worshipp, and inhabyte w^{t} many notable marchandes maryners, and craftes menn to the nowmbr of lij score housaldes and mo, and all is now so decayde and waysted be infortoun off were and waystyng of the see, wherby the haven is wrekyd and stopped, by the which the resorte of marchandyes is destroyed, and the bygyng gone doun, so that ther is not left within the saide Town xij men of substance that is able to uphold and repare the seide Towne, and upp holde and maynteyn the iij parysh kyrkes, ij howses of freres, an Abbey, and a house of nonnes w^{t}in the seide Towne.'

The petition further noted that Grimsby had been '…a grete strenght and shulde be to all the countre a safe porte and a kay.'

A letter from Henry VII to the Mayor, dated c 1490, also refers to '…the grette desolation and decay that oure sayde towne is now fallen in.' A commission was set up to investigate the problem and the Corporation appear to have received permission to again divert water from the

Freshney into the Haven to assist in keeping it clear.
The port and town were still regularly reported as being in decline throughout the 17th century, partly due to the silting of the Haven, although its importance to the economy of the region was recognised. In this respect, a 1606 letter from James I to the Sheriffs and Justices of Peace of Nottingham, Derby, and Lincoln, the City of Lincoln, and the West Riding of Yorkshire, recommended that they made contributions towards the repair of Grimsby Haven.

In a deposition of 1624 brought by the town Corporation regarding lands at nearby Bradley, a witness described Grimsby as '…an ancient haven towne, and he hath known it 50 years, but it is not so populous nor so much frequented by merchants and mariners as heretofore it hath been.' The mid 17th-century writer Gervase Holles agreed, stating that '…the haven hath been heretofore commodious, [but] now decayed; the traffic good, now gone'. As a result, Grimsby was '…mean and straggling by reason of depopulation, and the town very poor'.

In response, in 1660, the Corporation appointed a committee for the restoration of the Haven, but little seems to have been done, as in 1697 Grimsby was still being described as 'but a little poor town, not a quarter so great as heretofore'.

Shortly afterwards, c 1700 work, began again to divert the River Freshney into Grimsby Haven via the West Haven in order to try to scour out the accumulated silt, suggesting that earlier attempts had either failed or not been maintained (Ambler 1990, 236). This presumably had little overall effect and once again nothing of lasting value appears to have been achieved until plans were finally drawn up in 1796 to revive the fortunes of the town with the formation of the Grimsby Haven Company, dedicated to improving the water supply and creating a dock.

Construction work began in earnest in 1800–01 with what was later known as the 'Old Dock', constructed along the north–south line of the Haven, and protected by an entrance lock which allowed the dock area to remain in water at low tide *(Fig 13).* This structure, known as Rennie's Lock after the engineer, John Rennie, still survives as one of the most significant parts of the dock.

The problem with the Old Dock was that Rennie's Lock could only be reached via the canalised mouth of the diverted Freshney channel, which ran from the lock entrance across the wide expanse of intertidal foreshore to the north: consequently, access to the dock was only possible at certain states of the tide.

Plate 136 North exit of Alexandra Dock, Grimsby, into disused Rennie's Lock (1800)

Plate 137 Looking north from Rennie's Lock, Grimsby, along the Freshney tidal channel towards former shipyards

Following the formation of the Grimsby Dock Company c 1846, and the arrival of the railways into the town, the Royal Dock was completed in 1852. The Dock appears to have been formed by constructing an extensive revetment, effectively a reverse coffer dam, consisting of lines of large contiguous piles driven into the foreshore, supporting planking. The enclosed area was then infilled to create a series of moles surrounding a new water area, with locks at the north end; parts of the coffer dam still remain. As the dock was created in front of the existing seabank, the entrance locks at the north end lay much further into the deep water channel than Rennie's Lock, providing an enormous advantage by greatly extending the hours of operation.

Included in the plan was a graving dock and an elaborate Italianate Dock Tower which was built between the two northern entrance locks to

disguise a hydraulic accumulator providing power for the locks and dockside cranes.

Plate 138 Mid 19th-century coffer dam used to construct moles around Royal Dock, Grimsby

Plate 139 View along mid 19th-century Royal Dock towards contemporary hydraulic accumulator tower of 1852, Grimsby

A smaller second Dock Tower was added near the entrance locks in 1892, a little less elaborate, but capable of pumping to a higher pressure.

New industries, including several shipbuilding yards with a graving dock and long slipway next to the Freshney, an ironworks, timber yard and a sawmill, sprang up on the extensive areas of reclaimed land around the moles.

Plate 140 Later hydraulic accumulator tower of 1892, north end of Royal Dock, Grimsby

The rapid expansion of the town's fishing fleet, which began from a low base in the late 1850s, ensured that the Royal Dock was followed by the construction of No.1 Fish Dock in 1857 (enlarged 1866) and No.2 Fish Dock in 1877–8 (enlarged 1900), while the continued improvement in trading led to the extension of the commercial dock estate in 1879–80. In order to improve accessibility to the oldest parts of the estate, Union Dock was built as a broad channel which linked the south end of the Royal Dock to the Old Dock, which was reconstructed and renamed Alexandra Dock. This new arrangement greatly increased the area of the docks while allowing vessels to pass to and from Alexandra Dock through the locks at the entrance to the Royal Dock, entirely bypassing Rennie's Lock. Two further graving docks were completed in No.1 Fish Dock in the late 19th/early 20th centuries.

There were further improvements to the estate in the 20th century, with No.3 Fish Dock completed in 1934, extending eastward across a large area of reclaimed foreshore and removing a long section of the mole forming the east side of No.1 to create a larger combined water area. Around the dock were cold stores and other facilities relating to fishing, with a trading and industrial estate at the east end. The Fish Docks originally had two entrance locks, but these were both superseded by a new and enlarged version further east, although traces of one of the earlier chambers and its entrance gates survives crossed by a narrow local road bridge.

Grimsby still retains a large and important dock estate, and although fishing and cargo handling have declined significantly, the docks remain in

use. The offshore windfarm industry has led to maintenance facilities being based in Grimsby while parts of the former Fish Docks function as a marina. A new Fish Market building was completed in 1996 at the west side of No.3 Fish Dock, and upgraded in 2012, while ship repair and other facilities are also maintained within the dock estate.

The rapid and almost wholesale development of Grimsby as a fishing port outlined in Section 4 has led to a predominance in the archaeological record of 19th-century and later buildings and structures. With the decline of the use of the port, many substantial 19th- and early 20th-century structures have either been cleared or replaced by modern equivalents, while redundant structures have been allowed to decay, including jetties, piers and slipways. Despite this, many important features remain, with some relatively well-preserved areas where modern replacements have formed part of a picture of gradual change.

As well as photographic surveys of buildings and streetscapes as part of Phases 1 and 2 of the RCZAS, a largely desk-based assessment of the docks has been made by English Heritage (Whitfield 2009) and Humber Field Archaeology (Brigham & Jobling 2013a) which discusses their significance and provides an overview to assist with their future management and conservation.

The surviving elements of the docks reflect all stages of their development from the mid 19th century onwards, and alongside evidence for the once substantial fishing industry in the 'Kasbah' area (Section 5), the shipping industry is represented by surviving warehouses of 19th- and 20th-century date, some of which are combined with shops which were originally established to provide chandlery and provisions.

Other buildings relating to the port include the former Dock Offices and Customs House. Many other features have, however, been lost, including several former ropeworks, foundries and sawmills, all of which would have relied on the docks for much of their business, as well as the extensive dock railway network, which closed as the port declined.

In conjunction with the development of the commercial and fishing port there were several shipbuilding and repair yards of varying sizes. Originally these would have been for wooden sailing vessels but they would have been adapted to produce the iron and steel steam-powered fishing vessels demanded by the industry from around the 1880s. Documentary evidence from the 1890 OS map shows two complexes of shipyards. The first area is where the 1930s entrance to the Fish Docks was constructed and is now completely destroyed, although traces of jetties, slipways, an old entrance lock and several graving docks survive in and around the Royal Dock and Fish Dock. The second area was located immediately to the north of Rennie's Lock with three to the east side of what is now known as the Freshney Channel and one to the west. These were still operating for some time after WW2 but are now abandoned, leaving substantial traces which are of interest, including several sections of a long timber jetty which ran alongside a lengthy slipway outside the western mole of the Royal Dock, a nearby former graving dock, and Rennie's Lock itself.

Plate 141 Remains of wharf and former slipway of shipyard, Grimsby

Plate 142 Disused slipway of former shipyard north of the Fish Dock, Grimsby, blocked by later flood wall

Boston

Boston lies just outside the study area, but had a significant impact on other settlements. The town formed an unimportant part of the manor of Skirbeck until the River Witham shifted away from

the port of Drayton in 1014 to a new course which passed through Skirbeck. As much of this was held by the same tenant as Drayton, establishing a new centre was relatively straightforward, and the position of Boston in relation to the road and river network made it a natural location.

The town was probably handling salt from local production sites from its foundation, while large quantities of fish were also landed on the town quays (Starkey *et al* 2000, 35).
Wool and finished cloth were both major exports, which led to the town collecting a third of all custom dues payable to the crown in the 13th century (Jackson 1983, 32). In 1204, the merchants of Boston paid £780 in response to the 'fifteenth' tax paid on 6.6% of the value of their moveable goods, while those of London paid £836, only slightly more. In 1289, the town paid more customs duties than any other English port, and in 1332, was ranked as the fourth wealthiest town. The Hanseatic League had already established a 'steelyard' in the town by that time, with another at nearby King's Lynn, which retains a warehouse, built in 1475. Boston was one of a limited number of 'staple' ports licenced to import and export goods, and among the imports were Flemish bricks and tiles, pottery and wine. Grain and Derbyshire lead passed through the town, much being brought down river for transhipment: in 1170, lead shipped from Boston was used to roof Waltham Abbey, Essex.

Wool, however, remained pre-eminent and the decline of the cloth industry from the middle of the 15th century had a significant impact on Boston, which led to its eventual abandonment by the Hanseatic League, whose last visit occurred in 1518. This also affected smaller local ports and havens involved in its transportation, as well as reducing the volume of traffic attracted into the Wash: between the late 14th and early 16th centuries, for example, ships from a number of local centres were involved in carrying wool from the town to Calais, including vessels from the ports of Grimsby and Skegness and the havens at Fishtoft, Gedney, Saltfleet, Wainfleet, Wrangle and Wyberton. The decline in the volumne of trade was exacerbated by the progressive silting of the Haven, a process which also affected smaller havens such as Wrangle, Wainfleet and Saltfleet. Few large vessels were able to reach the town by the mid 18th century, and the population declined to a lower level than it had reached during its 14th-century high water mark.

The town saw a revival following the late 18th-century draining of the Fens and improvements in agricultural practice, with the town again becoming a major grain exporter, together with King's Lynn. A key event was the opening of the Grand Sluice across the Witham in 1766, which included a tidal lock; this prevented silt from entering the river while maintaining a deep navigable channel. Most of the key elements of the present drainage system were put in place in the following fifty years, including the construction of Hobhole Drain and improvements to the 16th-century Maud Foster Drain in the early years of the 19th century, each controlled by sluices. Massive warehouses were built in the South Square area around this time and a new dock was opened in 1884 between Maud Foster Sluice and the town workhouse, handling grain, animal feed and fertiliser exports while large quantities of Baltic timber were also imported. The town became an important shipbuilding centre, constructing trading and fishing vessels and, although this ceased in the 20th century, Boston remains a trading port and also accommodates a small fishing fleet. The port still handles c 1 million tonnes of cargo annually, with more than 600 ship movements. In addition to regular container services to Germany, imported bulk cargoes include paper, steel and timber, with c 500,000 tonnes of grain exported every year.

Coastal havens

Outside the better-known ports of Grimsby, Skegness and Boston, maritime activity was a significant component of the local economy and records show that a considerable number of sites were in use between the medieval and early modern periods, despite the apparent lack of suitable sites today.

Although set back some distance from the coast, many of the established settlements had access to the sea by means of tidal creeks (havens), which were embanked where they passed inland of the contemporary sea defences (Section 3). As the coastline moved further east, however, the settlements became increasingly distant as the havens were shortened through silting or embankment, with some already reported as standing 1–2 miles inland by the mid 16th century (Pawley 1984, 133).

An idea of the number of late medieval havens and their wide geographical distribution can be gained from an inventory compiled by Pawley using the home ports of vessels mentioned in official records such as Exchequer lists between 1334–69 (Pawley 1984, 279–81). Many lie well outside the study area, but the list from this and other sources for the county of Lincolnshire includes Barton on Humber, Baumber, Boston, Burton Stather, Ferriby, Fleet Haven, Grimsby, Haxey, Horncastle, Kinnard, *Marehaven*, Marsh

Chapel, North Cotes, Saltfleet, Skegness, *Skottermuth* (Halton Skitter), Surfleet, *Swine* (Grainthorpe), Wainfleet, *Walkerith* and Wrangle.

The 1565 list of Lincolnshire ports liable to customs duties included *Barton upon Humber, Grymmesby, Cley, Somercote, Saltflete, Ingolmylles, Winthorpe, Skegnes, Waineflete, Tofte, Boston,* and *Fosdike (Fig 8),* but a fuller list of Lincolnshire sites in use from 1550–1612 (ibid, 131, 288–9) would include Alkborough, Bardney, Barrow on Humber, Barton on Humber, Boston, Burringham, Burton Stather, Cleethorpes, Croft, Dogdyke, East Halton, Ferriby, Fishtoft, Fleet Haven, Fosdyke, Frampton, Freiston, Goxhill, Grimsby, Harbrough, Immingham, Ingoldmells, Keadby, Killingholme, Kirkstead, Lincoln, Long Sutton, *Fulstowmarsh* (Marsh Chapel), *Northolle*, North Cotes, Pinchbeck, Saltfleet, Skegness, Somercotes, *Southolle*, Spalding, Stallingborough, Tetney, Theddlethorpe, Tattershall, Whitton, *Wilgrip* (Theddlethorpe), Winteringham, Wainfleet, and Wyberton. Those sites located on, or with access to, the central and southern North Sea coast and the Wash fell into the jurisdiction of the port of Boston; those on or close to the northern coast and Humber fell into the jurisdiction of Kingston upon Hull.

Plate 143 Silted fishing and possible trading haven, Anderby Creek

The majority of these sites functioned as havens, used primarily for laying up vessels in a sheltered location convenient for their owners between commissions. Depending on the size of the haven and the depth of water available, the vessels using these sites would necessarily have been limited in size and therefore capacity, involved in the main with local coastal and inland trade, with cargoes being loaded and unloaded in the larger ports, although they were also used to distribute fuel and provisions to the coastal hinterland. The shipowners may well have been engaged in a number of alternative businesses, such as farming; the same havens would also have been suitable for fishing vessels, and a number are recorded in the 16th century (see Section 5). Like farming and fishing, trading was highly seasonal, mainly occurring from about March onwards, through the summer months to September, occasionally longer if the weather continued fine. In the winter, traders may have concentrated on farming activities such as salting meat, as well as catching the numerous eels to be found in the local dykes and wetlands, or engaging in the Yarmouth herring fishery, which took place between September and November.

The full volume of trade is difficult to measure, as coasters from other bases visited havens like Saltfleet and Wainfleet, while others often unloaded onto smaller boats some distance offshore without landing. Saltfleet, for example, was regularly visited by vessels from Newcastle, York and Grimsby as well as other local havens (Pawley 1984, 238). The size of the home fleet is not, therefore, entirely an indication of the prosperity of a port or haven, particularly as a temporary decline in the condition of a site might lead to it being temporarily closed and home vessels transferred elsewhere; an example is Saltfleet, where the home fleet was based temporarily in the haven at North Cotes in the 1330s, probably while the Withern Eau was diverted into the haven to counter silting there. North Cotes had itself previously suffered considerably from silting and there had been efforts to clear it at the end of the previous century.

Tetney Haven, referred to in the 16th century as the *shipdok*, had shifted by 1610 due to the accumulation of saltmarsh in this area, and the site probably shifted to a northern exit of the River Lud, with inland access to Louth. The canalisation of the River Lud through the construction of the Louth Navigation between Tetney Haven and Louth in 1756–70 allowed the development of the village as a small port, remaining open to commercial traffic until 1924. Goods and fish were transported to the Riverhead at Louth, but a wharf and warehouse were also built in Tetney. A small yacht club is still based in the haven. Further south, Grainthorpe Haven, at the mouth of the Seven Towns North Eau, was also important to the local economy, providing small-scale loading and transhipment areas for local shipping and industries, with road access inland.

Other sites which cannot be identified with certainty include *Northolle*, *Southolle*, and *Swine*, which were located north of Marehaven in Grainthorpe and North Somercotes: topographical changes and the drainage history of this length of

coast is complex and sites consequently difficult to identify with certainty. The area was crossed by several natural and modified channels of the River Lud and was subsequently completely altered by new drains. Northolle and Southolle were perhaps located at the medieval outlets of channels which became known in the post-medieval period as Grainthorpe and Somercotes Havens, although the present sites bearing those names have shifted from their original locations as coastal silting and the drainage pattern have altered the local topography further. The original sites were probably close to the present outlets of Seven Towns North Eau and Seven Towns South Eau, which lie to either side of the short promontory of Donna Nook. The third site, Swine, probably lay south of Southolle on the parish boundary between Grainthorpe and North Somercotes, which formerly followed Swine Dike. Swine (*Suine*) was referred to in the Domesday survey (1086) and was still usable in the 16th century, carrying coal for the last surviving salterns at Marsh Chapel.

The haven at *Marehaven* and its neighbouring village have both entirely disappeared, and probably lie between North Somercotes village and Saltfleet Haven in the reclaimed area behind later seabanks (including the late medieval/early post-medieval 'Roman Bank').

Plate 144 Silted and reclaimed medieval/post-medieval harbour, Saltfleet Haven, Saltfleetby

Saltfleet Haven, which is one of the few sites still remaining as a usable harbour, was once much larger than at present with a history of alterations extending back at least to the 13th century, and probably consisted of a large basin extending inland south of present Saltfleet village along North and South Creeks. It was apparently large enough to accept 24 vessels from Hastings in the late 11th century, when tolls are recorded (Pawley 1984, 315).

The site was an important saltmaking centre, as the name suggests, and this would have contributed to its significance and longevity; as mentioned above there was a small fleet of ships based there throughout the medieval and early post-medieval periods, which outlasted the end of the industry. Salterns may have extended inland for a considerable distance along the surrounding creek systems, and the production of large quantities of silt as a waste product of salt extraction probably accelerated its physical shrinkage, although the Withern Eau stream was diverted into it by canalisation during the 14th century in an effort to scour the basin.

In the 14th century Saltfleet also imported goods like herrings from Scania (southern Sweden) and Yarmouth, coal, malt and grain, while its ships were also involved in the Boston wool trade (see below). During the apparent late 16th-century decline of the Lincolnshire ports, Saltfleet was identified as one of a small number of havens requiring restoration because of its significance as an importer of food and fuel for the isolated hinterland villages.

Plate 145 Exposed stakes and stone reinforcement, approach channel to Saltfleet Haven, Saltfleetby

The Withern Eau, which had been diverted to assist in scouring the haven in the 14th century, had apparently been blocked by 1600 and had presumably been diverted elsewhere, with the customs deputy from that point onwards being based at nearby Theddlethorpe (Pawley 1984, 142). The topography of the site at the confluence of several drains meant, however, that Saltfleet clung on and became one of the last surviving havens on the coast.

Plate 146 Wreck of steam vessel, Saltfleet Haven

The present haven consists of an embanked channel created in 1832 to replace the original exit of the creek. The channel contains the extensive remains of a stone causeway or platform and long stake alignments and several wrecks, including a steam vessel.

Wilgrip Haven was located further south at Theddlethorpe St Helen, probably where the Old Gout drain emerges on the boundary between Theddlethorpe and Mablethorpe. This site was fairly remote and used in the 14th century for smuggling, but it was identified in the late 16th century as an important landing site requiring maintenance, as fuel and foodstuffs for the surrounding area were imported there, and for a time may have eclipsed its neighbour, Saltfleet. The site had, however, gone by the end of the 18th century (Pawley 1984, 90–1).

The significant small port at Wainfleet Haven was probably exporting salt from the 11th century onwards. The 16th-century geographer Leland claimed that it was originally navigable to the site of Magdalen College School at the south-east corner of Wainfleet All Saints (established in 1484 by William Wainfleet, Bishop of Winchester). The channel suffered badly from silting due to lack of maintenance; it had formerly carried water from the East Fen which kept it clear, but this had been diverted to Hobhole on the Witham as early as 1532, together with the water of the West Fen (Oldfield 1829, 64). A new straight channel with sluices was planned at Wainfleet c 1560, which the Commissioners described as '…a pore beggarlie markett towne and wherein doeth inhabit no marchaunt or other person that useth any trafique of merchaundise' (Pawley 1984, 132–3). The channel was not built, and despite repeated attempts to improve the existing channel and its sluices, the haven may well have finally gone out use. The River Steeping may at least partially follow the course of the original haven channel, although a surviving plan of the proposed new channel shows that it would have entered the Wash west of its present site.

Wrangle Haven appears to have been a substantial broadly triangular water body on the north side of the village, which would have been located next to the seabank in the 11th/12th century. The haven was probably used by trading and fishing vessels from the early medieval period onwards and was still handling salt in the mid 14th century. As saltmarsh developed to the south, however, it became necessary to maintain an increasingly lengthy channel to the Wash; the beneficial tidal scouring action diminished with distance, and the haven almost certainly suffered continually from the effects of silting as a result, since it does not appear to have been fed by any major watercourses. Wrangle barely appears in 15th-century and later shipping lists and seems to have entered an irreversible decline, with the produce of any local salterns which still operated probably transported by vessels from elsewhere. Leland suggests that the haven had already gone by the time he compiled his *Itineraries* in c 1540, although the entrance channel was probably still partly usable, at least until 1641, when the 'Roman Bank' was constructed across the area, cutting off the northern end. Even after that date, the southern section remained as a long indentation with one side followed by Sea Lane. Until it was finally blocked by the present seabank in the 19th century and reclaimed for farming, small boats would still have been able to land there, some distance from the village.

Plate 147 North-eastern bank of silted Wrangle Haven

Further west, another channel, *Toft Haven*, separated Fishtoft from Freiston; this was said to be still extant and navigable in the 18th century, running from a point near Fishtoft parish church to the Witham close to its entry into the Wash, midway between the outlet of the early 19th-

century Hobhole Drain and North Sea Camp open prison (Hallam 1965, 80). Any traces of the channel have been lost, and may have been infilled when Hobhole Drain was cut through the area, but its course can still be traced in the irregular, eccentric pattern of field boundaries along its former line. Local tradition suggests that fishermen used the haven and it almost certainly also provided a base for trading vessels associated with both villages, although little is known of its earlier history.

A further channel at the mouth of the Welland linked Surfleet, another small medieval port outside the study area, to the Wash, and there were others, for example to Whaplode and Gedney. Another inlet, *Bicker Haven*, entered the Wash as the original outlet of the Witham, with Drayton (like Boston, outside the study area) an important early medieval inland port before the Witham shifted course in 1014 to break into Boston Haven further north, leading to a transfer of its functions to the manor of Skirbeck, of which Boston formed part. The old channel survived, with Bicker briefly taking over from Drayton as a local small port, giving its name to the haven, before it silted up.

As already mentioned, ships from a number of local harbours and havens carried wool from Boston to Calais between the late 14th and early 16th centuries, including Grimsby, Fishtoft, Gedney, Saltfleet, Skegness, Wainfleet, Wrangle and Wyberton, although the proportion carried by ships from the havens (as opposed to the larger ports) diminished through this period, with the size of vessels involved also apparently decreasing as the mercantile trade began to concentrate in fewer centres (Pawley 1984, 122–8). Cloth seals recovered at Theddlethorpe probably indicate an involvement in the 17th-century wool trade.

The decline of the woollen cloth industry would have affected shipowners based in the ports and havens involved in its transportation, as well as generally reducing the volume of traffic being pulled along the coast and into the Wash. The number and size of ships involved in the wool and non-wool trades from the formerly significant havens at Wainfleet and Saltfleet fell to a similar level as their smaller neighbours, and both were reported by the Exchequer Commissioners as requiring significant repair works in the 1560s. By this time, the salt trade had ceased and neither were considered in a good enough state to be suitable for merchantmen, although they it was suggested that they should be kept open for delivery of fuels and essentials to the local communities.

Overall, the number of havens fell dramatically through the course of the post-medieval period with only a few of the larger inlets, such as Saltfleet Haven, remaining in use by the 19th century; this is apparent from the first edition Ordnance Survey (1824). In the case of smaller inlets this may have been due to silting, but the increasing size and draught of vessels would have required greater investment and better handling facilities.

Trading became an increasingly full-time activity operated from a reduced number of centres by individuals with access to the substantial capital funds required for investment. The majority of the earlier inlets were infilled and drained as they became incorporated into new sea defences constructed further to seaward and those which did survive appear to have been in the last stages of use by the time the 1824 Ordnance Survey was published; they do not appear on later 19th-century editions.

Between the North Sea coast inlets area series of ‘pullovers’, where roads crossed the seabanks. The construction of the pullovers, including a Roman Road which crossed the coastal fringe and passed through the protecting dunes to the head of the beach, would seem to imply that they met a need for regular access. They were presumably used almost exclusively by fishing boats, although small trading vessels may also have used them or transferred cargoes to smaller boats for distribution (legally or otherwise)

Contemporary records, mainly those for boats impressed into the king’s service, suggest that the trading vessels operating from the havens in the 14th century were mainly c 40–50 tons, about the size of the 19th-/early 20th-century keels operating in the Humber, with the smallest being c 18 tons, the crews approximating to 1 man for every 4 tons weight. The size of vessels increased, although during the apparent decline between c 1560–1600 there seems to have been a reduction in both tonnage and numbers of vessels: one ship above 100 tons is recorded at Grimsby, two of 80 tons and one of 60 tons, with another of 100 tons at Boston (probably trading elsewhere), the remainder in that town being much smaller, trading in coal from Newcastle, wool, grain and other foodstuffs.

By the 1580s, Boston had continued to decline in the number of large vessels compared to Grimsby, but Croft (presumably Wainfleet Haven), Fosdyke, Ingoldmells, Marsh Chapel, North Cotes and Saltfleet retained one or two small- to medium-sized vessels, suggesting that the havens had enjoyed a slight resurgence in their

fortunes, although this was not to last far into the 17th century.

Shipping

Like the Yorkshire coast, Lincolnshire was a dangerous area for shipping in peacetime and during periods of conflict, particularly the First and Second World Wars. Generic named locations for large numbers of wrecks without detailed individual co-ordinates include Donna Nook, Theddlethorpe Saint Helen, Mablethorpe, Chapel St Leonards, and Ingoldmells. As has already been mentioned in Section 5, however, there is little evidence for early vernacular vessels from the Lincolnshire area, with the vast majority of known wrecks dating from the later 19th and 20th centuries.

Plate 148 Post-medieval ships' timbers, with trenail fastenings, beach near Donna Nook, North Somercotes

Due to the soft and anaerobic nature of the mud foreshore along much of the North Sea and Wash coastline, there is a high potential for unrecorded well-preserved medieval and early post-medieval boat remains to be present in this area, particularly within and close to the approaches to contemporary havens, most of which have silted up and been preserved behind later sea defences. Evidence for local vernacular types of trading and fishing vessels may therefore be recovered.

On the North Sea coastal section, several post-medieval/early modern boats have already been recorded near Cleethorpes and Mablethorpe and noted at Grimsby, but others are present there and elsewhere. The nature of the foreshore in some areas has made access to wrecks extremely difficult, particularly in the north of the area, where a number of sites have been identified through aerial photography rather than ground surveys.

There are at least four wrecks scattered across the foreshore north of Rennie's Lock, Grimsby, with three others buried beneath a late 20th-century reclaimed area to the west. Although these wrecks have not been studied or dated, experience has shown that vessel remains which are visible tend to be of a post-medieval or modern date. One of the vessels is the remains of an iron or steel lighter which ran aground in 1974, probably dating from the interwar period (1920s–1930s).

Plate 149 View along hold compartments of 20th-century steel shipwreck immediately north of the Fish Dock, Grimsby

Plate 150 Wooden wreck, Grimsby

The others are most likely to be the remains of small, local late 19th-century wooden cargo vessels abandoned at the end of their working life. In some instances, wrecks can be of regional significance when considering the variations and development of vernacular craft. However, in this case with the close proximity of the shipbuilding yards, the vessels recorded in and around the study area are more likely to be associated with repair and/or dismantling and salvage carried out

by the boatyards, while others probably simply ran aground and were not considered worth salvaging.

Several post-medieval/early modern wooden wreck sites recorded on the foreshore of neighbouring Cleethorpes have shown a considerable degree of survival. Recent monitoring has shown that they have deteriorated since first being recorded during the late 1990s due to fluctuating beach levels periodically exposing the timbers, although this likely to have occurred frequently since the boats were deposited.

Plate 151 One of a number of 19th-century wrecks at Cleethorpes

The remains of three modern ships at Mablethorpe/Sutton-on-Sea represent wooden merchant vessels that had all been purchased and deliberately run ashore to be broken up for salvage (Buglass 1997b). They have been identified as *Stavanger*, a Norwegian merchantman, beached in 1914, *Georgio Avasoti*, an Italian vessel, and *Acorn*, a British ice carrying barque, built in Dundee 1855. Further evidence for this appears in two postcards of c 1907 illustrated in section 5 which show beached merchantmen (possibly the same vessel from two different angles). In one of the views, the upper masts have been removed.

Plate 152 Small disused private dock, Fishtoft

Known wrecks or wreck sites in the Wash include examples at Benington, Freiston Shore, Fishtoft, Wyberton, Holbeach, and Sutton Bridge. The recorded ship types include coal barges, schooners, and steamers, many of which will be of standard construction without any local characteristics, but among them are likely to be locally-built vessels just as the Humber and Norfolk coastline developed their own traditions.

7 MILITARY INSTALLATIONS

North Yorkshire

Significant portions of the North Yorkshire coastline became important as the result of a series of actual or perceived military threats stretching over the course of more than two millennia. Scarborough Castle remains a dominating metaphor of military power, strategically important as a fortress and military base in several different eras, but the headland was also the site of a possible Iron Age fort, a Roman signal station, post-medieval to early modern batteries and 20th-century installations, reflecting on a single site the range of structures constructed elsewhere on the coast as a response to the changing nature of offensive and defensive warfare.

Prehistoric–Romano-British

Although defended sites may have been located at suitable sites along the coast in the pre-Roman period, no direct evidence survives. It is quite likely that an Iron Age promontory fort existed on the Castle headland, Scarborough, for example, where there was a late Bronze Age/early Iron Age settlement, and similar locations, such as the abbey headland at Whitby, may also have been selected for their defensive potential.

In Scarborough, it would have been simple to control access to the rhomboidal castle plateau, surrounded as it is on all sides by steep cliffs. The landward (south-western) side is separated from the 'mainland' (represented by the ridge below Castle Road) by a declivity, the location of the later barbican and presumably the early entrance to the plateau as well. The east end of the ridge is occupied by the outer barbican and may well have been raised to bring the interior almost to the same level as that of the inner bailey, while the declivity between the two has also been enhanced by the addition of a defensive ditch which presumably widened and deepened the natural contours. As a result it is difficult to reconstruct the unmodified late Bronze Age and Iron Age topography.

The earliest datable military installations are the late Roman signal stations built at Scarborough, Filey, and probably Ravenscar, the southern half of a chain of early warning and observation sites which includes Goldsborough and Huntcliff to the north of Whitby, outside the study area. The remains of the signal station at Scarborough are preserved and displayed within the medieval Castle precinct. Although evidence for a similar installation at Ravenscar is restricted to a disturbed inscribed slab found in 1774 referring to a fort and tower, the topography of the site itself certainly has features in common with the other known sites where the main criterion was good visibility: clear views out to sea in all directions and to neighbouring coastal stations in the chain, allowing hostile movements to be tracked. There may also have been repeating beacons or towers located on inland vantage points capable of passing signals to inland garrisons at York, Malton and elsewhere, although these are likely to have been basic and none have been located. The design and defensible locations of the signal stations suggests that they were also intended to form local strongpoints and house small garrisons to deal with raiders moving between and behind the towers.

The loss of the Filey and Huntcliff sites during the 20th century reflects the danger posed by coastal erosion; in both cases, recording work mitigated the loss, with Filey re-excavated by York Archaeological Trust in 1993–4 using modern archaeological techniques, although clearly other sites may have been lost without record. There is a possibility, for example, that Whitby, which stood at the centre of this local chain, was the administrative headquarters and control centre for the signal stations and a further signal station may have been located nearby. A site beyond Saltwick Bay near the present lighthouse would have provided visibility to Ravenscar and Goldsborough and was almost exactly equidistant between the two.

In addition, the sheltered Esk valley would have been a suitable location for a military base capable of responding to messages passed along the signal chain while awaiting reinforcements from the interior. As the only true harbour between the Tees and the Humber, it could have provided safe moorings and provisioning facilities for the use of units of the Roman fleet (*Classis Britannica*) based in the province. After the initial invasion, the fleet was mainly involved in providing logistical support for the army, which would have involved maintaining an active coastal route to the northern frontier. The fleet also undertook anti-pirate and anti-raider duties which intensified in the 4th and early 5th centuries, the period which saw the construction of the signal stations and southern Saxon Shore forts.

There are indications of a Roman presence in the town in the form of artefacts (mainly coins and pottery) and the possible structural remains of a ford and culvert (Section 3), although these are almost entirely the result of casual antiquarian discoveries. No traces of Roman occupation had

been recovered from more recent archaeological interventions undertaken in Whitby prior to the inception of the RCZAS.

Medieval

The major medieval fortification on the coast is undoubtedly Scarborough Castle; Before the town and castle were built, and the area was modified, however, the declivity between the castle plateau and the ridge following Castle Road would have been clearly outlined against the skyline and, setting aside the legendary explanation for the origin of the town's name, *Escardeburg*, or *Skarþborg* may well mean 'fortified place by the declivity', perhaps a reference to the remains of the signal station and any earlier extant earthworks which were destroyed by the construction of the castle curtain wall and barbican.

Plate 153 Scarborough Castle dominating the headland between North and South Bays, Scarborough

Construction of the castle was begun early in the reign of King Stephen (1135–54) by William le Gros, Earl of Aumale (Albermarle) and Lord of Holderness. Le Gros, as Earl of York, effectively managed the royal estates in the region during Stephen's unsettled reign. Following the accession of Henry II, the castle was among a number of properties surrendered to the Crown in 1155 to curtail le Gros' power, remaining in Royal hands until the 17th century.

Scarborough Castle continued to have strategic importance, playing an active role in the Pilgrimage of Grace, Wyatt's Rebellion and the English Civil War, and was refortified (together with the Newborough defences) during the Highland Rising of 1745. The town itself was walled in the 13th and 14th centuries, and although none of the gated defensive circuit is now extant, it has left its mark on the layout and street names.

Post-medieval

New artillery batteries were built in Scarborough during the 17th and 18th centuries to update the defences and provide some seaward protection. Bushell's Battery was built by the defending Royalists west of the castle barbican during the Civil War siege, presumably to protect the approaches and allow counter-battery fire with a Parliamentarian battery located at St Mary's Church. South Steel Battery was built at the northern end of the castle to overlook the harbour and lower town.

An outer ring of small forts or batteries were also built around the town during the Civil War, including one on Ramsdale Hill and another near Peasholm, both constructed by the besieging Parliamentarian forces; the earthwork remains of the Peasholm star fort continued to be shown on 1:2500 Ordnance Survey map editions into the early 20th century. The surviving medieval gatehouses on Newborough and Auborough were both rebuilt in 1642, presumably to assist in controlling the approaches to the town; the bars were demolished in 1842 and 1817 respectively, although Newborough was replaced for a time by a Victorian pastiche.

South Steel Battery was maintained until at least the 1740s, with other defences added around the town perimeter and castle in response to the Highland Uprising. Brick barracks were also built into the castle's curtain wall to provide modern purpose-built accommodation; at this stage such buildings were still rare, although earlier examples survive, such as those at Ruthven, Aberdeenshire (c 1689), Bernera, Ross & Cromarty (1717–23), and Fulford, York (c 1720). The castle defences were maintained through the late 18th-/early 19th-century French Wars.

Early modern

An extensive red brick Burniston Barracks complex was constructed at the north end of Scarborough in 1862, a period when the British Army was establishing better facilities across the country, and modernising in the aftermath of the Crimean War. A practice battery was also established on the castle headland in the late 19th century, overlooking the North Bay. Around the turn of the century the 800-yard Scalby Beck Rifle Range was built north of Burniston Barracks with butts or target platforms at 100-yard intervals, their locations recorded on the 1912 1:2500 Ordnance Survey, and still appearing on the 1958

1:10560 edition. The area was used for Home Guard training in the Second World War, but had gone out of use in the early 1950s. At least one of a series of numbered concrete post locations ('No.4') marked on the maps survives on the north side of the rifle range, marked with the old Board of Ordnance arrow symbol flanked by 'W' and 'D' (War Department).

Plate 154 War Department marker post, late 19th-/20th-century rifle range Scalby Ness

Further south near Filey, local tradition suggests there was a gun battery located on top of the Brigg which was apparently manned by militia and positioned to control passing shipping. Assuming this information to be accurate, it would be reasonable to assume that the battery is most likely to have been active during the late 18th-/early 19th-century wars against the French when local militias were activated. It is known that a naval unit under a Royal Navy lieutenant was based in the town in 1803 as a successor to the Dickering Volunteer Corps (1794–1801). The 2nd Company of Artillery Volunteers was, however, raised in Hunmanby and Filey in 1859; from 1860, this became the 1st East Yorkshire Artillery Volunteers, with batteries at Filey, Flamborough, Hornsea and Withernsea, remaining in being until Haldane's reforms of 1907 (Norfolk 1965, 55).

First World War

Although both Whitby and Scarborough were shelled at the start of the First World War, there is little evidence for new defensive structures on this stretch of coastline: both towns were defended by resident army units armed with rifles and a few machine-guns, perhaps with some artillery support. The pre-First World War rifle range at Scalby Beck was almost certainly used for training purposes, just as it was in 1939–45. A short 'zig-zag' trench on nearby Scalby Ness may be early, but is at least as likely to have been one of a series of features excavated by Home Guard training in the area in the Second World War. The dog-legged conformation was a simple and effective way of containing the blast of shells and grenades. Introducing angles also prevented enemy forces from enfilading entire trenches after over-running one section while allowing defenders to establish local strongpoints using barricades.

The sunken remains of two small square reinforced concrete structures located on sandy areas of the beaches in Cayton Bay and Filey Bay closely resemble the plan forms of First World War pillboxes identified on the Holderness coast in dimensions, materials and layout although removal of beach sand would be necessary to be certain. Both are located next to beach exits and distinct from anti-invasion defences constructed in the same areas in 1940–1.

Plate 155 Possible WW1 square pillbox, Flat Cliff, Filey

Like the East Riding examples (see below), both structures are c 2m square, with walls c 0.15–0.2m thick, and with a door in the centre of the rear wall, while the coarse aggregate of the concrete walls, cast around a central mesh core is also almost identical. Unfortunately insufficient of either structure is visible under normal beach conditions to identify any further diagnostic features which characterise all of the East Riding examples and which would confirm the early attribution, particularly the distinctive single rifle embrasures set centrally in each of the three forward walls and the small diamond pattern of the mesh reinforcement used in place of the larger square mesh used in Second World War structures. Traces of the thin slab roofs may also remain, incapable, like the walls, of resisting even a nearby shell blast (Brigham *et al* 2013).

Second World War

Unsurprisingly, the most extensive surviving military remains on the North Yorkshire coast

relate to the defensive infrastructure created during the Second World War. The long stretches of high cliffs which characterise most of the North Yorkshire study area led to the concentratation of the main defensive effort to the vicinity of urban centres with landing places and more isolated stretches with accessible beaches and usable exit points. For this reason, only Cayton Bay and Filey Bay approached the density of hardened defences seen on the Holderness section, where there are long sections of low cliffs, flat sandy beaches and a series of easy beach exits. There was also widespread use of minefields and beach obstacles to create layered front-line defences designed to slow down attacking forces and attempt to channel them along specific routes, exposing them to fire from defensive locations.

By the same token, the elevation of the cliffs made them suitable for the location of early warning defences, anti-naval and anti-aircraft batteries; Whitby had an example of both types of battery. The anti-aircraft battery, located near the Abbey, was also a gunnery school, with eleven gun sites located in a row along the cliff. Here, men and women trained before being sent to active duty batteries. No trace of this site now survives, but the former double 6-inch naval gun battery near the Pavilion Centre, West Cliff, is still visible as a landcaped area; the Pavilion itself was pressed into service as a battery guardroom. The crews of both sites were billetted in nearby hotels and houses. Possibly the only extant monument of the period is a rare loopholed section of stone-faced anti-tank wall near the western edge of the town in Love Lane.

The fact that the North Yorkshire coast was a potential flightline for incoming V1 pulse-jet missiles meant that a series of sites were selected for the construction of 'Operation Diver' (anti-V1) batteries from 1944. The four 3.7-inch guns were sited in a row rather than a standard 'V' or semi circle, to enable the gunners to put up a wall of fire, aided by new and highly-accurate radar-assisted automatic gunlaying system and Royal Observer Corps posts. The effectiveness of the guns was also enormously improved by the introduction of proximity fuses, which meant that shells exploded on detecting nearby targets rather than at pre-set heights. The fact that the missiles flew on a straight path at a fixed height made them relatively easy targets to hit once they had been detected, and successful interceptions by gun or fast aircraft such as the Typhoon eventually accounted for most incursions.

The first sites were located on the south coast and Thames approaches, followed in September 1944 by East Anglia, with the Yorkshire sites only becoming operational as late as December, by which time the last launch site in range of Britain had been over-run by Allied forces. Between July 1944–January 1945 a large number of V1s were, however, air-launched from modified Heinkel 111 bombers which flew in low in an effort to avoid radar detection, although the British had developed the Chain Home Extra Low (CHEL) system which could pick up signals from aircraft flying as low as 50ft (15m) at up to 30 miles (48km); the nearest CHEL site (Station K47) was located at Bent Rigg, Ravenscar (see below). In the event, the Diver sites in North Yorkshire never received guns; the selected locations included two on high ground a little inland in Hawsker, one in Ravenscar near Raven Hall, with a possible second site to the south, and three in Cloughton.

The numerous classes of defence installation included pillboxes of various designs, beach searchlights, anti-tank defences, spigot mortar positions, 'Ruck' prefabricated machine gun posts, barbed wire obstructions and beach defences, road blocks, minefields, observation or minewatch posts, trenches, weapons pits, radar stations, radio direction finding posts, covert wireless stations, gas decontamination centres, backed by a range of ancillary buildings, camp sites, Home Guard facilities, ARP posts, and training areas.

The civil populations of Whitby and Scarborough were partly protected against bombing raids by public shelters, although those with back gardens would have relied on their own Anderson shelters.

Plate 156 WW2 minewatch post and adjacent coastguard lookout, Burniston

An unusual set of features in Whitby are the remains of a row of decaying and overgrown steel plate pontoons with timber staging, which are thought to have been used for mooring minesweepers immediately upstream of the former Whitehall shipyard, a reminder that coastal ports, including both Whitby and Scarborough,

acted as bases for minor naval vessels, possibly including converted armed trawlers used for minesweeping.

Plate 157 Remains of WW2 pontoons for coastal minesweeper fleet on site of old Whitehall shipyard, Whitby

Many of these features, such as minefields, beach obstacles, roadblocks and anti-tank defences, trenches and other earthworks, were intentionally of short duration. Clearance work of redundant features and minefields began before the end of the war and only a few traces of 'soft defences' survive, including the infilled outlines of trenches and weapons pits visible at Scalby Ness, north of Scarborough: most have entirely vanished.

The majority of features assessed as dangerous in urban areas were demolished immediately by the army (assisted in some areas by prisoners of war). Other obstructions were removed by local authorities acting as agents for the War Office to allow normal life to resume. Such obstacles included pillboxes and roadblocks in seafront or harbour locations in Scarborough and Filey which impeded access to the beach or approaches to the town, and beach obstructions, including wire, which would affect post-war fishing and the (hopefully) returning tourist trade. The seafronts of Scarborough, Filey — and presumably Whitby — were defended by pillboxes, minefields and beach obstacles, but all of these had been cleared by 1945–6. A clifftop pillbox at Glen Gardens, Filey, was buried to roof level to form the base of a viewing platform and remains in place, but this is a rare survival.

Outside the towns, the picture was quite different. Government compensation had been paid to landowners for the loss of value of land occupied by defence works under the *Compensation (Defence) Act 1939*, which effectively removed the obligation of the War Office to remove surviving obstacles. In practice, local authorities or the Ministry of Works demolished pillboxes and other hardened defences where they caused an actual or potential obstacle, or were considered a prominent eyesore or visibility hazard. This included those blocking vehicular beach access points and many standing next to roadsides, by bridge approaches or at crossroads and road junctions. Some private landowners cleared pillboxes which stood within arable fields at their own expense, particularly following the introduction of combine harvesters in the late 1940s and 1950s, but even here, farmers often simply continued to work around them and many hedgerow pillboxes also survived the progressive amalgamation of small fields to improve efficiency.

Plate 158 WW2 anti-tank cubes blocking Reighton Gap

In some areas at least, post-war maps of beach obstacles, including pillboxes and various forms of anti-tank and anti-landing defences were created by local authorities, and potentially dangerous examples which might cause accidents to civilians were identified. A 1955 map of obstructions on the Holderness coast between Carnaby and Skipsea survives in the East Riding archives, for example (NBT/435), some of which were subsequently removed. Although plans may have been drawn up to remove all structures in some areas, in practice non-hazardous beach obstacles were often only partly dismantled by under-resourced post-war local authorities. A surprising number of anti-tank cubes were left in position; most consisted of concrete blocks with either a separate foundation or attached to a strip foundation, in lines running parallel to the cliff or laterally to divide the beach into 'killing zones', while others blocked beach exits which might be used by enemy vehicles. Although many cubes were left in place for decades, many were moved in the late 20th century for use as localised cliff protection.

Many of the more robust structures with foundations such as anti-tank walls remained *in situ*, while smaller installations subsequently sank under the sand: near Filey, for example, areas of anti-landing scaffolding and concreted screw pickets for barbed wire entanglements are still exposed periodically during cycles of sand loss, lacking only the wire itself. Even some areas of mines on less accessible parts of the East Anglian and southern coasts had not been fully removed by the summer of 1946, although the western coast and most of northern England were reported to have been cleared (*Hansard* 142, 4th July 1946, House of Lords debate: 'Evictions from Battle Training Areas', 151–91).

The remains of pillboxes of different types are the most numerous individual class of surviving features in rural North Yorkshire, as they are elsewhere. The majority were quickly built in 1940–1 following the retreat from Dunkirk. At the time, the army lacked mobility, having left most of its heavy equipment in France or shipped it to other theatres and static defences were perhaps the only option for Home Defence. At a local level there seems to have been little cohesion in designing the defences and many pillboxes were identified by sector commanders as being badly sited, with some facing in the wrong direction while others were practially undefendable or served no tactical purpose. The design of many of the pillboxes was also inadequate and would not have withstood modern artillery fire, but fortunately, none were ever tested in action.

Although most now stand in isolation, contemporary aerial photographs show that in many cases pillboxes were surrounded by trench systems and barbed wire, with each forming the centre of a section or platoon defence. As such some of the designs were equipped with a large number of loopholes, but by late 1941 this had been recognised as a mistake, potentially encouraging troops to remain under cover until they were encircled while providing multiple entry points for incoming fire and grenades. A General Headquarters memorandum of October 1941 makes it clear that 'sieve'-like pillboxes of this type were considered to be an anachronism and many superfluous loopholes were blocked, while others were filled with barbed wire, bricked up or demolished to prevent their use entirely, in favour of more flexible defences (Brigham *et al* 2013, 54–5).

The change in strategy became possible as the army was re-equipped with armoured vehicles and troop transports, regaining the mobility it had lost in 1940. Where pillboxes were retained they were to be used as a shelter for the duration of shelling or air assault. During a ground attack, the occupants were expected to fight from linked trenches and weapons pits with only one or two remaining in the pillbox, which acted as a keep, providing covering fire and radio communications. In the Northern Command as a whole, there were estimated to be 7.8 pilboxes per mile of beach, although very few appear to have been constructed between Whitby and Scarborough, where the topography of this coastal section ensured there were limited safe landing sites or beach access points and high cliffs which were relatively difficult to scale. Those which survive are at constant risk from natural processes such as cliff falls or wave action. This can also trigger pre-emptive demolition for safety reasons, a notable example of which is a rare section post in Robin Hood's Bay (RCZAS ref FD60: see below). Fortunately, the Heritage Coast designation of the North Yorkshire coast between Saltburn and Scalby, with the exception of a small area at Whitby, has protected the area from coastal development such as housing and caravan sites, to a greater degree than elsewhere. Inland, the introduction of automated combine harvesters and tractors controlled by GPS could lead to the removal of second-line pillboxes and other features located in fields to avoid disrupting planting, spraying and harvesting patterns.

A variety of pillboxes were used in the area north of Scarborough, mostly of known types developed by the directorate of Fortifications and Works (FW3) for the War Office in 1940, with further types added later. Early pillboxes were often built without Royal Engineers present to supervise and non-standard types appear; these are recorded as including hexagonal forms, but as none of these remain, it is difficult to be precise as to their layout. Some may well have been related to the common 'lozenge' type, as these were used from the Humber to Berwick, but the dimensions and details given for a demolished pillbox in Fylingdales (RCZAS Ref FD55) do not match any known forms. An FW3 Type 24 (FW3/24) irregular hexagonal pillbox was reportedly formerly present further south in the same parish (RCZAS Ref FD63), although there is a possibility that this was actually an 'eared' type, since some recorders referred to 'irregular' or 'double hexagonal' pillboxes further south in the Speeton area, where RCZAS Phase 1 and 2 field examinations identified them as eared types.

Other FW3 designs may have been used: a little to the north of the study area at Runswick Bay is a Type 23 (FW3/23), which consists of an open–topped enclosed AA gunpit attached to a closed square blockhouse; this had been positioned at 90° to the cliff to provide enfilading fire along the

beach, while the AA gunpit retains an outer camouflage facing designed to mimic drystone walling. The occurrence of this type of pillbox in the region and its orientation are extremely unusual, although it cannot be ruled out that the type was used more widely in North Yorkshire and possibly in the study area. Modified Type 23s, with two enclosed blockhouses flanking a central AA gunpit, are common in Lincolnshire, but have not been recorded north of Grimsby (see below).

Plate 159 Rare angled WW2 clifftop section post, one of two south of Robin Hood's Bay

Plate 160 Interior of WW2 section post, showing embrasures and shelves

A rare type of 'enclosed trench' section post was adopted in the area with examples constructed in Robin Hood's Bay and Cayton Bay, where two have been identified in each location. These posts were an alternative to pillboxes, individually designed for awkward clifftop locations where there was insufficient room for more standard structures. Because of their unique design, details vary, but each usually consists of a long and narrow slightly angled and partly sunken structure. There were entrances at both ends reached by a short flight of steps and the seaward end generally included a small open-topped observation post which may also have been used for anti-aircraft duties, using a Bren fixed to an AA mounting. They all included a large number of rifle embrasures in both of the main faces, sufficient for an infantry section to fight one or both sides, with long internal shelves acting as fire rests.

Plate 161 Collapsed WW2 section post, one of two at Cayton Bay

Plate 162 In-situ WW2 section post on cliff edge at Killerby, Cayton Bay

In terms of the identified section posts, the results of the most recent field investigations show that the continued survival of this unusual type of pillbox is in doubt, with three of the four now in a collapsed state and the fourth being slowly undermined at the seaward end. A combination of erosion, cliff location and the concrete slab construction means that the long-term survival of the posts is very unlikely, as the recent demolition of one post for safety reasons (RCZAS ref FD60) has shown. Fortunately as part of the Phase 3 surveys a detailed record has now been made which allows for their 'preservation by record' (Brigham *et al* 2013).

With the exception of the section posts, the range of Second World War defences in Cayton Bay and

Filey Bay were similar to those of East Yorkshire, based around the concrete 'lozenge'-shaped rifle pillbox and the 'eared' heavy weapons pillbox, both of stretched hexagonal plan with internal and external blast walls. This is perhaps unsurprising in the case of Filey, which at the time formed part of the East Riding of Yorkshire, but it suggests that Cayton formed part of the same command.

Plate 163 WW2 clifftop 'lozenge' pillbox, Primrose Valley, Filey

Plate 164 WW2 'lozenge' pillbox slipped from position on cliff, Hunmanby Sands, Filey

The lozenge pillbox was normally used in clifftop locations or provided covering fire as 'backstop' defences in the fields to the rear, protected and camouflaged by earth mounds. Like the angled section posts, the lozenge pillbox was designed originally to hold up to a full section of infantry armed with rifles and light machine-guns (LMGs). As such, they generally had ten loopholes in the main structure, including four for the LMGs in the angled end walls. The latter sometimes have the remains of iron 'Turnbull' mounts underneath to hold the Bren guns or other weapons. In the rear elevation was an offset entrance, which was protected by an L-shaped blast wall. In North Yorkshire the main roof and floor slab extended around the blast wall to create a strong enclosed porch in contrast to the open-topped arrangement prevalent in East Yorkshire. A major feature of the interior was a longitudinal anti-ricochet wall which supported the centre of the roof and would also have given some protection against incoming rounds, flamethrowers or grenades entering the front embrasures. The wall occasionally contains loopholes, presumably introduced to allow the defenders to continue fighting from the rear half after the enemy had reached the front wall.

The 'eared' type heavy weapons pillbox is, like the lozenge pillbox, found only in the north-east of England, but with a more restricted distribution between the Humber and Cayton Bay. Eared pillboxes were generally based in exposed positions at the foot of the cliff on the sand or rock foreshore to provide wide arcs of fire across the beach from the two long slits for the medium machine-guns (MMG), probably the tried and tested Vickers. In plan, the pillbox consisted of two irregular hexagons, the front part forming the actual fighting area, the rear containing the two side exits which were fully enclosed within roofed external blast walls projecting either side of the structure (the 'ears').

Plate 165 WW2 'eared' heavy machine-gun pillbox, Cayton Bay

The two forward-facing side walls containing the embrasures were angled at c 35°. Although these gave a combined arc of fire approaching 180°, in practice the gunners are likely to have directed most of their fire diagonally across the advancing waves of invaders to intersect with that from neighbouring pillboxes and cause the maximum number of casualties. Projecting from the wall below each embrasure was a large integral hollow 'box' containing an internal recess at the base of the wall, either to accommodate a cooling tank for the machine-gun or the front leg of a heavy tripod mounting. Internally, there was a short anti-

ricochet wall separating the twin entrances. A problem with this pillbox type was the position of the entrances, which were not protected from the front, and the usual location backed up against a cliff, both of which would have given the occupants very little opportunity to escape alive, the intention presumably being that they would continue firing until either killed or captured.

Plate 166 WW2 beachlight with blocked searchlight aperture, Hunmanby Sands, Filey

The pillbox and trench systems on the surrounding cliffs were supported by beach lights, also located at the base of the cliff. Enclosed in concrete without defensive weapons slits, the only opening apart from the side entrance was a large quadrant-shaped aperture for a searchlight which was designed to shine sideways along the beach to illuminate the advancing enemy front lines and identify targets for the machine-gunners and supporting rifle and mortar sections. The fact that some of the openings were subsequently reduced in width by concrete suggests that it was recognised that the searchlight and its crew would be exposed to such a degree that they would only have been able to operate for a very short period.

Filey and Cayton Bays both still contain several fine and intact examples of lozenge and eared pillbox types as well as beach lights and at the latter, a probable command post, although cliff collapses and storm damage are increasing in intensity. There are also significant remains of former rows of anti-tank cubes in the Reighton/Speeton beach area; again this part of Filey Bay is extremely exposed and many are in poor condition and have been displaced.

Plate 167 Displaced possible WW2 command post, Cayton Bay

At least two 'Ruck' machine-gun posts were also present on the cliffs at the south end of Filey Bay near Reighton Gap. Designed by James Ruck, North Midlands regional military advisor, these structures used the same prefabricated curved concrete half-arch wall/roof components as 'Stanton' shelters, which were designed for air raid protection and as tunnel linings, enabling defences to be built cheaply in the summer of 1940 by unskilled labour in restricted locations without much in the way of ground preparation. In practice, the structures would have provided little protection to the occupants, and they were usually partly embedded in rising ground such as a cliff or seabank, with a covering of rammed earth, concrete blocks, slabs, sandbags and any other materials which came to hand.

Plate 168 Collapsed prefabricated segmental wall sections of WW2 Ruck machine gun post, Reighton

The posts were generally constructed with 20-inch (0.5m) rifle embrasures in the sides and a large opening for the HMG in the brick or concrete block gable wall opposite the entrance; the holdfast for the machine-gun mounting is clearly visible in the concrete floor of one of the Reighton examples,

although both were in very poor and partly collapsed condition when examined for Phase 1 of the RCZAS. As many of the components were built by Hydroprest Concrete Ltd, Scunthorpe, the type was relatively common in Lincolnshire, and the Filey posts were probably at the northern edge of their normal distribution. At least 6000 were built, but only a handful in any condition were recorded in the study area between Filey Bay and the Holbeach area; examples were also built inland, including a fine but recently demolished example near Stapleford, Nottinghamshire (Osborne 2008, 184).

Gun batteries provided longer distance fire to disrupt landing craft and naval support vessels; these were either located on the cliff if the gradient or topography allowed or on the clifftop. A former gun battery originally located on the cliff at Primrose Valley, Filey, is among a number of collapsed structures. This was armed with two 6-inch guns, with a searchlight battery immediately below.

Several nationally-important Second World War sites remain in the area, including the scheduled RAF Bent Rigg radar station, Staintondale, and a Special Duties Branch Out Station bunker located in Cloughton. Bent Rigg was a Coastal Defence/Chain Home Low station (CD/CHL), site M47, opened in 1941 and operated by the army to detect shipping and aircraft. From 1942 CD/CHL sites were combined with Chain Home Low (CHL) sites operated by the RAF to form a single system of low-cover radar.

Plate 169 Standby generator building and fuel store, WW2 radar station, Bent Rigg

Later, Bent Rigg was one of a number of sites upgraded with more powerful centimetric radars as part of a series of Chain Home Extra Low (CHEL) stations, site K47. A number of concrete and rendered brick buildings and a Nissen-type hut remain close to the cliff, including the Transmitting & Receiving Block (TX/RX), the generator building and fuel store; the site would also have had offices, a mess, accomodation, latrines and other ancillary buildings, represented by several groups of building platforms.

The Special Duties Branch Out Station at Hulleys Farm, Cloughton, was a secret site operated by the British Resistance, which would have become operational following an invasion. Many stations consisted of an underground bunker with two exits, containing accommodation and stores for Resistance cells of four men; in this instance, the Special Duties Branch were concerned with intelligence collection, and the site would have housed a radio transmitter with operators tasked to pass on messages dropped by runners. A common method was to place the message in a split tennis ball and drop it down a tube leading down to a bunker. The main entrance shaft, covered by a metal grille, was located in woodland during the Phase 2 investigation of the area, and the bunker presumably survives at least in part, although many were destroyed after 1944 or are now in a collapsed condition due to the perishable materials used in construction, such as corrugated iron and timber.

Plate 170 Entrance to WW2 Special Duties Branch Out Station, Cloughton

Cold War

Perhaps the most important class of post-war sites in the area consisted of a series of Royal Observer Corps (ROC) underground nuclear monitoring bunkers constructed in the late 1950s/1960s, some of which remained in use until 1991 although the overground elements at least have been demolished. The bunkers generally comprised a 15ft (4.6m) deep vertical shaft reaching a chamber divided into a store cupboard/latrine and the main chamber accommodating the three-man crew.

The posts were intended to monitor a nuclear war using three instruments: a Bomb Power Indicator (BPI) measuring blast over-pressure, a Ground Zero Indicator (GZI) recording the height, bearing and size of a nuclear fireball, and a Fixed Survey Meter (FSM) for measuring radiation fallout. The collected information would be sent by secure telephone to 20 Group Headquarters located in York.

Posts on the North Yorkshire coastal section include examples near Whitby Abbey, another in the grounds of Scarborough Castle close to the cliff edge, one at Robin Hood's Bay and a well-preserved post at Cloughton.

The underground bunkers were often located next to existing aircraft observation posts constructed in the later 1940s/early 1950s to replace wartime equivalents built in early 1937, many of which had consisted of little more than sheds or sandbagged emplacements with only spartan facilities for the observers. Some of the new posts were locally built using brick; others consisted of pre-cast 'Orlit' posts, which were occasionally attached to the roof of existing pillboxes which could be used as rest rooms. The three North Yorkshire posts were located in Whitby, Robin Hood's Bay and Cloughton on the same sites as the later bunkers, although the example at Robin Hood's Bay had been located elsewhere until 1953.

North of Robin Hood's Bay is a timber lookout mounted on a brick and concrete observation post. From 1906 there had been a Coastguard lookout at this site, but in 1937 it was designated as a peacetime occasional station and a wartime War Watch Station for monitoring coastal activity and mine watching. In 1961 the site was designated as a Coast War Watch Station III; the post still remains as a lookout and has seen some recent restoration.

East Riding of Yorkshire

The low-lying nature of much of the coast and coastal hinterland of Holderness would have made it vulnerable to raiders and invaders from the late prehistoric period onwards and for that reason defensive or early warning arrangements arelikely to have been put in place to protect the area. The only relatively stable part of the coast is, however, Flamborough Head and the physical evidence for any pre-First World War coastal defences has been lost elsewhere due to coastal erosion, although some documentary or circumstantial evidence remains.

Prehistoric–Romano-British

As in North Yorkshire, there are indications that prehistoric defended sites were located along the East Riding coast, although the evidence is restricted to the one area which has not seen extensive coastal erosion: Flamborough Head. The principal feature here is Danes Dyke, a massive, nationally-important Neolithic or Bronze Age linear earthwork constructed halfway along the headland. It may have been intended to form a large defensible enclave, although by and against whom is unlikely to be determined, just as the date of construction cannot be given with certainty. Alternatively, despite its size, the Dyke may have been intended as a symbolic boundary feature: construction would almost certainly have required the participation of many more people than the headland contained, suggesting the communal effort or control of a much larger area. The enclave has four possible landing places, North and South Landings, Thornwick and Selwick Bays, which would have formed a security risk, but had the benefit of allowing access to the sea and foreshore.

Plate 171 North end of Danes Dyke, Flamborough

The Dyke runs for a little over 4km across the headland, and varies in construction. Typically, it consists of a single bank constructed of chalk blocks and turves with a western ditch, but there are stretches with double and triple banks, some of which mark alterations or entrances, possibly made much later. The surviving bank reaches on average around 3m in height, 5.5m in places, and the ditch is at least 2m deep, 18m wide, but both were clearly more substantial in their original state. In the area to the east of the Dyke a site identified as a late Iron Age promontory fort has been excavated on the northern cliff edge at Briel Nook.

Briel Nook is a good example of a surviving late Iron Age earthwork; although the site is at risk of

loss through cliff collapse in the medium term, parts are likely to survive for much longer, unless erosion accelerates.

Three small ramparted enclosures were also identified further west near Gull Nook through aerial photographic analysis during Phase 1 of the RCZAS, although these were not necessarily defensive, and they have not been examined archaeologically as yet.

Plate 172 Site of Iron Age promontory fort, Briel Nook, Flamborough

Around 3km to the west of Danes Dyke is the much smaller Buckton Dyke, a parallel north–south linear embankment which is also undated. The ditch was apparently associated with a round barrow and square barrow, presumably of Bronze Age and Iron Age date respectively. This much smaller feature may be an outlier of the Flamborough Head enclave boundary represented by Danes Dyke, although in this case, the bank appears to be on the west side of the ditch. A very short northern section survives as an earthwork; the remainder has been ploughed out although it can be traced easily as a soilmark for c 780m and thereafter may have run along the west side of Hoddy Cows Lane/Bempton Lane past the west end of Buckton, into northern Bridlington. If that was the case, the Dyke would have marked off the entire headland, a much more significant area than Danes Dyke.

On the south side of the headland, Beacon Hill has traditionally been considered the site of a 4th-century Roman signal station, with unworked stones being recorded as the area was destroyed by quarrying; late Romano-British pottery has also been found in the area including Crambeck ware, which was present on other signal station sites. There is no good reason why the chain of signal stations would have ended at Filey Brigg, particularly as the long finger of Flamborough Head would have blocked visibility southwards, and it is highly likely that other beacons or signal stations were present further down the coast, communicating with the Humber area. Unless the tower at Beacon Hill was very high, however, it is unlikely that a beacon on the sheltered south side of Flamborough Head would have been intervisible with the station at Filey, since the northern cliff, which was c 80m higher in places, would have blocked the direct line of sight. Although the quarry was the location of a beacon in the medieval and post-medieval periods, there were intervening sites at Beacon Hill, Reighton (139m OD), and Standard Hill, Bempton (c 110m OD); the association with a Roman installation remains speculative, and a site with better all-round visibility further east nearer the lighthouses would have been a much more suitable location. Sites at either Beacon Hill or the lighthouse would have been visible in Bridlington Quay where there appears to have been a Roman settlement and quite probably a harbour.

The long, clear views across Bridlington Bay suggest that the high point of Dimlington cliffs would be the next suitable location southwards, whether or not the shifting peninsula of Spurn was considered suitable for a station on the Humber itself. South of Bridlington, however, relentless coastal erosion and the westward movement of Spurn have destroyed any evidence for military coastal installations, probably not long after the end of the Roman period itself.

Medieval

From the early medieval period onwards there remained a constant threat to Britain's eastern seaboard from invaders or raiders: Scandinavian Vikings from the end of the 8th to the 11th century, followed in the 13th to 16th century by the French; Scottish raids by land and sea were also a real threat over the same period, often in alliance with French forces, but there was also frequent internecine civil strife at local and national level as the result of power struggles between rival factions at several points in history, most notably the Yorkist/Lancastrian conflict and the English Civil War. Against this background, and with a general level of lawlessness, coastal and inland defences continued to be created and developed across East Yorkshire.

At the north end of Flamborough village, aerial photographic analysis undertaken as part of Phase 1 of the RCZAS identified what appeared to be the northern part of a large rectilinear ditched enclosure either side of the road to the North Landing which bisects the northern side at an angle. The western side can still be traced in a

hedgerow bounding a modern housing development at the north end and the line of Chapel Street (B1255; formerly Garth Ends) to the south. The levelled earthworks could be interpreted as an early fortification: the site is equidistant from the north and south cliffs and also lay opposite the centre of the massive banks and ditches of Danes Dyke, which would still have been sufficiently impressive and intact (possibly with some remodelling) to allow it to operate in conjunction with the enclosure. The headland would therefore have become a defended enclave secure from landward invasion and able to deal with incursions at any of the four main landing places.

Most of the site has unfortunately been built over and without further investigation, the nature, extent and date of the earthworks remain speculative, although potentially of great significance. There is a possibility that they were built in the late 9th or 10th century either as a defence against Danish raiders or as part of a network of fortified centres created by the Danes themselves across Yorkshire, the East Midlands (Danish Mercia) and East Anglia. These centres reused earlier defences where they existed and the name 'Danes Dyke' may therefore reflect this rather than simply being based on a folk myth. The second placename element of Flamborough (*Flaneburg* DB) represents the Old English *burh*, 'fortification', although possibly loaned by Danish speakers, since the first element may have been derived either from the genitive of Old English 'arrow' (*flan*), or from the related Old Danish *fleinn*, 'arrow' or 'spearhead'. The combined name may therefore have the sense of 'fortified arrow-shaped headland', an accurate description of the area.

Rather than being an empty enclosure, the earthworks may have contained the early core of a settlement extending along both sides of High Street with the densely-packed tofts terminating along the western side at the appropriately named Garth Ends, as the mid 19th-century 1:10560 Ordnance Survey map and later editions still showed. The more open-plan linear development which extended further south along Tower Street may represent a later extension, perhaps a result of rebuildng following the 'Harrying of the North' (see Section 3). St Oswald's Church was established by the mid 12th century close to the junction of roads to the North and South Landings and Selwicks Bay. A possible late 12th-century fortified site was also created in this southern area on the site of the mid 14th-century 'Flamborough Castle', suggesting that the earlier fortifications, if that is what they were, had become redundant.

Flamborough Castle was in reality a fortified tower house with a vaulted basement, surrounded by the fairly extensive and well-preserved earthworks of a hall, ancillary buildings, and village earthworks. The tower was probably built c 1351 after the lord of the manor, Marmaduke Constable, was granted a licence to crenellate by the crown, possibly in this instance as a defence against Scottish raiders, although there may have been an earlier manorial complex on the site, dating from the late 12th century, and controlled by a *constabularius*, the office from which the manorial family derived their name.

A possible defensive site has been suggested as existing near Bridlington harbour, largely based on the fact that Bridlington Quay was referred to interchangeably between the 13th and early 16th centuries as *Castleburn*, and a small mound associated with earthworks formerly existed on the east bank of the Gypsey Race stream. A small mound is clearly shown on John Wood's 1828 plan of Bridlington Quay and less certainly on a 1793 map of the Lordship of Bridlington, although it is more likely to have been a prehistoric burial mound with attendant enclosure remains; unfortunately neither the mound nor the earthworks survive. It is quite feasible that these features were popularly interpreted as part of an old fortification, suggesting the name *Castleburn* for the Gypsey Race itself, and that this in turn occasionally gave its name to the surrounding settlement.

Further south, Skipsea Brough, which lies just outside the study area, was a typical motte-and-bailey fortification, established between 1071–86 by Drogo de Bevrère, 1st Earl of Holderness and remaining in use until c 1221 when its destruction was ordered by the Crown. A fortified settlement was added by William le Gros, Count of Aumale and 4th Lord of Holderness, in the mid 12th century. The motte, which was an enhancement of an existing glacial mound, and extensive earthworks remain.

The medieval period saw the construction of many moated manors across the East Riding between the 12th and 15th centuries, particularly between c 1200–1325, with a large number constructed in Holderness. The addition of a moat may well have been intended, at least in the earlier period, as a security measure against casual local unrest or theft, but would have been of little defensive value against determined and organised opposition. The main purpose was undoubtedly to emphasise the prestige of the owner; this is also reflected by the practice of adding crenellations over the same period. Moats, however, did not require crown

licences and also served to provide the manorial household with fish and waterfowl.

Plate 173 Site of Winsetts moated grange, Skeffling, one of several sites inland of the Humber sea defences

A study of licence applications in the East Riding shows that crenellations were added to manor houses which already had moats, and they can be regarded as no more than fashionable embellishments in most cases. An exception was Kingston-upon-Hull which received its licence in 1321 (confirmed 1327 and again in 1462), allowing the burgesses to construct town defences. The licences to crenellate issued in East Yorkshire were mainly granted to sites located well outside the study area, including the manors of Leconfield, Cottingham and Sculcoates near Beverley and Hull, and Riccall, Kexby and Sutton on Derwent further west near York. This reflected the fact that the manor houses themselves were almost certainly overwhelmingly timber framed in the area and the addition of crenellations was therefore pointless without substantial and expensive rebuilding in either brick or stone. Harpham manor, Flamborough Castle and the precinct of Bridlington Priory are exceptions, all in the north-east of the county, of which only Flamborough lies in the study area.

Post-medieval

With a French invasion threat still in existence in the 16th century, an early warning system consisting of beacons was put in place by Henry VIII c 1540 while small artillery forts were located in the Humber estuary at Hull and Paull. This is likely to have extended or replaced a system of earlier beacons consisting of piles of firewood assembled at short notice, and the sites of many Tudor beacons would have been traditionally used for the purpose, located on prominent positions with clear lines of sight to chains of repeater beacons and defended sites inland.

The system was maintained in being in later years and a letter of 1558 addressed to Elizabeth I listed beacon sites at Kilnsea, Dimlington, Withernsea, Waxholme, Grimston, Aldbrough, Mappleton, Hornsea, Skipsea, Barmston, Bridlington, and Flamborough, as well as Welwick in the Humber estuary. Many of these are shown on the c 1560 'Burghley' map of the area which shows navigation hazards and potential safe moorings as well as some seamarks, a category which clearly included the beacons. The close spacing of the sites on a section of the coast with ostensible good visibility suggests that there was concern that they would not be seen in adverse weather, including fog or rain, both common on this coast. All of the sites listed consequently remained in use later in the Elizabeth's reign, even after the Spanish Armada had been defeated in 1588: a Spanish threat still remained and the French could also not be trusted. The majority of the sites have subsequently been lost to coastal erosion; several traditional sites were still named 'Beacon Hill' on the first edition Ordnance Survey (eg at Flamborough, East Garton and Easington).

Each beacon generally consisted of three fire baskets set on poles, or braziers standing on stone hearths, with c 52 individual beacons in place in East Yorkshire. One would have been fired to alert the neighbouring countryside and inland repeater sites to the presence of unidentified or suspicious vessels; this may also have served to warn off potential raiders. Two signal fires were lit to warn of the observation of a large number of potentially hostile vessels, and all three were fired where these were observed heading towards land and threatened imminent invasion. The warnings were repeated by pairs of beacon fires forming chains heading inland to major population centres and garrisons, but they also served to give warning to local militias and inhabitants. The first repeater station inland would remain on alert if a single coastal beacon fire was observed, but would not respond unless a second light was seen, in which case the operators would ignite one of their own signal fires, which would be repeated down the chain. Both beacons would be lit if the coastal station fired all three of theirs, mobilising the countryside and local garrisons.

Other military structures of the post-medieval period are rare. An artillery fort was constructed at Bridlington Quay north of the harbour by 1656 to protect the installations and town, possibly replacing a pre-Civil War battery and giving its name to Fort Street and Fort Hall, a house built c 1792 and demolished in 1937. Rebuilt several times, the fort was repaired in 1794, but was finally cleared away in 1818. A further post-Civil War battery may have been constructed on the

site of the modern Promenade to the south of the main fort and harbour, although the site was lost c 1805 to the rapid erosion which affected this area until the middle of the century.

The French Revolutionary/Napoleonic Wars led to the restoration of a chain of beacon sites in the late 18th/early 19th century, including examples at Bempton (Standard Hill), Flamborough (Beacon Hill), Barmston (Hamilton Hill), Hornsea, Withernsea, and Easington (Dimlington Highland). As well as fire baskets, these had topmasts which could hoist a flag warning by day, with rockets and a smoke system added later (Norfolk 1965, 25–6). A number remained in place until c 1850, although they were presumably no longer maintained by that time: new technology such as semaphore and later telegraph systems made traditional beacons increasingly redundant. The expected invasion routes were near Low Grounds, Barmston, in the Dimlington area, and near Welwick (ibid, 30–1).

Semaphore stations were constructed near Flamborough lighthouse in 1796 and on Spurn, where an artillery battery of six 24-pdr guns and barracks were added in 1798. The barracks survived to become the first lifeboatmen's houses; although no visible trace of either the battery or the houses remain, archaeological investigation of the sites remains a possibility. From 1860, the 1st East Yorkshire Artillery Volunteers maintained batteries at Filey, Flamborough, Bridlington, Hornsea and Withernsea (Norfolk 1965, 55), remaining in being until Hlane's 1907 reforms which saw the replacement of the old systems of volunteers with an organised Territorial force.

First World War

In contrast to the North Yorkshire coastline, there are a relatively large number of monuments related to the First World War and the interwar period, including a camp on Flamborough Head, and a former airfield at Atwick. The latter was occupied in 1915 by several RNAS Special Duties Flights commanded from a seaplane base at Hornsea Mere on the western edge of the study area. The RNAS flights became 251 Squadron on the formation of the RAF in 1918; a part of their early duties were anti-zeppelin patrols.

No trace of the site now remains, partly because the small wooden temporary buildings lent themselves to being dismantled and moved elsewhere, while the tracks and runways would have been grass. By contrast several of the buildings at RNAS Hornsea Mere were of brick, and these remain in use as a boatyard and café.

Four buildings on the cliff south of Mappleton (now lost) may have been of First World War vintage. Here also was the extensive interwar Rolston Camp, begun in 1921 and enlarged in the following decades to include a rifle range set up in 1907 and another further south. In Withernsea, the Black Mill was used as an observation post during the First World War; this was an important task as German naval raids occurred on the East Coast in the first two years, prior to Jutland, and there was a constant threat of Zeppelin raids until June 1917.

The most potent military structures of the period were concentrated near the Humber. Here, Godwin Battery (Kilnsea) and at the south end of the Spurn peninsula, the Spurn Fort comprising the Green Battery, and the Light Permanent and Light Temporary Batteries, were built between 1915 and 1916.These extensive modern installations included substantial reinforced concrete gun emplacements, magazines, observation posts and permanent searchlight emplacements, supported by blockwork generator rooms, crew shelters, barracks, officers' quarters, and other facilities, many of which survived to be reused in the Second World War.

Godwin and Green Batteries (1915) were each armed with a pair of 9.2-inch naval guns, while the Light Permanent and Light Temporary Batteries (1916) housed 4-inch and 4.7-inch emplacements respectively. These were more suitable for close-defence work against torpedo boats and landing barges which passed through the main barrage.

Plate 174 WW1 blockhouse and western defensive wall, Spurn

Plate 175 WW1 northern 9.2-inch gun emplacement reused for 3.7-inch heavy AA gun in WW2, Green Battery, Spurn

Plate 176 WW1/WW2 crew shelter, northern gun emplacement, Green Battery, Spurn

A defensive wall incorporating several blockhouses was constructed on the estuary side of the Point to protect against landings, and several other blockhouses were located around the tip of the peninsula.

The Spurn batteries were reduced after the war to 'care and maintenance', the guns were removed in the 1920s–30s, and much was rebuilt during the Second World War, significant parts remain in reasonable condition. Some of the buildings are in alternative use, including officers' quarters and several stores.

Godwin Battery by contrast was constructed on the cliff at Kilnsea, and much has now either collapsed or been deliberately dismantled to make it safe, with both gun emplacements and magazines now lying on the beach among other extensive wreckage. Several ancillary buildings to the rear of the battery remain in use, located in a holiday camp which was badly affected by storms in December 2013.

Plate 177 One of two collapsed 9.2in gun platforms, WW1/2 Godwin Battery, Easington

Plate 178 WW1/WW2 Officers' Barracks, Green Battery, Spurn

A Port War Signal Station was constructed near Spurn lighthouse to identify friendly shipping by means of visual and sound signals before allowing them to pass into the Humber. The perimeter wall and subterranean structures remain, including a tunnel to an observation post located at the edge of the beach, although the most prominent feature, the signal tower, was demolished in the 1970s.

The Spurn and Kilnsea Railway was also constructed along the length of the peninsula, connecting Godwin Battery to Spurn Fort. It consisted of a single track with passing loops and although the lines were mostly taken up after the Second World War, some are still visible where they cross the later concrete military roadway which also formerly ran the length of the peninsula, while traces of buildings connected with the railway still survive, including the engine shed base at the south end and some jumbled remains on the beach at Kilnsea where there were platforms.

Plate 179 Section of WW2 military railway embedded in later roadway, Spurn

The northern end, like Godwin Battery, has been badly affected by the rapid westward movement of the peninsula in this area. The severing of the neck of Spurn as the result of storms in late 2013 may have destroyed more of the railway and road, although most had already been lost in this area, the best preserved sections lying further south.

An important feature at Kilnsea Grange is a scheduled concrete sound mirror which was designed to provide advanced warning of incoming aircraft. The incurved shape (probably circular rather than parabolic) reflected sound waves into a microphone, allowing an experienced operator to roughly determine distance and direction. This installation may date from the First World War, when experiments began, or the period immediately afterwards, since development and construction continued into the 1930s, overlapping with the early development of radio direction finding (radar).

Plate 180 Scheduled interwar concrete sound mirror with surviving microphone post, Easington

A major result of the Phase 2 RCZAS survey was the identification of a series of First World War pillboxes and other structures in the East Riding of Yorkshire and Lincolnshire. There are clear regional distinctions in construction and morphology between these two areas and also between known examples in Kent and East Anglia.

During the First World War, East Yorkshire formed part of Northern Command, with its headquarters at York. In the north of the county, clusters of defences were established in the Barmston and Skipsea areas, particularly at the beach exit points of Auburn and Withow Gap where there were a variety of structures. Although some of these have been lost through erosion, the remains of several examples have been identified among broken-up Second World War defences, while a larger number survive in their original locations.

The Auburn–Barmston sector included individual and paired pillboxes with fields of fire directed forward and intersecting to either side. Most of the pillboxes were sited either on field boundaries, where they were partly hidden in ditches and hedgerows, or at the edges of small groups of trees. A few were positioned in plain view, perhaps in an attempt to divert invaders towards the hidden defences in the field margins. In some instances several pillboxes were used to provide mutual supporting fire, although as on the Western Front and in the next war, they are unlikely to have stood in isolation and they were probably intended to act as hardened point defences at the centre of a network of trenches and foxholes. Earthwork coastal defences had already been in place since 1914–5, and these are likely to have been continuously improved along similar lines to those on the Western Front.

Plate 181 Pair of WW1 pillboxes straddling hedgebank south of Auburn Farm

Plate 182 WW1 square pillbox with WW2 machine-gun embrasures replacing smaller original single splayed opening, Auburn Farm

As many of the pillboxes were built on the lines of field boundary ditches, it is clear that the latter would have been used as access, communications and escape routes, as well, perhaps, as ready-made trenches. This practice was duplicated in the Second World War: in fact several of the early pillboxes were 'twinned' with a 'lozenge' pillbox of later design in 1940–1 and it is clear that most were incorporated into the later defences, despite their obsolescence and dubious defensive value.

Plate 183 Unusual large rectangular WW1 blockhouse, Auburn Farm

The majority of the pillboxes identified were distinctive c 2.1m square structures, with reinforced concrete walls and roofs only 0.15m thick and with a single small central rifle embrasure in each of three forward walls. Access was via a doorway set in the fourth wall. The presence of clear plank shuttering marks suggests that all were built *in situ* rather than prefabricated elsewehere and erected on site. There were some variations in design: at Auburn were a larger rectangular blockhouse of similar design to the smaller structures and a more substantial machine-gun pillbox with a single large embrasure in the east wall, although it had been altered in the Second World War to provide three MG openings. Another standard pillbox south of Auburn also had a larger seaward-facing embrasure, possibly to allow a greater field of fire, as it stood in an exposed midfield location.

Fewer structures survived at Skipsea, but they were identical to the standard pillboxes at Auburn and Barmston with the exception of a slightly smaller example, now on the beach. This had much thicker walls and was intended to be semi-sunken, with what appeared to be a single small loophole set asymmetrically; a likely interpretation is that this was a forward command or observation post, probably originally built into the cliff. Other forward posts are likely to have been lost: a 1955 plan in the East Riding Archives (NBT/435) showing relict Second World War military obstructions on the beach identifies a number of pillboxes on the beach between Carnaby and the south end of Skipsea. Many of these are known Second World War structures identified in existing RCZAS records, but others are apparently unrecorded. Some at least were of First World War date as they appear to include the Skipsea command/observation post.

Further south the rapid erosion of the cliffs of central and southern Holderness would not be conducive to the preservation of fragile structures with 0.15m thick walls. Any clifftop pillboxes in this sector would have rapidly broken up following a fall from the cliffs and subsequent wave action over a period of almost a century.

Plate 184 Sunken entrance to WW1 underground command/communications bunker, Atwick

Located some distance from the cliff edge near Atwick and East Garton, two semi-sunken structures have been identified as command and/or communications centres of identical design, with a third possible structure in Easington, now lost. The general construction resembled the pillboxes futher north, but as both were surrounded by earth mounds, neither had original external openings other than the door to the rear, which was reached via a set of concrete steps. Internally, they were originally divided into two compartments by a central brick partition. These may well have provided command facilities for sections of coastal defences. Both were clearly visible on the 1927 1:2500 Ordnance Survey.

The construction date of these smaller-scale Home Front defences is not certain, but concrete pillboxes were not built on the Western Front until the second half of 1917, with construction continuing until the war's end in November 1918. This suggests that a late date (1917/18) is likely: a pillbox with the date 1919 cast into the roof has recently been identified near North Berwick, East Lothian (scheduled by Historic Scotland), while the Haile Sands and Bull Sands Forts in the Humber estuary were not completed until the same year.

In the interwar period, Gummers Wharf in Bridlington harbour was the site of workshops and a ramp, part of an RAF Air Sea Rescue/Marine Craft base, where T.E. Lawrence served as Aircraftman T.E. Shaw for a time. The buildings remained in something like their original use until 1978, when the RAF moved out and the site was converted to alternative uses. They were finally demolished in 1993 to make way for the present Lawrence Complex.

Second World War

Monuments associated with the Second World War are still very numerous, and their distribution serves to show how important the defence of the coastline was considered to be in 1940–1. As discussed in the North Yorkshire section, this conflict saw the adoption of a much wider range of structures, largely in response to the greater range of threats posed by modern warfare. Along the cliff and beachhead, different types of pillbox were brought into use to reflect variations in site and task, supported by 'Ruck' sectional machine-gun posts, trenches, weapons pits, gun emplacements, beach searchlights, anti-tank and anti-landing obstructions, minefields, and barbed wire fences.

Behind the first-row defences were further lines of pillboxes, trenches and gun emplacements, separated by areas of anti-glider defences and barbed wire to disrupt airborne troop landings. Concrete road and rail blocks would have caused further delays to vehicle movements. Anti-aircraft and coastal defence batteries, supported by radar stations and searchlight installations, protected important targets. The anti-aircraft defences were augmented later in the war by Operation Diver sites, designed particularly to counter the threat from German V1 rockets ('doodlebugs'). Visual observation posts for the Royal Observer Corps provided an additional early warning system, manned by volunteers trained to identify a wide range of allied and enemy aircraft types. Alongside these installations were command and communications posts, army camps, decoys representing poorly blacked-out towns and airfields, and training facilities including shooting-, gunnery- and bombing-ranges.

Important installations and towns such as Bridlington and Hornsea were of strategic importance and were well protected; on the landward side of Hornsea for example, was a ring of defences aimed at containing expansion from the town itself, should it fall to the Germans.

Plate 185 Line of in-situ WW2 anti-tank cubes, Carnaby

Access points and beaches in front of areas of low cliff were blocked to delay and divide assaults from the sea, while bringing invading forces under fire. Particularly common are single, double and triple rows of anti-tank blocks, many *in situ* while others have been moved and piled up to form anti-erosion defences. Good examples can be seen in the north in Barmston and Carnaby, where the location of the westernmost line against the base of the very low till cliff shows that some areas have seen little recession, while much further south along the North Sea shore of Spurn, the lines of cubes now lie along the low tide mark, indicating the increasing impact of erosion in the Kilnsea area.

Plate 186 WW2 anti-tank cubes well to east of present shoreline, Easington

Plate 187 WW2 anti-tank blocks on concrete foundation dividing beach into sectors, Barmston

In addition to the rows of anti-tank cubes located parallel to the shoreline, shorter lateral lines of cubes running from the base of the cliff divided the beach into zones to restrict movement by hostile vehicles. These were normally attached by steel posts to a substantial strip foundation.

Between the Humber and Cayton Bay, the basic defensive strategy was underpinned by two main types of structure, the lozenge-shaped infantry pillbox and the 'eared' heavy weapons pillbox, which have already been described. The eared pillboxes provided the principal front-line active beach defence, designed to sweep the area with diagonal arcs of machine-gun fire to pin down invading troops among the barbed wire entanglements and other obstructions which criss-crossed the beach, including rows of anti-tank blocks and minefields.

Plate 188 WW2 'eared' heavy machine-gun pillbox and integral anti-tank wall, Carnaby

Several well-preserved examples survive, including one built into a slightly later anti-tank wall at Barmston; however, the exposed location of most eared pillboxes at the base of cliffs and the complex shape, which included large entrances and embrasures above protruding recesses for the machine-gun coolant tanks, has meant that the majority of this type have been broken up by wave action.

Plate 189 Remains of WW2 gun emplacement and anti-tank blocks, Barmston

These front-line pillboxes were augmented, generally near vulnerable landing points, by shelters for 6-pounder quick-firing Hotchkiss guns, as well as concrete beach defence lights, intended to shine searchlights sideways to illuminate the area in front of defended sections.

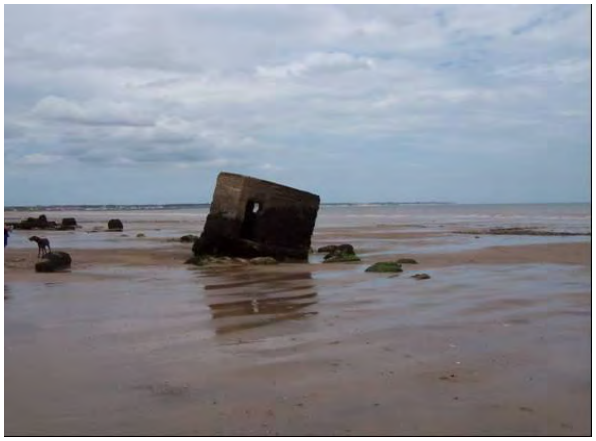


Plate 190 WW2 beach searchlight, Barmston

The lozenge pillbox was of much more solid construction and more examples have survived, assisted by the location of many in second-line locations; even those where the cliff has collapsed often remain intact, having survived the fall, or slide, to the beach.

Two examples located in hedgerows near the cliff edge at Barmston were supported by square pillboxes of First World War vintage located a little further to the rear, although their value would have been doubtful.

Plate 191 WW2 'lozenge' pillbox supported by a WW1 square pillbox (left), concealed in hedgebank, Barmston

Infantry deploying from the lozenge pillboxes into neighbouring trenches located on the cliff would have been able to pick off sheltering invaders using more accurate targeted fire from rifles, Bren guns and mortars.

The East Yorkshire coast was well within range of German aircraft, and heavy anti-aircraft batteries armed with 3.7-inch guns and supported by searchlights were established at the start of the war on sites in Barmston and at Warren Head at the north end of Spurn. A number of buildings and a gun platform with holdfasts still remain, with several structures forming part of the Yorkshire Wildlife Trust's Spurn Point Reserve HQ.

Plate 192 Surviving buildings of WW2 heavy AA battery, Warren Head, Kilnsea, now used by Yorkshire Wildlife Trust

Plate 193 WW2 3.7-inch heavy AA gun platform, Warren Head AA battery, Kilnsea

The First World War Green Battery on Spurn Point was also rearmed with a single 3.7-inch AA gun, with a supporting light AA site built nearby. With a shortage of large guns and a considerable number of sites to protect, most AA sites were, however, located further back from the coast to protect strategically important factories, installations and urban areas. Temporary sandbagged sites were created for a variety of smaller Oerlikon, Bofors and Lewis guns, representing the limited resources which remained to the British armed forces after the Dunkirk withdrawal.

Anti-aircraft defences continued up the Humber towards Hull, with a battery sited, for example, at Humber Farm Welwick, where traces of a 3.7-inch heavy gun position, magazine and a Nissen hut survive, with the searchlight installation in

neighbouring Skeffling. Further heavy AA batteries were located outside the study area, with one example surviving at Stone Creek, Sunk Island, close to a substantial First and Second World War coastal battery.

Anti-V1 'Diver' batteries were located at many locations along the coast, including Flamborough Head, Ulrome, Skipsea, Atwick, Hornsea, Mappleton, Aldbrough, East Garton, Roos, Rimswell, Hollym, Holmpton, and Kilnsea. Some were conversions of existing AA batteries including the example at Warren Head, Kilnsea, but most were temporary, many only occupied for a few months, with portable equipment and often only superficial earthworks.

Although the majority of these sites locally and nationally have now been lost to erosion or there are no extant remains, a double 'Diver' battery site at Flamborough has been scheduled; here, traces of the gun and searchlight positions, magazines, generator hut, control posts, a pillbox and an earlier radar station (built near a temporary American camp) survive, mainly as earthworks or concrete floor platforms.

Another rare site at Flamborough located on the cliff path near Selwicks Bay, are several concrete blocks with iron rings, part of a circle of barrage balloon moorings. Many similar tethering points formerly existed along the coast, but few survive.

Plate 194 WW2 barrage balloon anchor points on cliff path, Flamborough Head

Substantial coastal batteries were built or reactivated including an important new site at Ringbrough Farm, Aldbrough, constructed in 1941 near the cliff edge, with a dual role as a counter-bombardment and close defence installation. The site consisted of three gun positions linked by tunnels to underground magazines, a substantial brick observation tower, observation posts, searchlights, generator house and a plotting room, used post-war as a garage.

Plate 195 Collapsed WW2 Battery Observation Post, Ringbrough Battery

A few ancillary buildings survive including an earlier lozenge pillbox, although much of the site, including a later Diver battery built to seaward in 1944, has been lost to extremely rapid erosion; the BOP now lies more-or-less in one piece at the foot of the high cliff, having fallen during the course of the RCZAS.

Plate 196 Collapsed remains of WW2 gun positions and other debris, Ringbrough Battery

Godwin Battery at Kilnsea was also reactivated and rearmed with a pair of 9.2-inch guns, with a 4-inch gun for close defence and a searchlight added.

The four gun emplacements at the Light Temporary Battery at the south end of Spurn were also rebuilt and two 6-inch and two 6-pdr guns were installed, with several new searchlight installations built to the south and south-west. Two south-west facing 4-inch guns were placed to the west of the battery. The Light Permanent Battery, which had been built facing the Humber

estuary, was not rearmed, although a battery observation post was constructed there. As already mentioned, the Green Battery became an anti-aircraft site, with one of the two original gun positions armed with a 3.7-inch heavy AA gun supported by a light AA emplacement.

Plate 197 WW2 magazine, Light Temporary Battery, Spurn

Plate 198 WW2 6-inch gun emplacement with roof removed, Light Temporary Battery, Spurn

Plate 199 Interior of WW2 searchlight housing, Light Temporary Battery, Spurn

Other sites included a rail-mounted target range at Bempton and a live-firing range at Low Skirlington, Skipsea, for aircraft flying from RAF Catfoss. Also constructed at Skirlington was a 200-yard turret firing range for training air gunners, consisting of curved earth banks protecting moving target trolleys mounted on rails, with a hardstanding area to the west for dismounted aircraft turrets. Much of the site, including ancillary buildings, remained until the 1970s, but is now a caravan park, although parts of a similar site still survive at the former RAF Theddlethorpe, Lincolnshire, to give an idea of the original appearance (see below).

Inland of the gunnery range was an elaborate short-lived decoy airfield at Out Leys, Skipsea, intended to confuse bombers heading for RAF Catfoss, a little further inland. This had a grass landing strip with dummy aircraft, control tower, observation post, hardstandings, trackways and barbed wire. The site could be used during the day, and also at nightime, with electric lights to represent taxiing aircraft, flare paths and runways, as well as buildings. The command and control bunkers, including generator facilities, would have been sited at a safe distance to protect the small permanent staff. Skipsea was abandoned in June 1942 and nothing now remains. There are bomb craters in the area, and the decoy is recorded as having being attacked five times by April 1941.

A ‘Starfish’ (SF) decoy at Mill Hill, Aldbrough was in use between 1941–3 and was intended to mimic a poorly blacked-out Hull and Hull Docks at night, with a similar site established otside the study area near the north bank of the Humber. These sites were able to represent the effects of incendiary bombing attacks through the use of burning fuel and explosives.

At RAF Bempton are two separate sites associated with the wartime and post-war development of radar between 1940–72. The ‘Top Site’, located 500m inland, was the original World War 2 Chain Home Low (CHL) installation and later a Chain Home Extra Low (CHEL) radar station, Site K159, containing air raid shelters, a guardhouse, and the remains of other structures. The site was put on a care-and-maintenance at the end of the war but was reactivated in 1949, with the second site subsequently added near the cliff (see below).

Another CHEL radar station, K51, was located next to the later Diver site at Flamborough, with others possibly sited in Withernsea and near Easington gas terminal.

A CHL radar station existed in Atwick, where an auxiliary engine room and strongpoint survive. Further down the coast near Model Farm, Easington, was a CHEL station, K161, consisting of a mast-mounted radar scanner and associated outbuildings protected by a series of pillboxes and trenches, none of which remain. A 'Braithwaite' water tower situated to the north-west of the farm served the site.

At Hollym, a High Frequency Direction Finding ('Huff Duff') radio station located inland was used from 1942 to locate enemy surface and submarine naval units by triangulation in combination with other shore- or sea-based HFDF equipment, and may have assisted in sea rescues by pinpointing vessels in distress; the concrete base of a possible radar mast also survives on the beach.

Cold War

Following the end of hostilities in 1945, most of the less significant military sites in the study area were decommisioned and abandoned. Some of the major assets were, however, retained and modified for Cold War use and new facilities were built to confront the emerging military threat from the 'Warsaw Pact' countries, set against a background of rapid change resulting from technological and scientific developments by the Allied and Axis nations during the late war.

At Bempton, the 'Top Site' was re-activated in 1949 as a satellite station for RAF Holmpton/Patrington from 1964 until its closure in 1972. The site was disposed of in the early 1980s and remains in private hands. There are many surviving structures, including an underground command bunker and traces of an experimental 'Winkle' anti-jamming radar trialled c 1956, consisting of a substantial Y-shaped array of tall concrete posts.

Plate 200 RAF Bempton radar station

The 'Bottom Site' near the northern cliff edge was a three phase ROTOR period (1950s) site with Chain Home Extra Low (CHEL), Centimetric Early Warning (CEW) and Ground Control Intercept (GCI) radar arrays associated with an underground operations block.

Later, a GCHQ intelligence gathering array was built on the site. A third component part of RAF Bempton was the domestic site which was situated to the north of the village of Bempton and is now a caravan site.

Plate 201 Post-war ROC aircraft observation post and the blast/radiation measuring equipment of a post-war underground radiation monitoring station, Skipsea

Plate 202 WW2 lozenge pillbox with post-war ROC Orlit aircraft observation post on roof, Roos

Royal Observer Corps (ROC) underground nuclear monitoring bunkers built in the late 1950s/early 1960s were located at intervals along the coast in Flamborough, Bridlington, Skipsea, Aldbrough, Roos, Holmpton, and Easington; the post at Skipsea has been scheduled. Some were built next to existing aircraft observation posts of late 1940s/early 1950s date, of which examples

existed at Roos and Holmpton, the former built on a lozenge pillbox.

A large underground bunker, RAF Holmpton, was built in 1951–2 as an integrated command and control system for the direction of fighter interceptors as part of the 1950s ROTOR air defence scheme, as well as an ROC base; this is being fully restored with public access and guided tours. The wartime AA battery at Warren Head, Kilnsea appears to have been reused as a ROTOR site post-war, and some ROC bunkers were also integrated into the ROTOR network. There was also an RAF practice range at Great and Little Cowden, only recently disused, replacing a wartime tank gunnery range.

North-East Lincolnshire/Lincolnshire

As Section 3 explains, much of the coastal strip south of the Humber consists of land reclaimed either naturally or artificially since the last glaciation, although erosion has affected the area south of Theddlethorpe. The entire area was low-lying and dominated before the post-medieval period by tidal creeks with the Humber and Wash estuaries forming potential invasion routes at either end of the North Sea coast. It might be expected, therefore that the area would have been regarded as potentially at risk from raiders and invaders, but there is in fact little surviving physical evidence for this concern prior to the 20th century.

Prehistoric–Romano-British

Coastal settlement in the pre-Roman period was on a small scale with the larger centres and higher-status sites located further inland, particularly on the higher and drier land of the Lincolnshire Wolds: defended coastal sites are therefore entirely absent from the archaeological record. It is possible that the Romans established a late coastal warning system in the area similar to the chain of North Yorkshire signal stations, although there is no supporting evidence: any signalling sites may in any case have been located on high ground inland. A minor Roman road running from Stixwould to the coast in Saltfleetby suggests a lost site of some significance, possibly a military installation, although it might suggest that there was a harbour of some sort.

Medieval

The medieval settlements in the area between Grimsby and Skegness were small and of little strategic value. The mid 16th-century historical geographer John Leland's *Itinerary* quoted second-hand evidence that Skegness had been walled and was defended by a castle, presumably of medieval date rather than a surviving Roman installation, but this original settlement was destroyed by storms in 1526 and a new undefended town was built c 1.5km further inland. Skegness remains the only possible pre 19th-century coastal defence installation, although medieval moated sites were developed in the area, including an example near Mablethorpe and a scheduled site at Multon Hall, Frampton. The majority of these were however located outside the study area and, as in East Yorkshire, were status symbols rather than defences, although of course they would have provided security against casual theft and potentially against local unrest.

First World War

Royal Naval Reserve batteries had been constructed in Cleethorpes in the late 19th century, and remained in use until at least 1906–8, although it is unclear whether they were still manned at the time of the First World War. An airfield at North Coates Fitties was opened as an intermittent grass landing ground in 1916–18 on the site of a 1914 army camp, becoming fully operational in 1918–19 before being abandoned, although it was reopened in 1927 (see below).

The hexagonal Bull Sands and Haile Sands Forts formed a major defensive asset in the Humber. These two concrete forts were built on steel platforms in the mouth of the estuary in 1915, and contained gun platforms, magazines, searchlights and garrison quarters. Large concrete blocks were dropped around the platforms to prevent tidal scour. Refurbished during the Second World War, they remained in military use until 1956. Reflecting the importance of Grimsby as a major fishing port with a large dock facility, anti-aircraft guns and searchlights were installed for use against German zeppelin raiders.

The Lincolnshire coastline was garrisoned throughout the war, mainly by second-line infantry batallions or yeomanry converted to cyclist units. Rimac army camp was established in Saltfleetby early in the First World War to house part of the garrison, but while any remaining structures were absorbed into an interwar holiday camp on the site, this was demolished by the Air Ministry in the 1930s.

There initially appeared to be little evidence for other First World War installations on the Lincolnshire coast, although Osborne (2008, 55–6) had previously identified several trapezoidal pillboxes as being of possible First World War

date, including an example in Skidbrooke with Saltfleetby, which was illustrated (ibid, fig 43). The results of the Phase 2 study (Brigham & Jobling 2011b) suggested that there were likely to have been a number of assets which had either been demolished or incorrectly dated and more detailed investigation was undertalken as part of Phase 3 (Brigham *et al* 2013). As a result, six unique pillboxes were identified and recorded as part of the Phase 3 study of the area in Skidbrooke and neighbouring North Somercotes. Two had unfortunately been demolished, possibly fairly recently, leaving just a few identifiable fragments, but the others remained in good condition; all may have been reused in the Second World War and post-war periods, with the example in Skidbrooke located next to a Type 23 variant pillbox.

All six were trapezoidal in plan, with a single door in the rear wall and a machine-gun embrasure set in each of the two angled side walls, a similar concept to the eared Second World War heavy-weapons pillboxes built in East and North Yorkshire. The walls and roofs varied in thickness, but were substantial and in all but one case showed the clear impresssions of sandbags used as external shuttering; the sixth example was constructed using plank formwork.

Plate 203 WW1 trapezoidal pillbox with rear entrance and machine-gun embrasure in side wall, next to WW2 AA pillbox, Skidbrooke

The pillboxes were set at intervals either along the foot of the contemporary seabank, where they were partly hidden, or a little to the front on the edge of the saltmarsh. They were clearly intended to provide local strongpoints, producing diagonal arcs of machine-gun fire which intersected that of neighbouring pillboxes. This was similar to the strategy adopted on the Western Front, where machine-gun posts were strung at intervals along the forward trench lines, and they closely resembled some classes of pillboxes and bunkers constructed in France and Belgium in both form and method of construction (including the distinctive use of sandbag shuttering). The substantial structure would have been largely shellproof and much safer than the thinner-walled types erected elsewhere, including East Yorkshire, East Anglia and Kent. As the pillboxes closely match examples built on the Western Front it is possible they were built under the direction of Royal Engineers with battle experience, perhaps even for training purposes.

Plate 204 WW1 trapezoidal pillbox with WW2 or later additions to support observation tower for RAF Theddlethorpe air gunnery/bombing range, Skidbrooke

The First World War airfield at North Coates reopened in 1927, largely involved in a variety of training roles, including Armament Practice Training, catering for those using a nearby bombing range established at Donna Nook on the foreshore and over a substantial sea area. The site was extended in the 1930s, with concrete runways and more permanent buildings added; a hangar from this period survives among the remaining later buildings. A relief landing ground was opened in the same year at what became RAF Donna Nook.

Further south, Rimac Camp in Saltfleetby returned to military service in 1935–6, also operating eventually as a bombing range. Bombing and air gunnery ranges also opened at RAF Theddlethorpe and RAF Holbeach in 1927, and at RAF Wainfleet in 1938, although there had been a First World War RNAS range there; nothing remains of any of the original buildings, all of which were rebuilt in the Second World War and again in the post-war period.

Second World War

Monuments of Second World War date are very numerous, despite demolition and clearance of many sites, particularly in urban areas. The

Lincolnshire coast was strategically important in the Second World War and was potentially extremely vulnerable to enemy landings. This is reflected in the number of 'defended localities', which relied on concentrations of several pillboxes, gun emplacements and batteries to create local strongpoints. Strung between these were further pillboxes which would have been protected by barbed wire, minefields, trenches and other defensive structures. As no aerial photographic analysis was undertaken for this area as part of the project, the full extent of these features (compared with East and North Yorkshire) is unknown.

The first- and second-line defences included pillboxes, anti-aircraft batteries, Hotchkiss 6-pounder and other gun emplacements for short-range local defence, 3-inch or 6-inch medium- and long-range coastal batteries, 'Ruck' machine gun posts, searchlight batteries, anti-landing beach defences, road blocks, tank traps, minefields, mined bridges, weapons pits, trenches, anti-aircraft obstructions, and aircraft observation posts, along with the usual military buildings and trackways for accommodation, command and communication posts, air raid shelters, and training sites including rifle, bombing and gunnery ranges.

Plate 205 Rear of WW2 Type 23 Lincolnshire variant pillbox with entrance to central AA gunpit and flanking blockhouses, Tetney

The primary front-line infantry defence was provided by the unique Type 23 'Lincolnshire variant' pillbox, which had a combined infantry and anti-aircraft (AA) role. It consisted of a three-cell rectangular structure with two small square infantry blockhouses separated by an open-topped central gunpit containing a concrete post for a Bren or Lewis gun on an AA mounting. The blockhouse sections sometimes contained internal anti-ricochet walls and usually had a single small embrasure in each of the three outer walls which could accommodate either a rifle or an LMG such as a Bren. The gunpit floor was a concrete slab raised over a substantial void, presumably for ammunition storage or similar use. The single external entrance was centrally located at the rear of the AA gunpit, with doors to the left and right leading into the covered end sections.

The type was standardised across the Lincolnshire area with little variation although in the case of at least one example outside the RCZAS study area 2km inland of the Rimac defended locality, the central gunpit had been roofed over to create three chambers and the small rifle loopholes were replaced by three wide machine-gun embrasures to create a heavy weapons design; the rear entrance in this case was protected by flanking pistol loops.

Standard Type 23 pillboxes, consisting of a single blockhouse and gunpit, were constructed in other parts of the country, including Kent, North Yorkshire and Northumberland, but the Lincolnshire variant was unique to the county. It may be the case that the additional infantry accommodation was a response to the remoteness of the coastline: these structures were occasionally to be found in pairs, but were generally widely spaced, typically along the crest of the sea defence banks on the North Sea coast and the Wash, with some located at strategic inland sites on earlier seabanks, on field boundaries, or near road junctions.

Unusually, two urban examples survive built into the outer seawall of Grimsby harbour, although the entrances and gunpits have been blocked.

Plate 206 Front of one of two WW2 Type 23 Lincolnshire variant AA pillboxes constructed on seawall, Grimsby, all embrasures blocked

The fact that the Type 23 variants could accommodate a dual infantry and AA role clearly indicates that these pillboxes were intended to be

self-reliant, in contrast to the defences in Yorkshire where the AA role was separated out, and there were additional HMG defences in the form of 'eared' pillboxes. More complex schemes of hardened defences only appear to have been developed in a few areas where good access to the coast suggested an enhanced invasion risk, such as the areas around RAF Donna Nook and RAF North Cotes and the Rimac, Seaview and Olivers 'defended localities' in Saltfleetby.

In the lengthy intervening stretches of featureless coast, the relatively sparsely distributed pillboxes would have relied on extensive passive defence systems such as minefields and anti-landing defences, including barbed wire entanglements and 'Admiralty' beach scaffolding; more expensive concrete anti-tank blocks appear to have been restricted to a few locations in short rows, whereas their use along the Holderness coast was comparatively profligate. The wide area of saltmarsh in the northern coastal section and the Wash would have been considered soft going for invading armoured vehicles as well as very exposed crossing zones for infantry.
In the Wash, regular hexagonal Type 22 pillboxes (FW3/22) were common, either singly or in pairs, as well as Lincolnshire-type AA pillboxes. The Type 22 had a single embrasure for rifles or LMGs in five of its sides with a door in the sixth to the rear, while some had an internal blast wall to provide a refuge against grenades or shells.

Plate 207 WW2 AA pillbox (left) and twin Type 22 pillboxes (right) on former seabank, Butterwick

Several examples built near gun batteries at Gibraltar Point had enclosed external porches to protect the entrances, although this does not appear to have been common elsewhere.

Plate 208 WW2 Type 22 pillbox with enclosed porch, Gibraltar Point

Type 22s were also built in a few locations on the North Sea coast, including Skegness, Ingoldmells (Butlin's site), and Chapel St Leonard, where at least two small square pillboxes, presumably a variant of the Type 26 (FW3/26), were also built near Soldier's Hole. Four Type 26s protected the Witham, with a fifth in Holbeach, although aerial photographic analysis suggests the presence of others of this type in the area, now demolished.

Both the Type 22 and Type 26 pillboxes may have been enlarged developments of First World War prototypes built on the Western Front and as part of the Home Front defences. Although neither of the pillboxes at Soldier's Hole survive intact, the Type 26 resembled an enlarged and much more robust version of the square First World War rifle pillboxes recorded in Holderness, although the rear entrance was offset rather than central, allowing a covering embrasure to be added.

Plate 209 Pair of WW2 square Type 26 pillboxes protecting the Witham, The Scalp, Fishtoft

Plate 210 Roof of intact sunken WW2 Ruck Machine Gun Post Holbeach

A sectional Ruck machine-gun post was located at Sea View, Saltfleetby and possibly at Theddlethorpe All Saints, although others are likely to have existed on the North Sea coast as Lincolnshire was the manufacturing base for the components. The bases of two former posts are still visible on the contemporary seabank in Freiston, but the best preserved example survives at Lawyer's Creek, Holbeach, with an intact roof containing embrasures.

Plate 211 Base of the northern of two WW2 Ruck machine gun posts on the seabank south of Freiston Shore Battery

A surviving section of Stanton shelter, using the same prefabricated sections as the Ruck posts, presumably formed part of the Wainfleet/Croft defences around Gibraltar Point, although it may have been moved from elsewhere.

Plate 212 WW2 variant pillbox apparently designed for reverse slope of seabank near Type 23 AA pillbox, Holbeach

Alongside these structures were a number of non-standard rectanngular pillboxes or blockhouses in the Holbeach/Gedney area, some of which were used in sunlen positions at the reverse side of the seabank or next to roads, while Type 23 AA pillboxes were normally positioned on the crest of banks, presumably to give good AA visibility. The blockhouses had three embrasures in each long side, at least when not against a bank, and one at each end where the entrances were also protected by a low blast wall; in at least one case these contained a further low level loophole for a prone rifleman or Bren gunner. These structures had clear design and construction features in common with the local Type 23 pillboxes and were almost certainly part of the same phase of construction. One may have been used as a command post, as it stands at the centre of a cluster of defences around Lawyer's Creek, Holbeach, including several Type 23 variants, a Type 22 pillbox and anti-tank blocks.

Plate 213 Triple WW2 anti-tank blocks on a single strip foundation, Holbeach

Many other structures identified in the Wash from pilot aerial photographic analysis have been demolished, particularly between Wainfleet and Benington: most stood on a seabank which was replaced and ploughed out, although second line pillboxes do remain, and these are often Type 22s. In Freiston, several intact pillboxes on the seabank were filled with soil and buried as the bank level was raised in the 1990s as part of a flood protection scheme.

The trapezoidal First World War pillboxes in northern Lincolnshire seem to have been pressed back into service: although one standing next to a Type 23 variant in Skidbrooke had the door bricked up, this may have been done later. Several have modifications to the roofs which suggest that observation posts or AA installations were mounted; one was encased within the cast concrete supports for a wooden observation tower related to the RAF Theddlethorpe bombing range and surviving to c 1960, while the southernmost, at Seaview Farm, had irregular cast concrete 'lump' camouflage on the roof to break up its regular appearance, possibly added at this time.

Anti-aircraft and coastal defence batteries, supported by radar stations and searchlight installations, protected important targets. A large coastal gun battery was positioned on the outer wall of Grimsby's Fish Docks which would have worked in conjunction with a searchlight battery further to the east in Cleethorpes; there was also a heavy AA battery south of the Fish Dock. These batteries would have been able to co-operate with those at Spurn Point and mounted on the Humber Forts at Bull Sands and Haile Sands, which were all brought back into operation; further batteries lined the estuary on the approaches to Hull. As mentioned earlier, Grimsby's harbour defences included the two surviving Lincolnshire variant Type 23 AA pillboxes located on the seawall.

Other AA batteries were located at North Somercotes and Ingoldmells with 3-/4-inch and 6-inch coastal batteries at Skidbrooke, Theddlethorpe St Helen, Ingoldmells and Chapel St Leonard, where a surviving emplacement has been converted into a viewing platform.

Plate 214 WW2 gun emplacement converted into a viewing platform, Chapel St Leonard

Further AA sites were located to the south, one within the Seaview defended locality, Saltfleetby, where there was also a possible 75mm gun battery, and at Gibraltar Point, where there was a 6-inch coastal battery protecting the southern flank of Skegness and the entrance to the Wash. The Saltfleetby AA battery may have been converted to an 'Operation Diver' anti-V1 site in 1944, although this is not certain.

Plate 215 WW2 6-inch gun emplacement, Fishtoft, now a summerhouse

A 6-inch battery was constructed at Fishtoft, with one of the emplacements surviving as a converted summerhouse. Smaller calibre temporary gun emplacements, usually consisting of sandbagged earthworks containing standard army field guns, would have been located at intervals, but have left no trace of their presence.

Plate 216 Western 6-inch gun emplacement, WW2 Freiston Shore Battery

Plate 217 WW2 searchlight emplacement, now a summerhouse, Freiston Shore Battery

An important coastal battery was located on the north shore of the Wash at Freiston, designed to inspect the credentials of wartime merchant shipping heading to and from Boston. There are almost intact remains of this important scheduled site built into the contemporary seabank including two 6-inch gunhouses and two searchlight installations (CASL), and in the area immediately to the rear, the magazines, engine houses, and ancillary buildings such as stores and workshops. As well as being protected by Type 23 pillboxes, there is an unusual two-storey hexagonal pillbox at the north end of the battery, consisting of a standard Type 22 with an upper storey added for AA defence. There was also a military railway serving the battery, with some of the rails surviving *in situ*.

The early airfield at North Coates was redesignated in 1940 as an RAF Coastal Command and RN Fleet Air Arm base, continuing to operate as an RAF bomber base. The site was considerably enlarged in 1942–3, although many of the early period buildings, including a row of wooden pre-war double-gabled hangars, slightly later Bellman hangars, control tower, and wooden accommodation blocks were retained alongside new facilities; the grass runways were, however, concreted, to accept medium bombers.

One of the interwar double hangars, two later hangars, including one of the Bellmans, and a handful of other buildings survived post-war demolition; the hangars have been reclad, but retain their internal structure.

Plate 218 Rare 1930s two-bay 'No 4' hangar with side-opening doors, RAF North Coates

The interwar RAF relief landing ground and bombing range at Donna Nook functioned for a time at the start of the war as a decoy representing nearby RAF North Coates, equipped with dummy Blenheim medium bombers, but became a satellite landing site for Coastal Command in 1941 and then once again a relief landing ground for RAF North Coates. It subsequently became a prisoner-of-war (POW) camp in 1944, largely taking Poles and Ukrainians who had fought for the German army.

A considerable number of Second World War buildings, concrete tracks and hardstandings from the original airfield domestic site and POW camp still remain in variable condition on the west side of the former airfield site outside the study area, mostly located in several former compounds or clusters across a wide area extending up to c 1.5km inland. They included rendered brick structures typical of wartime construction and Nissen huts, some of which were probably used as barracks and later as POW accommodation. The cleared floor platforms of many more demolished buildings can be seen, identifiable from the 1951 1:10560 Ordnance Survey map of the area. One of the Nissen huts contains original paintings and graffiti; some at least executed by a Polish internee, including a poem and folk art, which could be considered for conservation or

removal for preservation in line with examples from other sites, such as the former air base at Podington, Bedfordshire.

A concentration of non-standard structures is located between the airfield and the seabank, many now hidden in a heavily overgrown area. Some were undoubtedly related to the airfield, others to the bombing range, others still formed part of the wartime base defences. The structures included a large brick pillbox with a concrete roof close to the seabank, while a series of concrete block buildings survive in various states of repair.

Plate 219 WW2 Observation post (right) and tunnel entrance formed from Stanton shelter components (left), Tetney

Plate 220 WW2 brick blockhouse, perimeter of RAF North Cotes

Several observation posts were also noted in this area. These consisted of a two-storey structure cut into the seabank, with the observation post on the upper floor and steps down into a command or communications room below, with a short tunnel leading to the rear entrance; a side chamber extending into the bank had been constructed using Stanton shelter sections.

Plate 221 Side chamber formed from Stanton shelter components, WW2 observation post, North Somercotes

A brick blockhouse in the same area supported a later concrete 'Orlit' observation post, forming a group with a Type 23 pillbox and a brick structure containing machine mountings and with a railing around the flat roof.

Plate 222 WW2 blockhouse and post-war ROC Orlit observation post, WW2 AA pillbox and building to the rear, RAF Donna Nook

Extending from Saltfleetby to Theddlethorpe, Rimac, Seaview Farm and Sea Bank Farm ('Olivers') became defended localities. Rimac was also the site of an enormous army camp, echoing its First World War use, and had its own rail link to London to improve the movement of troops. Important installations such as these were of strategic importance and were well protected, with a number of pillboxes, trench systems and gun batteries surrounding fortified farms, protected by minefields and beach obstructions. The road bridges crossing the canalised Great Eau, which ran parallel to the coast before entering Saltfleet Haven, were prepared for mining and would have been destroyed during an invasion as the defended localities and coastal crust defences

were abandoned. As mentioned, the defences at Seaview included the southernmost of the six First World War trapezoidal pillboxes, the roof of which may have been given its 'camouflage' of concrete lumps at this time. The gunpits of an AA battery referred to earlier are also still visible on the northern edge of the defended locality, immediately behind the seabank. Other localities were established along the Lincolnshire coast, including the small former resort of Freiston Shore, centred around the Plummers Hotel.

Plate 223 RAF Theddlethorpe, concrete wall and bank around turret firing range prior to partial clearance c 2010

Between Rimac and Olivers, RAF Theddlethorpe remained in use as a dual-purpose air gunnery and bombing range. The original domestic site consisted of a barracks, headquarters, workshops, a water tower and other buildings, some of which remain in other uses: the main building is now a private residential care home.

Plate 224 RAF Theddlethorpe, general view of turret range maintenance building/store next to turret firing apron

A trackway led east from the domestic site to the air gunnery range which consisted of an oval track for the mobile target trolleys which were protected by a straight earth bank, with a higher curved backstop bank to the rear intended to stop overflying shells; some distance to the west was a strip of concrete where dismounted aircraft turrets stood, allowing air gunners to practice before joining their crews. Alongside the concrete apron was a long rendered brick storage and maintenance building. These structures still survive in poor condition, although the western bank and part of the backstop have been ploughed out in recent years. The trackway led past the gunnery range to the beach where there were a number of large bombing targets.

The two pre-war RAF bombing and gunnery target ranges located in the Wash at Wainfleet and Holbeach were also retained. RAF Wainfleet was one of a number training locations used by 617 Sqn in advance of the 'Dambuster' raid. None of the original buildings are thought to survive on either site due to comprehensive post-war rebuilding, but wartime aerial photographs show targets and direction arrows on the foreshore as well as the location of the domestic sites.

Smaller training sites included two rifle ranges at North Somercotes and Skidbrooke. Billy Butlin's camp near Skegness, constructed in 1935–6, was requisitioned during the war, in this case for the Royal Navy. It returned to civilian use in 1946, initially catering largely for 'demobbed' servicemen and their families enjoying their first post-war leave. There are few remains of the original buildings, although one of the early timber and asbestos panel chalets within the holiday camp has been retained and has been Grade II listed. Another important site was a decoy site located in Humberston, intended to divert bombers from Grimsby's docks and naval base. The decoy was designed to represent an imperfect blackout around the docks, but would also have been capable of mimicking patterns of fires started by German incendiaries and high explosive bombs during an air raid.

Cold War

Lincolnshire retained much of its strategic importance in the immediate post-war period and many military sites in the study area were retained while new facilities were also built, including a series of aircraft observation sites, often consisting of pre-cast 'Orlit' posts. These include examples at Skidbrooke, Humberston, Chapel St Leonard and Fishtoft, none of which have survived, although a brick observation post still exists at Old Leake, consisting of a brick shelter with a ladder leading to a concrete roof; it is possible that this supported an Orlit shelter,

although it may have been a bespoke type. The Orlit post at Chapel St Leonard was probably mounted on an extant pillbox, where there are traces of mountings.

Plate 225 Remains of post-war ROC post, Mablethorpe

Plate 226 Post-war ROC brick aircraft post, looking towards later underground nuclear monitoring bunker in the copse, Old Leake

Underground ROC nuclear monitoring bunkers were built in the 1950s/early 1960s as part of a national chain in Cleethorpes, Humberston, Skidbrooke, Mablethorpe, Chapel St Leonard, Friskney, Old Leake and Fishtoft, usually near an earlier aircraft observation post where these existed. The entrance hatches and ground zero indicators (GZI) above the bunkers are still visible at Mablethorpe and Old Leake, but most were sealed, particularly those which were abandoned early. A concrete slab may hide the demolished entrance to the bunker at Chapel St Leonard.

RAF North Coates was recommissioned in 1957 as a Bloodhound AA missile defence base, remaining in use until 1990. Many new buildings were added in the post-war period, including large areas of permanent housing, but the site has now closed and the former technical site in particular has been partly redeveloped. A flying club still operates there, using the last remaining pre-war double-gabled hangar;as mentioned above, two later hangars and several other pre-war/wartime buildings remain.

Plate 227 Post-war RAF Wainfleet control tower, Friskney

Further south, the four wartime gunnery and bombing ranges remained in use although the bombing range at RAF Theddlethorpe was the first to close in 1973, while RAF Wainfleet closed in December 2009. RAF Donna Nook and RAF Holbeach have both remained open.

All of the sites saw considerable investment over the following decades. New quadrant towers and range control towers replaced their wartime and early post-war equivalents, which had been constructed of timber, including a tower built on a First World War pillbox north of Theddlethorpe.

Targets on the foreshore were regularly replaced, including redundant armoured vehicles, ships and landing craft at Wainfleet, some of which remain despite its closure. RAF Holbeach includes several ship hulks and decommissioned vehicles as well as purpose-built targets, including ‘strafe panels’, consisting of red and white tapes stretched on mesh and others made of tyres and plastic drums. RAF Donna Nook has several pyramidal targets mounted on platforms, plastic drum targets, vehicles, and a number of trolley-mounted dummy vehicles constructed of metal tubes and netting which are stored next to the beach when not in use.

Plate 228 Target ships and markers, RAF Holbeach bombing range, Gedney

Plate 229 Comet tank hull target, RAF Theddlethorpe post-war bombing range

Structures at Theddlethorpe have largely been removed, leaving few traces other than small target shelters, posts which formerly supported the target platforms, parts of wrecked boats and the partly dismantled hull of a Second World War Comet tank.

8 TOURISM

Pilgrimage and early tourism

Although there had undoubtedly always been enterprising individual travellers and small groups engaged in sightseeing and other non-business-related journeys, relatively large-scale medieval tourism also existed, related to the tradition of pilgrimages both to local shrines, such as Whitby Abbey and (outside the study area) Beverley Minster, and international centres, such as Santiago de Compostela, Rome and the Holy Land. Although the principal purpose was to pay homage to a particular saint or sacred place, many travellers were also keen to enhance what could otherwise be an arduous, dangerous, or simply tedious journey, either by sightseeing or absorbing different cultural experiences, or for the more learned by studying architecture and art collections or by arranging visits to notable universities, libraries and scholars.

The popularity of pilgrimage therefore encouraged the development of a significant support industry with a number of recognisably modern features, including the provision of means of transportation, with inns and lodgings along the main pilgrimage routes and at the ultimate destination, as well as the emergence of souvenir manufacturers and vendors of items such as badges, *ampullae* (holy water containers) and images. Monastic houses close to the route often capitalised by providing board and lodgings and the option to view their own collections of relics, but many of these also owned inns outside their precincts in towns and rural areas, which gave them a further opportunity to increase their income.

This tradition ended abruptly in Britain c 1538 following the 'Dissolution of the Monasteries' and the start of the Protestant Reformation, but with the emerging Renaissance passion for knowledge, particularly relating to classical Graeco-Roman culture, it was already becoming fashionable for the wealthy to visit continental destinations, studying classical art and architecture, bringing some of the ideas back to influence the native development of arts and sciences.

During this period, a small number of enterprising individuals also engaged in collecting information for the first 'modern' historico-geographical descriptions and maps of the British Isles. Some of the information was gathered by travelling, the remainder by collating available written sources which inevitably meant a dependence on rediscovered or well-known classical texts such as Ptolemy's *Geographia*, itself based on information from the great library at Alexandria, and on which many inaccurate medieval maps were based.

John Leland's *Itineraries* of the late 1530s and early 1540s remained unpublished until the 18th century, but the notes of his first-hand experiences were sufficiently well-known to influence both Raphael Holinshed's *Chronicles of England, Scotland and Ireland* (first published 1577) and William Camden's *Britannia* (first published 1586). Texts such as these provided inspiration for early travellers, while improved non-Ptolemaic maps of the British Isles began to be available at the same period, including the anonymous *Angliae Figura*, c 1540 (British Library, Cotton MS Augustus, I.i.9), and the Yorkshire-born Catholic priest George Lily's map of the British Isles, 1546 (British Library, K. Top. 5 (1)). Both of these were possibly derived directly or indirectly from a lost Roman original which, to judge from their relative accuracy, was itself the result of a naval survey which had circumnavigated mainland Britain, but probably not Ireland, which was less accurately depicted.

These first generation modern maps were copied by others but were followed from the 1570s by more accurate and detailed surveys, including Humphrey Lluyd's *Angliae Requi Floretissimi* and Christopher Saxton's very similar map of England and Wales (British Museum, maps, C.7.c.i), both dated 1579; the latter was copied for inclusion in editions of Camden.

As well as covering the British Isles, individual county and town maps began to appear in the very late 16th and early 17th century, initially produced by John Norden and John Speed, with Speed's atlas, *The Theatre of the Empire of Great Britaine* appearing in 1610/11. It was not until 1676, however, that John Ogilby published the first of what was intended to be three volumes of road maps, a series of strips showing 100 routes with all principal features, although the volume was too large for the average traveller to carry. It was some time before a pocket atlas appeared, but Ogilby's work set the tone for a new era of travelling, characterised by individuals such as Celia Fiennes (1662–1741), and Daniel Defoe (1660–1731) who both visited Yorkshire, including parts of the east coast, the spas, and notable inland towns.

Health tourism

Alongside the simple sightseeing or cultural tours embarked on by those with sufficient disposable income, health tourism also began to grow during the early post-medieval period. This shared some

of the aspects of earlier pilgrimages, with favoured health resorts to replace the shrines, provided with various grades of lodgings and a souvenir industry (for further background see Brodie & Winter 2007).

The health benefits of drinking and bathing in spa water (hydrotherapy or balneotherapy) had been known since Greek and Roman times, with both Bath (*Aquae Sulis*) and Buxton (*Aquae Arnemetiae*) established in Britain during the Roman occupation. There had been continued interest in such sites in the medieval period alongside locally-venerated holy wells and springs, some of which undoubtedly had pagan origins, and which is still represented by the tradition of well-dressing in the Derbyshire area. Meanwhile, the benefits of hot baths had been discovered by crusaders in the Near East and the returning soldiers may have introduced the habit, with sweat baths or 'stews' appearing in Southwark, London, under the auspices of the entrepreneurial Bishop of Winchester (Crebbin-Bailey *et al* 2005). The Bishop of Bath and Wells attacked the profanity of mixed nude bathing at Bath in 1449, with bathers forced to wear smocks thereafter. Towards the end of his reign, Henry VIII closed the existing baths together with holy wells because of a perceived connection with Catholicism, but the effect was temporary.

In 1562, the physician and naturalist William Turner published *A Boke of the natures and properties, as well of the bathes in England as of other bathes in Germany and Italy*, and from c 1571 bathing in this country was promoted as a patriotic alternative to visiting continental spas, partly due to the popularity of Spa in Belgium as a meeting place for exiled English Catholics, and potentially therefore a centre for plotting against the Crown. The choice of sites included the revived Roman spas at Bath and Buxton as well as new sites where medicinal springs were identified, such as Harrogate (1571) and the forgotten and short-lived Kings Newnham, Warwickshire (by 1581). By the early 17th century, health tourism included visits to further springs discovered at Tunbridge Wells (1606) and Epsom (c 1618). Research into the chemical composition of the waters also began; initially this was fairly crude and often wide of the mark, but by the late 18th century, the contents and medical properties were much more precisely understood.

Coastal health tourism in Yorkshire began to develop rather later than at Harrogate with the discovery in 1626 of two mineral springs on the present Spa site in Scarborough by Mrs Thomasin Farrer, the wife of a prominent citizen. When Celia Fiennes visited in 1697, the spring was occasionally flooded by the tides although it quickly purged itself of salt water, but the following year a cistern was constructed to collect the water; the springs were lost for a time after a major rotational landslide in 1737, taking with it the early timber Spa House and other buildings shown on panoramas by Francis Place (1731) and John Harris (1735). The replacement of 1739 was damaged in 1808 and agan in 1825, and completely destroyed in 1836, to be replaced by Henry Wyatt's Gothic Saloon. This was too small for the increasing numbers of visitors arriving by train and was replaced in turn by Sir Joseph Paxton's design of 1858, which had an external promenade, shopping arcade and on the terrace to the south with an ornate bandstand and a freestanding prospect tower. Damaged by fire, the Spa Hall was rebuilt and extended between 1877–80 to include a larger theatre and other facilities; the bandstand was replaced in 1913. The wells themselves were located for most of the 19th century in a sunken area reached by steps, as a coloured print by James Green and Thomas Rowlandson in John Papworth's *Poetical Sketches of Scarborough* (Papworth 1813) shows, but in 1875 an underground pump room was created, which is now infilled and lies beneath the access road.

Plate 230 Scarborough Spa, 1813 (Papworth's Poetical 'Sketches of Scarborough')

A spa water spring was discovered on the north side of Filey Brigg in the 1670s and became popular from the 1820s. The Spa Well was part way down the cliff, reached by a steep path and covered by a small circular brick shelter shown in two illustrations by Rock & Co, London (1855). The site is also shown above Spa Nab Hole on the 1853–4 1:10560 First Edition Ordnance Survey and continues to appear as a placename, although the spring has been lost to erosion.

Whitby boasted no less than three chalybeate springs on the East and West Cliffs in the early 18th century, with one meriting a poem written in 1718 by Samuel Jones, gentleman, *Occasioned by Mr Andrew Long's Recovery from the*

Jaundice, by Drinking of Whitby Spaw-Waters, comparing Whitby waters favourably with those of Tunbridge, Epsom and continental spas. At least one of the springs was near the Abbey, with the narrow bridge leading to the East Pier named the 'Spaw Ladder', but a small Grade II circular brick structure, the Victoria Spa of 1860, still survives on the West Cliff at Bagdale, housing a spa well.

Plate 231 Victoria Spa Well, Whitby

Plate 232 Plaque celebrating 1811 discovery of tidal chalybeate spring, Garden Walk, Bridlington

A chalybeate spring was also discovered in Bridlington's harbour area in 1811, allowing it to claim its own devotees; this is still displayed with a plaque relating its discovery. Some distance from the spring, the New Spa was built in 1896 with a lake filled from a second spring, but the principal purpose of the building was entertainment. The Spa complex, rebuilt in 1907, 1925 and 1932, still houses a Royal Hall, theatre, gallery and other features; it was extensively refurbished in 2005–8, but retains much of its Art Deco styling. Hornsea also benefitted from the discovery of a spring with medicinal properties in the 19th century, with Charlotte Bronte visiting the town to take the waters in 1853.

Cleethorpes had also developed a spa at Isaac's Hill by the 1820s, where there was a spring of iron-rich water; this and the fashion for sea bathing led to the development of a major resort from its three constituent villages.

Drinking sea water was also promoted as a cure for glandular disorders in Dr Richard Russell's *De Tabe Glandulari* (1750), which became more widely available in English from 1752 as *Glandular Diseases, or a Dissertation on the Use of Sea Water in the Affections of the Glands*. Russell's work contributed towards the popularity of his adopted home town, *Brighthelmstone*, a fishing port which became the fashionable spa resort of Brighton, assisted by the similar promotion of the benefits of seawater by two of his fellow contemporary local doctors, John Awsiter and Anthony Relhan, but also by connections with wealthy and influential visitors, by the 1780s including the Prince of Wales (later George IV): Brighton was to become, in many ways, a prototype for British seaside resorts.

As well as drinking sea and spa water, the health benefits of seawater bathing (thalassotherapy) were being promoted as early as the 16th century by individuals like Thomas Vicary (c 1490–1561), Sergeant Surgeon to the royal court and governor of the post-Dissolution St Bartholomew's Hospital (Brodie & Winter 2007, 9). Sea bathing was promoted at Scarborough by local doctor Dr Robert Wittie by c 1660 (ibid 9–10), while Samuel Jones' Whitby poem of 1718 informs the reader that '…what the Drinking cannot purge away, is Cur'd with ease by Dipping in the Sea.'

The nascent tourist industry began to expand as the fashion for taking spa water and sea bathing began to spread down the social scale through the ranks of the emerging middle classes, leading to the development of early hotels and lodgings to replace or augment existing travellers' inns. In Lincolnshire, the New Inn was established in the small coastal village of Saltfleet before 1673, catering for sea bathing, while at Freiston Shore, two inns, the Anchor and the Coach House, and a bathing house were built in the late 18th-/early 19th-century in an attempt to capitalise on the fashion.

From the 1720s, bathing machines began to appear to protect the modesty of the bathers. An engraving by John Setterington shows recognisable bathing machines in use at

Scarborough as early as 1736; before that, changing huts were available for women, while men had the option of jumping into the sea from fishing cobles a suitable distance from shore to preserve their modesty.

Plate 233 Bathing machines, Scarborough (1813), from Papworth's Poetical Sketches of Scarborough'

Large numbers of bathing machines remained in use until the 1890s, although after mixed bathing was allowed in 1901, they technically became redundant, and many were parked at the top of the beach to act as changing facilities, a role subsequently taken by permanent beach huts and specially designed tents. Traditional beach huts, with their planked construction and basic facilities, closely resemble bathing machines with the wheels removed, and were almost certainly simply a derivation of the same design, by the same builders.

Plate 234 Nos 5–7 Pier Road, Whitby, the Quayside Hotel, formerly the town library, museum and public baths

For those preferring indoor bathing, facilities were provided from the late 18th century. Whitby baths was built next to the harbour on Pier Road in 1825, although it is not clear whether there was the option of seawater bathing; the building also housed a museum and subscription library and survives as the Quayside Hotel.

Five heated seawater establishments were reported in Scarborough in the early 19th century (Hinderwell 1832, 169–72), mainly in the neo-classical style favoured for early spas. These included Travis's (1798), Weddell's (1812), Harland's, Champley's, and Vickerman's Baths (1829). Vickerman's Baths opened at the base of the cliff several decades before Foreshore Road was constructed, but most of the establishments were close to the sea, allowing water to either enter naturally or be pumped in at high tide. In 1859 the heated Seawater Baths was opened by the Scarborough Public Bath Company Limited a little further to the north of Vickerman's; the building was enlarged in 1863 to allow separate facilitate men and women to be created, still some time before Foreshore Road was built. The upper floor of the building was given distinctive Moorish windows, while the corner water tower was disguised as a domed minaret. The baths closed in 1931 and has for decades been the Coney Island amusement arcade; the building has been shorn of many of its distinctive features including the top of the water tower with its dome and the distinctive roof top pavilion housing the Turkish baths. There have been recent plans to clear the site to make way for a casino.

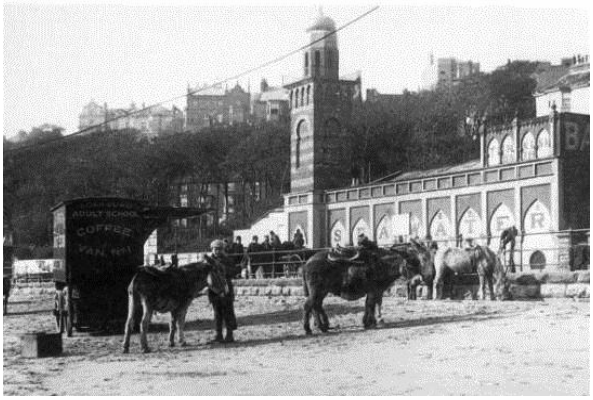


Plate 235 Late 19th-century view of Moorish-style heated Seawater Baths, Scarborough, with Turkish Baths in the rooftop pavilion, after the construction of Foreshore Road

Perhaps the apogee of private indoor bathing in the town came with the construction of the Grand Hotel in the town in 1863 on a prominent location overlooking the South Bay. The hotel's private bathrooms were connected to both fresh and seawater supplies, allowing its wealthy customers to select their preference.

In 1791, a campaign began to provide curative seawater bathing at Margate for the poor,

espoused by the Quaker physician John Coakley Lettsom (Brodie & Winter 2007, 110–11). From around 1796 the Margate Infirmary initially provided immersion in the sea via attended bathing machines, but by 1853 included indoor baths. The example of Margate quickly inspired other resorts and in 1858–60, following a long campaign with influential backing, an Infirmary containing seawater baths was built on Foreshore Road, Scarborough, with balconies and French doors along the front at first and second floor level to allow fresh air to be introduced as part of the treatment. Constructed as the Royal Northern Sea Bathing Infirmary, the building continued in use as St Thomas's Hospital until the late 20th century, acting as a convalescent centre for Scarborough Hospital; the attractive building survives as a commercial premises. Fresh air outlived the bathing regime as an important part of recuperation, but part of the 19th-century Londesborough Lodge in the Crescent was converted to Medical Baths in 1925 and operated until c 1970.

Plate 236 Former St Thomas' Hospital, Sandside, Scarborough

In Bridlington, Benjamin Milne's hot baths opened in 1803; it was Milne who in 1811 discovered a tidal chalybeate spring in the harbour area. New baths were built on Cliff Terrace in 1815, still operating into the 1870s, followed in 1844 by Bishop's Improved Baths which were built on the cliff slope north of the harbour, but demolished in the 1860s to allow the construction of new seawalls. In the 1870s, George Travis opened a new bath complex on the north side of the harbour, offering a choice of sea or fresh water, and Turkish, Russian or Vapour (steam) baths. The sea water was piped in directly, while the fresh water came from the same natural source as Milne's nearby chalybeate spring. The baths were still operated many years later by William Pool, who added a steam laundry, and from c 1920 was run by Albert Gautier as the Royal Baths; these continued to operate until destroyed by bombing in 1940. The site today forms part of the landscaped Garden Walk.

Exposure to ultraviolet light from the sun was also increasingly recognised as important to health; although sunlight had been used as a treatment for scurvy and rickets as early as the 18th century, important research began to be carried out in the pre-First World War period, with solar treatment (heliopathy) prescribed in the 1920s and 1930s as a cure for certain skin diseases and rickets, caused by Vitamin D deficiency, as well as proving beneficial to tuberculosis sufferers. This was particularly a problem for those with a poor diet or from cities where persistent smog or fog filtered the available sunlight, and there was also a culture of covering up the body, including the universal wearing of hats by men and women alike. The popularity of tanning as an aesthetic rather than health benefit can also be dated to the 1920s, influenced by the leading fashion figure Coco Chanel and other society individuals. Purpose-built outdoor swimming pools (lidos) encouraged swimming as an exercise with poolside sunbathing becoming a health activity in its own right. Solaria were also built: an unusual example of the period was the castellated neo-Gothic Sun Castle solarium, Skegness (1932), which was built with a roof substantially composed of Vitaglass, a 1920s development which allowed the transmission of healthgiving ultraviolet light. Outside were bowling greens for light exercise and a sun terrace. The building survives as a pub-restaurant and entertainment centre.

The growth of modern tourism

The growth of mass tourism in the 18th and early 19th centuries was prevented by two principal factors: firstly the difficulty and expense of transportation; secondly the complete absence of holidays, whether paid or unpaid.

The condition of the road network was extremely poor, little better than in the medieval period, and it was not until the 18th century that main routes began to be improved: although the creation of turnpike trusts began in 1662 (Bradley 1988 edn, 8), it was not until 1752 that the York to Scarborough road was turnpiked, followed by Pickering to Whitby in 1759. Apart from a small number of improved routes, the coast remained remote and difficult to reach. Turnpikes also introduced a system of tolls which made long-distance travel expensive.

Road transport itself was primitive and many vehicles were either unsprung or hung from leather straps ('thoroughbraces') until the

development of steel springs in the mid 18th century (Bradley 1988 edn, 11). From this period, faster and more comfortable coaches were built, with the mails also carrying passengers from their introduction in 1784, stopping at intervals ('stages') every 10–15 miles to change horses and give the passengers a brief rest.

East coast coaches in Yorkshire included the York, Scarborough & Whitby Mail (1807–40) and the Leeds–Whitby 'Neptune' (1832–3), although Whitby mails had run to the Angel from 1795. The early Leeds & Scarborough Stage Coach (1754–70) was replaced later by the Leeds, York & Scarborough Diligence (1781), which quickly became the long-lived 'True Blue' (1781–1844), one of the last to run before competition from the railways finished the trade. The 'Eclipse' also ran between Leeds and Scarborough in 1792, the 'Royal Union' and 'Prince Blucher' in 1818–20, a seasonal coach, the 'Recovery' ran on this route from 1823 and the 'Old True Blue' in 1839. The 'North Briton' and seasonal 'Expedition' post coaches were running between Sheffield and Scarborough in 1822. A coach also ran between York and Bridlington (1804). The 'Royal Union' and 'Original British Queen' were operating between Scarborough and Hull in 1828, stopping at Filey, and presumably Bridlington and other coastal towns.

The coaches and roads, improved though they were, could only carry limited numbers of passengers inside and out, with the better-off travelling in their own vehicles. It was the development of the railways which for the first time allowed the prospect, if not yet the actuality, of cheap mass transportation. Stations at intervening villages served by networks of carriers — the horsedrawn forerunners of modern taxis — allowed the prospect of the economic development of settlements along the route as well as the main towns.

Whitby was already linked to York and the main north–south lines via an inland horsedrawn single-rail route to Pickering by 1836 (double-track steam from 1847), and a coastal route to Middlesbrough followed in 1883. The arrival of the line from Scarborough in 1885 with stops at Robin Hood's Bay, Fyling Hall, Ravenscar, Staintondale, Hayburn Wyke, Cloughton and Scalby completed the coastal route from Hull. Scarborough was connected to York from 1845 and Hull by 1846.

The Filey–Scarborough section included stations at Gristhorpe and Cayton, and south of Filey, there were stations at Hunmanby, Speeton, Bempton and Flamborough, although south of Bridlington the line headed inland away from the coast. In Holderness, Hornsea was not connected to Hull until 1864, ten years after Withernsea.

Plate 237 Whitby railway station, Station Square, looking south-east

Plate 238 Viaduct of disused Whitby–Scarborough railway over former Peak alumworks access, Staintondale

South of the Humber, Grimsby was linked to the industrial towns of Sheffield and Manchester by the Manchester, Sheffield & Lincolnshire Railway between 1847–9. The East Lincolnshire Railway opened in 1848 to connect Boston, Louth and Grimsby, with stations connecting some of the Wash villages, including Old Leake before turning north. A coastal branch to Wainfleet and Skegness opened in 1873, with further branch lines built by the Louth & East Coast Railway and the Willoughby & Sutton Railway completing a loop off the main line along the east coast, connecting settlements such as Mumby, Sutton-on-Sea, Mablethorpe, Theddlethorpe and Saltfleetby by 1888. The MS&LR opened a branch from Grimsby to Grimsby Docks, New Clee and Cleethorpes in 1863, providing an important route for both industry and tourism. A short-lived tramway was established between Alford and

Sutton, with railways running to Mablethorpe from Louth and Willoughby until closure in 1970.

Plate 239 Sutton-on-Sea railway station

Despite the expanding railway network, lack of paid free time for workers ensured that coastal tourism largely remained the preserve of the better-off until around the 1870s. For the rest, the small number of traditional one-day holidays tied to the church calendar were unpaid and from the early 19th century the demands of the factories and mills for long hours and continuous production made increasing inroads on these.

The 1871 *Bank Holidays Act* finally allowed workers a legal right to paid days off on Easter Monday, Whit Monday, the first Monday in August and Boxing Day. Good Friday and Christmas Day were already traditionally regarded as days of rest and were not specifically included in the Act. These paid concessionary breaks did not yet, however, apply to those engaged in heavy industry, where production processes often continued without shutdowns. The main early beneficiaries would have been shopworkers, clerical staff and other non-industrial employees.

The plight of the industrial workforce was answered by the spread of Wakes Weeks from the 1860s–1870s. These had originated as religious holidays, but were adopted by increasing numbers of northern mill and manufacturing towns, which effectively closed down for one or two weeks to allow essential maintenance works. Those not engaged in such tasks were allowed unpaid leave and large numbers began to holiday together *en masse*, a tradition which continued in some areas until the 1970s. From this period, miners and millworkers from the coalfields of West Yorkshire, Nottinghamshire and Derbyshire formed a significant component among holidaymakers making for the coast: most of the essential and familiar components of the modern seaside holiday were now in place, although statutary holiday pay had yet to be addressed.

In the early 20th century, paid holidays began to be introduced voluntarily by more enlightened employers and had been offered to about 1 million workers by c 1920. After a long campaign by the Trades Union Congress, starting before the First World War, the *Holidays with Pay Act* 1938 was enacted, which recommended, but did not enforce, a paid week for employees, with around 11 million now benefitting; the rest generally had to wait until after the Second World War, while some, such as agricultural labourers, were still unable to take holidays during the busy summer harvest period. The concept of Wakes Weeks has survived in some former manufacturing areas into the 21st century as local variations in the school summer holiday period: the concept of holidaying together has gone for good, however, together with the large mill and factory workforces which made it such a major phenonemon.

From the mid 19th century, the rapid rise in popularity of the coast as a holiday destination, coupled with the availability of cheap and efficient mass transportation led to the development of Whitby, Scarborough, Bridlington, Filey, Hornsea, Withernsea, Cleethorpes, Mablethorpe, Chapel St Leonards, Ingoldmells and Skegness, and smaller centres such as Hayburn Wyke (*Fig 14).*

To begin with, there would still have been few facilities for the majority of visitors apart from those enjoyed by earlier, more genteel generations of tourists: walks along the seafront and beach, short trips on fishing boats, improving visits to notable buildings or museums. The principal purpose of the holiday was to escape work for a week or so and enjoy the clean air, in stark contrast to the pollution and congestion of the industrial towns and cities of the West Riding where many visitors lived and worked. Most of the new holiday resorts were, though, still working ports and fishing harbours, with all the noise, smell and dirt which went with them. To some visitors, including artists, picturesque decay and the chance to watch working men, women and children going about their mundane but exotic-seeming tasks would have been an attraction in itself, as shown by the popularity of the evocative photographs of the Whitby area taken by Frank Meadow Sutcliffe (1853–41). It was not long, though, before mass tourism brought about an entertainment revolution.

In these new resorts, the increasing population attracted by the railways outstripped the available employment opportunities in traditional industries such as shipping, boatbuilding and fishing, but the

inhabitants were now able to exploit the emerging popularity of the seaside by providing all the increasingly diverse elements of a service industry, much as their medieval forebears had taken advantage of pilgrimages to make a living.

Hotels and large rentable houses continued to cater for the better off, including a number of premises established in the 18th and earlier 19th centuries before the mass market was created. Meanwhile, large numbers of boarding houses of various grades, often run by women, opened to cater for the more modest pockets of working and middle class families. Boarding houses usually closed during the day, with the resident holidaymakers forced to amuse themselves outside whatever the weather, although it is probably fair to say that with fewer alternatives, people were more prepared to put up with the variable British climate than their later 20th- and 21st-century counterparts.

Alongside a range of places to stay came an ever-increasing variety of indoor and outdoor attractions, some of them free, others depending on the depth of the visitor's pocket. To the original seaside attractions of the spa, sea bathing and beaches were added ornamental parks and gardens with their bandstands, lakes and floral displays, promenades and piers, pavilions, concert halls, assembly rooms, winter gardens, theatres, music halls, cinemas, amusement parks, fun fairs, and arcades, cafés, restaurants, public houses, and shopping arcades.

Donkey or pony rides, Punch-and-Judy shows, brass bands, pierrots and street vendors formed part of the attractions, accompanied by peripatetic photographers offering studio portraits or 'walkies'. Visitors could opt to sightsee in open-topped trams and carriages, travel on miniature railways and cliff lifts, sail in steamers and cleaned-up fishing boats, or for the more energetic, row on a boating lake, and there were always sporting activities, such as golf, tennis, shooting and fishing.

The late Victorian and Edwardian periods saw the emergence of extensive holiday advertising by the railway companies and destination towns, but the 1920s and 1930s were the heyday of colourful posters, using idealised images and slogans in a range of fonts which were often inspired by modernist design, although some were more traditional and nostalgic in tone. Post-war posters initially adopted pre-war designs, but the 1960s saw the introduction of a freer less formulaic approach to advertising, very similar to that used to promote holidays abroad from this period.

Plate 240 Example of pre-war railway advertising

The cheap foreign package holiday market began to affect the home holiday market from the late 1960s, coupled with the demise of mass holidays as the mills, factories and mines began to close. The wholesale closure of railway branch lines and stations had a considerable impact, particularly on more remote resorts relying on daytrippers. In terms of numbers alone, however, the peak in seaside holidays was, surprisingly, as late as the 1960s and 1970s, a period which saw the rapid expansion of caravan parks and reinvestment in the more traditional holiday camps. The decline really began in the 1980s, assisted by increasing aspirations and unfavourable comparisons between the unreliable summer weather conditions at home with the perpetual sunshine of the Mediterranean, an important determining factor at a time when people were increasingly in search of a tan.

The closure of Butlin's holiday camp near Filey in 1983 is a good indicator of the impact of competition on the home market at this period, reflecting a move away from the communal holidays of the past to more individually tailored experiences, although the camp at Skegness was reinvented, and managed to survive as a cornerstone of the local seasonal economy by changing its offer to cater for the altering market.

Holiday resorts, almost entirely dependent on a short summer season as other forms of employment such industry and fishing declined over the same period, became some of the most deprived areas in the country. This was apparent away from the main tourist areas and in indicators of social deprivation such as educational achievement, health, mobility, crime and unemployment, but also began to have an impact on the condition of facilities and attractions as maintenance and modernisation was affected.

Many other attractions, some longstanding, some relatively new, closed during the same period as operating and maintenance costs spiralled while visitor numbers dwindled. Traditional seafront hotels also closed and were converted into apartments or retirement homes: in Filey, the conversion of the Victoria, Hyland, and Royal Crescent Hotels in the 1970s–1980s left no hotels in the superb Regency Crescent other than the White House at the south end, while the fine mid 19th-century Alexandra Hotel in Bridlington was demolished in 1975. More recently, the 19th-century Cliff Hotel, Cleethorpes, was demolished in 2003 and replaced by modern apartments. Those which survive have generally been entirely refurbished, such as the Crown Spa and Grand Hotel in Scarborough, and the Crown, Skegness, and some have included apartments to provide additional income.

After a prolonged decline through the 1980s and 1990s, the late 20th- and early 21st-century trend has seen a trend towards a market for day trips and short stays ('staycations') rather than long holidays, although factors such as the strength of the home economy and the exchange rate can have temporary effects. With the continual need for change and novelty that is part of the nature of tourism, many of the earliest features have disappeared or have been altered substantially, while even late 20th-century developments are now being replaced to cater once again for a more discerning and demanding clientele used to sophisticated 21st-century lifestyles and facilities. Over the same period, the traditional short summer holiday season has also been extended so that facilities are open from spring to autumn, or in some cases, all year round, with a new emphasis on niche out-of-season festivals to fill the surviving hotels and boarding houses.

Despite the recent popularity of 'staycations' and improvements to facilities at a number of resorts, particularly Scarborough, most remain a cause for concern in terms of social deprivation. A 2013 report by the Office of National Statistics (ONS) revealed that Skegness was the most deprived of 57 large and medium resorts in the UK in 2010 despite the continued popularity of Butlins. This suggests that the tourism sector is too small and seasonal to have a significant effect on (for example) full-time employment, and that money spent at the seaside does not cascade down to benefit the population as a whole. Although this is a complex issue, this is partly because seaside employment in the towns and holiday camps attract seasonal staff from outside the area, while smaller businesses probably generate too little surplus to reinvest locally beyond necessary spending on goods and services.

Holiday camps and caravan parks

By the 1920s, the popularity of the seaside was beginning to outstrip the capacity of the established resorts to provide accommodation. The first holiday camps began to emerge outside the resorts, developing basic facilities of their own and providing pitches for the first touring caravans and campers. A few sites were based in former First World War army or internment camps, the huts providing ready-made accommodation, such as Humberston Fitties (Cleethorpes). Some of the camps existed solely to provide a base for holidaymakers to explore the nearby resorts and beaches, but increasingly they aimed to become self-contained resorts in their own right, with the Warners chain beginning to open camps as early as 1931. The entrepreneurial Billy Butlin, who had been employed by Warners in Devon, opened his first camp in Skegness in 1936, and the Filey camp was under construction in 1939. The coastal camps were requisitioned by the armed forces during the Second World War, Skegness becoming HMS Royal Arthur and Filey RAF Hunmanby Moor. The post-war period saw an enormous expansion in the holiday camp industry with the regulated regime of entertainment and catering characteristic of the Butlins chain perhaps appealing to a generation of returned servicemen and people used to rationing; the Filey site had its own branch railway line and station.

Alongside the main national chains such as Warners, Butlins and Pontins many other local camps opened. At the pre-war Humberston Fitties, the early army huts and tents were augmented by an eclectic mix of chalets, railway carriages, buses and the small and basic caravans of the day. In the post-war period, other sites established from the 1950s–1960s onwards include holiday camps or static caravan parks at Saltwick Bay, Scalby Mills (Colleys camp, demolished 1970s), Cayton Bay, Gristhorpe/Lebberston, Primrose Valley and Reighton Gap (Filey Bay), Bridlington (Wilsthorpe camp, now South Shore Holiday Village), Skipsea, Ulrome, Sand-le-Mere, Hornsea, Aldbrough, Withernsea, Easington, Kilnsea, Cleethorpes, Saltfleet, Theddlethorpe St Helens, Mablethorpe, Trusthorpe, Anderby Creek, Chapel St Leonards, Ingoldmells, and Skegness. The early sites provided cheap holidays and were particularly popular with families on a budget and Wakes Weeks hirers, allowing large groups to block book caravans or basic chalets and enjoy communal holidays. It was not unusual for the same chalets or caravans to be booked in the same week year after year, a tradition which lasted well into the 1970s.

The sites which survived the home holiday slump of the late 1970s–1990s were rebuilt to a higher standard with purpose-built chalets and mobile home parks and the larger examples are normally self-contained, providing their own entertainment. The increasing popularity of static caravans in the early 21st century has possibly come at the expense of more traditional hotels and boarding houses located in resorts.

The Holderness coastal section has been particularly affected by erosion and twenty-four holiday parks have been identified as at risk (David Tyldesley & Associates 2003). These sites are undergoing a process of 'rollback', moving the easternmost pitches to sites further inland while investing in new or revamped permanent facilities to improve their appeal. The Chapel St Leonards to Skegness section of the Lincolnshire coast has seen particularly intensive development, while the protected North Yorkshire Moors coastline has no sites between Saltwick and Scarborough. Some provide facilities or activities which attract non-residents from a considerable distance: the Flower of May Holiday Park, (Lebberston) includes a fairground museum with a collection of historic rides and steam engines; Skirlington Leisure Park (Skipsea) has a large and well-established Sunday market.

Seaside architecture

The quality of the built environment became increasingly important between the 18th and first half of the 20th century, essentially forming the backdrop to the holiday experience. Early visitors with limited funds might have to put up with rooms in fishermen's or labourers' cottages or existing inns located in the historic centres of harbour towns and fishing villages, but the influx of the new urban middle classes with their larger disposable incomes required significant improvements in terms of quantity and quality of accommodation and leisure facilities.

Substantial new houses and terraces were already being built in the late 18th and early 19th century, with neo-classical late Georgian forms dominating, examples including Cliff Bridge Terrace and St Nicholas Cliff, Scarborough, and Cliff Terrace, Bridlington, but from around the 1830s–1840s, extensive new developments were constructed on 'greenfield' sites by speculative builders, while at the upper end of the scale the wealthiest could afford to commission villas standing in their own grounds. The earliest developers were able to take their pick of commanding locations along the seafronts and clifftops flanking the existing cramped town centres and harbours, which nevertheless formed a picturesque backdrop for discerning travellers to visit.

Plate 241 The Rotunda Museum (1828–9), Cliff Bridge Terrace (c 1840) red-painted Cliff End House late 18th century) and the Grand Hotel (1863–7), Scarborough

The new developments echoed the inland spa towns such as Bath and Buxton and fashionable new residential areas of London such as Regents Street and South Kensington. Extensive terraces and crescents were built around a grid of streets in late Georgian/Regency neo-classical style. Some of these, such as the Crown Terrace, Scarborough, were built to resemble the front of a palace, although in practice it was divided into separate plainer houses with a more elaborate large hotel as the central portico. The Crescent, Filey, consisted of smaller blocks, each individually designed, but again, a more elaborate hotel, the (Royal) Crescent, was the centrepiece.

The buildings were occasionally stone (the Crescent and Belvoir Terrace, Scarborough), more commonly stuccoed brickwork (Royal Crescent, Whitby, The Esplanade, Scarborough, the Crescent, Filey, and Royal Crescent, Bridlington), with the cement render allowing the creation and application of complex features from a catalogue of contemporary design elements such as colonnaded porticoes, Corinthian or Doric pilasters, window surrounds, cornices and entablatures. The buildings were topped by low-pitched roofs covered by lightweight Welsh slate and disguised by parapets, often with dormers lighting a garret for servants' rooms. The terraces normally included semi-basements containing service rooms with railed 'areas' in front for deliveries; the ground floor was usually raised and reached by steps to increase the kerbside impact, while the first floor was often marked by decorative iron railed balconies with French windows to give the impression of a *piano nobile*.

Plate 242 Neo-Grecian Londesborough Lodge (1839), Scarborough, one of four villas built as part of The Crescent development

More stylistic variation was employed in detached villas: a group of four built in the 1830s–1840s as part of the Crescent development in Scarborough exhibit the differing classical influences which could be employed even by the same architect, with Grecian and 15th-century Italian detailing apparent.

Behind the main frontages the new streets were lined with less prestigious, but often still imposing buildings; those built at around the same time were generally smaller versions of the large neo-classical terraced houses and villas, but from around the 1870s infill developments were increasingly in the broadening range of styles available to later Victorian architects, including Gothic Revival.

Canted bay windows rising several floors were also introduced increasingly from the 1860s to increase floor space and improve natural light, appearing across the range of styles. This is apparent in a comparison between the first blocks of houses built on The Crescent, Filey in the 1840s–1850s and the last (southern) block, built in the 1860s and completed in the 1890s: the earlier buildings are more purely classical, with flat fronts relieved by porches and recessed sections, the later blocks have three-storey bays. Bays were also added to earlier buildings, such as the late 18th-century terrace forming the south side of St Nicholas Cliff, Scarborough, as a relatively simple way of modernising their appearance.

In the 1890s–1900s, an eclectic mixture of pastiche or hybrid styles was in use, influenced by the Arts & Crafts movement. Two major strands developed: firstly the late medieval/Tudor style ('Tudorbethan', 'Jacobethan') characterised by the use of bright red facing brick, fake timbering, tile hanging, rendering or pargetting and steeply-pitched gabled roofs covered by flat tiles with substantial, often decorative chimney stacks; secondly the classical villa style, often with red or pale yellow brick walls, contrasting with artificial stone or rendered decorative deatiling such as window surrounds, quoining, and cornices, below hipped or mansard slate roofs. More often than not, the styles were mixed, with Italianate Renaissance and Gothic detailing appearingalongside classical and Tudor architectural motifs.

The Arts & Crafts movement continued to influence seaside residential architecture through the Edwardian and interwar periods, and pastiches continued to be built in the late 20th-/early 21st-centuries. The South Cliff area of Scarborough contains examples of all the competing styles from the 1840s to the present. The plainer Georgian styling of the 18th century did not find much favour in the Victorian period and as mentioned earlier, many existing buildings were altered in the mid to late 19th century to bring them up to date; examples of this can be seen in the surviving late 18th-century houses forming the west side of St Nicholas Cliff, Scarborough, where square and canted bays, porches and new windows were added. The southern part of the terrace was eventually amalgamated to form the St Nicholas Hotel, now a Travelodge.

The first late 18th-/early 19th-century permanent baths buildings in Scarborough seem to have been built in the form of small classical villas or pavilions. The Spa, however, initially had no architectural pretensions, being mainly a dispensary housed in timber buildings. Two panoramas of Scarborough by Francis Place (1731) and John Harris (1735) suggest that the first permanent Spa buildings were still unprepossessing, although these were destroyed two years later and although the replacement included a large saloon with sea views, it is unclear whether it had any architectural pretensions; several illustrations by James Green (etched by Rowlandson) in *Poetical Sketches of Scarborough* (Papworth 1813) suggest it was still a fairly raffish unsophisticated complex, with the wells located in a revetted sunken space reached by wooden steps, and a sea terrace with wooden handrails and bench seats.

Wyatt's Spa Hall which opened in 1839 was, however, a turreted and crenellated 'Gothic Revival' structure, standing behind a stone seawall with a similarly crenellated parapet. The sunken enclosure around the wells (below the present road roundabout) was also rebuilt, with a stone parapet in matching style. The choice of the

gothic style for the Spa was in contrast to the variety of classically-influenced buildings being built on the north side of Ramsdale Valley and soon to be erected on The Esplanade. The main use of Gothic architecture in Scarborough was for churches, although from c 1876, the famous Yorkshire artist John Atkinson Grimshaw (1836–93) was able to rent a newly-built castellated Gothic house which he called 'Castle-By-The-Sea' on the cliff north of the Castle, now a guesthouse of the same name.

By the middle of the 19th century, major architects such as Sir Joseph Paxton (Scarborough's New Spa Hall, replacing Wyatt's Gothic Saloon) and Cuthbert Brodrick (Grand Hotel) were being employed in seaside towns. The Victorian and Edwardian periods saw the emergence of elegant glass and steel pavilions influenced by the innovations of Paxton and other mid Victorian designers who were able to take advantage of new production techniques. Buildings such as Paxton's own Crystal Palace had been visited by millions during the Great Exhibition (1851), and similar techniques can be seen in the roofs spanning the vast new railway stations of the period, including the London termini (e.g. King's Cross, Paddington, St Pancras, Marylebone), York, and on a smaller scale, in stations such as Scarborough. It is this enduring style which was used to construct the late Victorian and Edwardian Floral Pavilions at Scarborough, Bridlington and Hornsea, and the Café Dansant, Cleethorpes, as well as less imposing but often essential seafront shelters.

Plate 243 The Art Deco Winter Gardens, Skegness (left) opposite the glazed Victorian Café Dansant, 1937

The same techniques and materials were also employed on the archetypal seaside structure of the mid to late 19th century, the pier, where relatively lightweight prefabricated sections of glazed or timber panelled decorative steelwork were ideal for constructing gazebos, windbreaks, end-of-pier pavilions and theatres. Piers (both shortlived) were constructed at Scarborough and Withernsea, and one was planned for Bridlington on a site north of the harbour, but never built. Cleethorpes and Skegness were also given piers, both surviving, although greatly shortened.

The fanciful Indian–Mughal Brighton Pavilion (completed 1823) also had an influence on seaside architectural design decades after it was built, although this was not so apparent on the Yorkshire and Lincolnshire coasts. The onion-domed corner water tower 'minaret' and oriental-style detailing on the ground floor and now-demolished first floor pavilion of the Seawater Baths, Foreshore Road, Scarborough (1859 & 1863; now Coney Island amusements), were influenced by the presence of Turkish baths within rather than by Brighton.

The popularity of Continental holidays among the better-off ensured that German, French and Italian influences became popular from the mid 19th century for major buildings. Baroque and rococo elements were applied to window and door surrounds, cornices and other elements, with slate-covered mansards replacing vernacular pantiles and low-pitched classical roofs. The Alexandra Hotel, Bridlington, the Grand Hotel and New Spa Hall, Scarborough would not have looked out of place in a northern French or German resort or spa town. For the broadly contemporary St Thomas's Hospital, Scarborough, however, an Italianate villa style was adopted.

Plate 244 The superb frontage of the Alexandra Hotel, Bridlington, now demolished

In the period from the end of the First World War until the late 1920s, versions of classical styling were still applied to public buildings. The Futurist Theatre, Scarborough, was built in 1920, effectively as a continuation of the pre-First World War late Victorian/Edwardian interpretation of the neo-classical style, another example being the Colisseum Theatre, Bridlington (1921–2). In Skegness, the extensive Derbyshire Miners' Convalescent Home (1927) was built in a plain

neo-Georgian style which appeared in locations which varied from interwar RAF aerodromes to local authority apartment blocks, where it remained in use until the 1950s. The style was characterised by plain brick walls, sash windows with imitation stone surrounds and unclassical steeply pitched tiled roofs behind low parapets.

Plate 245 Mid 20th-century postcard of the Sun Castle solarium and gardens, Skegness

The Sun Castle, Skegness (1932) was an unusual Medieval Revival architectural confection considering its purpose was to provide some of the functions of a solarium. The building intentionally resembled a large double castle gatehouse with crenellated 'gothic' walls and towers instead of glazing, but the roof was of ultramodern Vitaglass, invented in the 1920s to allow the passage of ultraviolet light while the large windows at the sides and rear indicate that this was on the cusp of the widespread introduction of Moderne styling on the coast.

From the 1920s, modernist styling began to be applied to new buildings on the seafront, although early examples are relatively rare, particularly in the north-east, and most date from the 1930s. Many of the larger late Victorian and Edwardian buildings of otherwise traditional appearance were steel framed while ferro-concrete had been used for large structures since the late 19th century, championed by firms such as Hennebique. Moderne architecture at its best used the full capabilities of reinforced concrete for the first time to create fluid, sweeping structures, although more traditional rendered and painted brickwork was often employed by local builders to mimic the new material.

Outdoor swimming complexes ('Lidos') were built or rebuilt in response to the fashion for healthy exercise in the late 1920s and 1930s. Many of these have been lost or replaced by modern indoor swimming centres with complex slides and wave machines. In Scarborough, an existing pool in the South Bay was given Moderne features in the 1930s, but these have recently been cleared and the pool filled in. A second pool complex in the North Bay was converted into a more modern swimming centre in the late 20th century, but this has also been closed and the site largely cleared, leaving the 1930s entrances and poolside pavilion in place for the time being. The nearby Corner Café (1924–5), also recently demolished to make way for The Sands development (see below), was an example of transitional styling, colonnaded and parapeted, with some classical detailing, but with large glazed panels between the columns and a flat roof, capped by a tiled octagonal lantern over a central glazed-over courtyard.

Plate 246 1930s Moderne entrance and surviving buildings of former North Bay Lido, Scarborough

Plate 247 Post-war Sands Café, Bridlington below the Expanse Hotel (1937), North Sands, Bridlington

The Moderne style was also used for hotels and other structures, including the Expanse Hotel (1937), the Spa (1932), and the rebuilt Ozone Hotel (Royal Yorkshire Yacht Club), all at Bridlington. The Expanse was an angular interpretation of the style rather than exhibiting the more familiar flowing lines associated with architecture of the period, like the Regal Cinema

(1938) on the Promenade, near the more traditional Winter Gardens.

The Ship Hotel, Skegness (1935) replaced a much earlier building and is a classic use of the Moderne style: largely rectilinear, one wing terminates in a large curved bay window, with another bay at the corner of the main block, giving a sense of movement. The building has the metal-framed windows introduced in this period and another distinctive feature, rooftop railings around a flat roof. Although much altered, the Olympia (1934), Cleethorpes, later the Winter Gardens, was another fine example of Moderne styling, demolished in 2007, with the main frontage unusually capped by three domes on low towers. The use of Moderne styling was arguably the last period which saw the use of a distinctive 'seaside architecture' until recent years; the curved form in particular evoked the appearance of the great ocean liners of the day.

Plate 248 The late 1930s Empire Theatre, Butlin's, Filey

Butlin's camps were perhaps the best example of immediately pre-war/post-war tourist development, with the principal entertainment complexes, dining halls, restaurants and reception areas at sites like Filey mainly started in the late 1930s. These were of the same strand of contemporary architecture used on late interwar RAF aerodromes, extensively built using brick with contrasting concrete detailing. The original iconic tiered concrete fountains standing at either end of the outdoor swimming pools were designed for the first camps before the war and stored while they were used in 1939–45 by the armed forces; their timeless appearance ensured that they remained popular features until many camps, including Filey, closed in the 1980s and the remaining few, like Skegness, were transformed. The post-war period saw the completion of the camps' facilities but the architects adopted a more colourful futuristic Festival of Britain styling in the late 1940s/early 1950s, with the addition of indoor swimming complexes, further restaurants, shopping arcades, amusements, and in the 1960s, more modern chalet blocks, chairlifts and monorails.

In general, cash-poor post-war resorts relied heavily on the cosmetic tidying-up of run-down Victorian, Edwardian and inter-war facilities, characterised by often poor-quality replacement windows and doors, cheap and garish shopfronts, signage and fascias. This was accompanied by declining standards of maintenance and general lack of investment in areas of the public domain, such as parks and gardens, public facilities, lighting and seating. The residual impact of this is still apparent in many resorts, particularly in areas away from the immediate seafront which have not been revitalised. Relatively little new building was undertaken until the construction of extensive new amusement and leisure complexes in the 1960s–80s, often replacing cherished earlier buildings which had not been adequately maintained or had become uneconomic to operate: significant losses include the Olympia complex, Scarborough and the Alexandra Hotel, Bridlington. The replacement buildings almost universally adopted versions of the general utilitarian contemporary styling seen in locations from town centres to out-of-town retail parks, generally with some attempt at external detailing to reflect the seaside location. Examples include amusement arcades at the north end of Pier Road, Whitby and in Garrison Street, Bridlington, together with Leisure World, also in Bridlington.

Plate 249 Group of late 20th-century amusement arcades at north end of Pier Road, Whitby

Although the process of loss of potentially restorable earlier facilities has not yet ended, as the recent demolition of the Winter Gardens, Cleethorpes has proved, possibly soon to be joined by the Futurist Theatre, Scarborough, the 1990s and 2000s saw renewed investment in a range of public domain features designed to improve the experience of visitors.

Plate 250 East Pier, Whitby, modern artwork in concrete of a new causeway section linking the Pier and East Cliff

The seafronts of decaying resorts such as Whitby, Scarborough, Filey, Bridlington, Hornsea, and Cleethorpes have benefited from new landscaping, decorative paving, engraved stone panelling, retail and catering units, public conveniences, shelters, beach huts, and artworks which reflect the seaside character of the towns as well as celebrating elements of their history or natural history.

Plate 251 Crescent Gardens, Filey, with rebuilt bandstand

Particularly notable has been the use of nostalgic styling, inspired by Victorian or interwar originals, such as new bandstands at Filey and Scotch Head, Whitby. A 'millennium' design has also emerged, evoking masts, sails and rigging, with sweeping rooflines, railings and wire stays, such as the recent seafront café and sea rescue education centre tower next to Hornsea boat compound.

Bridlington's South Promenade includes several good examples, including a row of new shops below a viewing terrace close to the Spa, new beach huts, a coastguard's office, and various water features. The Headland Café evokes Moderne styling, with a striking new jetty alongside: the Café has been cited as an example of good design (Golding 2001, 12–13).

Plate 252 Refurbished boat compound, Hornsea, with 2010 café, rescue service education centre and offices,

Plate 253 Modern shops, South Promenade, Bridlington

In addition, traditionally-styled smaller-scale 'Victorian' features have been installed as part of refurbishment projects, such as post-and-rail fencing, lighting and seating, with new materials such as plastic-coated alloy used to prolong their life and reduce maintenance costs. Examples can be found on North Wharf, Scarborough, Cleethorpes Promenade and Skegness Pier.

Attempts to reinvent the traditional seaside towns for a post-millennium market have also seen the emergence of a lighter seaside architectural style and higher quality construction for larger developments which has moved away from the functionality of the 1970s-80s. This has perhaps been influenced by continental models, but also reflects late contemporary developments

emerging in revitalised city centres such as Leeds. This is typified by the The Point apartments, Cleethorpes (2005), built on the site of the 19th-century Cliff Hotel, and The Sands development, Peasholm, Scarborough (2007).

Plate 254 The Point apartments (2005) on site of the 19th-century Cliff Hotel, Cleethorpes

The Sands consists of two large blocks of apartments with ground-floor retail units; the development plan included a row of new traditional beach huts and will also incorporate a modernistic water park on the site of the old North Bay lido.

The £20m replacement for Leisure World, Bridlington, will be a high-quality modern structure with elements which reference the flowing curves of some Moderne design.

There are also many other examples of good modern smaller scale buildings, conversions and sympathetic restorations, characterised by the much improved environments of Pier Road, Whitby and Sandside, Scarborough, and the Beside The Seaside visitor centre, Bridlington, where a traditional brick façade with classical detailing was woven around the concrete frame of a former mid 20th-century electricity showroom.

These improvements have often been driven by the development of local authority Character Area Assessments and building design codes promoting best practice. The impact of this on Whitby is a good example of the beneficial influence this can have on the physical appearance of resorts as well as improved tourist footfall.

Plate 255 Beside The Seaside visitor centre, traditionally-styled refacing of mid 20th-century reinforced concrete building, 34–35 Queen Street, Bridlington

Plate 256 Henrietta Street, Whitby, restored late 18th-century cottages with more recent dwelllings in similar style beyond

The resorts *(Fig 14)*

North Yorkshire

Whitby

As an existing port and major shipbuilding centre, with a known spa, Whitby already had a number of facilities for travellers including the Angel Hotel, a substantial inn which became the town's posting house in 1795, with early 19th-century assembly rooms attached to the rear. Other long-established inns were located in the heart of the old town, with many grouped along or close to Church Street on the east bank and the Haggersgate area on the west bank, although the Angel benefited from its proximity to the new railway station when the first line opened. The hotel has recently been refurbished with attention give to the frontage, which was formerly the rear of the building, backing onto the river.

Plate 257 Refurbished late 18th-century Angel Hotel, next to traditionally styled modern flats, New Quay Street, Whitby

Plate 258 Mid 19th-century terraces of George Hudson's West Cliff development above Whitby harbour, including the Royal Hotel (corner, left)

The entrepreneurial early railway magnate, George Hudson, quickly realised the potential rewards of constructing accommodation for the large numbers of visitors his trains were beginning to bring into the town. In the 1840s Hudson bought a large vacant area of the West Cliff, where he planned construction of the five-storey neo-classical Royal Crescent, East Parade and other streets, including the imposing Royal Hotel, fronted by ornamental gardens.

The gridded streets extending towards St Hilda's Terrace were in stark contrast to the old town which had spread organically along the narrow river corridor below the West Cliff. Hudson's bankruptcy in 1849 left the Royal Crescent only half completed, but the remainder of the area to the west was developed in the following half century by other hands. The buildings were generally less ambitious, but still with three to four floors, and often with considerable attention given to decorative detailing.

Plate 259 The 19th-/20th-century Whitby Pavilion entertainment complex, West Cliff, Whitby

As well as places to stay, facilities in the town included a museum, subscription library and baths which opened in Pier Road as early as 1825, joined by the Pavilion Theatre on the West Cliff in the 1870s. The tourist trade assisted the rapid growth of the local jet jewellery industry in the mid 19th century and although the falling popularity of jet triggered a collapse in production in the early 1880s, there has been a small-scale but growing revival in the late 20th/early 21st centuries, supporting a number of shops and a jet museum.

Plate 260 Original stone seating and capstan, West Pier, Whitby with later additions including lamp standards and railings

The 18th- and 19th-century stone piers of the Lower Harbour and the promenade of Pier Road offered leisurely exercise, with extensions added to the East and West Piers immediately before the First World War, while a bandstand was built on the short Scotch Head in the mid 19th century. The West Pier already had shaped stone seating by the mid 19th century, although these may well

have been for the use of all harbour users, perhaps with the dual function of being used as bollards as well as storage areas for capstan bars. The late 19th or early 20th century saw the addition of lamp standards and post-and-rail fencing as access to the capstans presumably ceased to be required with the arrival of steam power.

The medieval confusion of the old town on both banks of the Esk provided an interesting diversion for earlier generations of tourists, much as it does today, with travellers able to admire its quaint, overcrowded and picturesquely decaying streets and ghauts (alleyways) safe in the knowledge that they would be able to retire to their comfortable lodgings on the West Cliff at night.

The late 20th-/early 21st-century harbour and river corridor still contains many amenities relating to the tourist industry including amusement arcades, which are mainly confined to the north end of Pier Road, public houses, cafés, restaurants, takeway food outlets and stalls, including a number of kiosks along Pier Road and at Coffee House End.

Many of the shops along Pier Road, Marine Parade and St Ann's Staith either sell souvenirs or leisure goods, while some house indoor 'wet weather' attractions. Recent restoration of properties such as the former town baths, library and museum, now the Quayside Hotel, have greatly improved the main Pier Road frontage, although some work remains to be done.

Plate 261 Scotch Head, modern bandstand replacing 19th-century original

At the north end of Pier Road, the Battery Parade has seen the recent incorporation of a 19th-century shelter with cast iron columns into a modern but traditionally styled restaurant and apartment development. Next to this is the less successful 1960s reuse of the ground floor of the mid 19th-century former coastguard station. The Parade also incorporates the twin observation towers of the 18th-century gun battery.

Plate 262 Battery Parade, Whitby, site of 18th-century gun battery, including original circular watchtowers, and incorporation of 19th-century shelter (left) and coastguard station (centre) into later cafés and apartments

Plate 263 Reuse of lifeboat station to create a museum, Pier Road, Whitby

Nearby, at the foot of Khyber Pass, the former West Cliff lifeboat house has been retained and is now a local RNLI museum. Stretching away from the river, Baxtergate, Flowergate and other streets also provide a wide range of facilities.

At the base of the West Cliff, a promenade extending from the area of the Pavilion complex is home to rows of traditional wooden changing huts for rental or hire, which are dismantled in winter. Demand for these is such that Scarborough Borough Council built additional huts in 2013.

Plate 264 Nos 10–14 Pier Road, Whitby, the buildings at either side of the altered central property have been maintained and sympathetically restored

Plate 265 Nos 1–9 Marine Parade, Whitby, general view of tourist businesses

On the east side, the Church Street, Sandgate and market areas contain many shops selling traditional and upmarket souvenirs, including fossils and jet, both traditional local offerings, and there is the longstanding Captain Cook Museum, Grape Lane. Alongside these are themed amenities and shops which have built on the Dracula connection, with the town attracting well-attended biannual out-of-season 'Goth' festivals in spring and autumn.

The restoration of many buildings, including those in the Church Street area and along Henrietta Street with its well-known traditional kipper smokehouse, have greatly improved the kerbside appeal of much of the East Cliff area. Another asset is the reinterpretation of the Abbey through the opening in 2002 of a new visitor centre within the shell of the derelict Cholmley House, home of the eponymous family from 1672–1743, and the restoration of the rare late 17th-century Stone Garden of the House itself.

The Upper Harbour contains a large number of modern moorings which have transformed the area into a linear marina, although fishing vessels and a commercial cargo wharf are also still accommodated. The town still offers charter fishing trips and a variety of pleasure sailings from vessels as various as a restored 1938 former Whitby lifeboat and a 40% size replica of James Cook's HMS Endeavour.

Smaller resorts between Whitby and Scarborough

Robin Hood's Bay is a popular tourist destination, and the trade has been accommodated without major alterations to the infrastructure and built environment. This is due in part to the steep and narrow access route from the cliff to the beach which has limited modern development in the historic core of the village, although the settlement has expanded away from the clifftop. The reconstruction of the coastguard station as a National Trust visitor centre has enhanced the 'offer' of the settlement, which also includes a museum. Robin Hood's Bay trades on its maritime history and smuggler connections as well as the outstanding rock foreshore with its important fossil sequences.

Plate 266 One of the few houses built at the failed early 20th-century Ravenscar development, Staintondale

At the south end of the bay, the Ravenscar Estate Company was formed in 1895 to take advantage of rising visitor numbers by establishing a planned village at Peak next to the late 18th-century Raven Hall, with a railway station being built some years previously and a brickworks opening at Peak alum quarry in 1900. This speculative development failed, however: part of the problem was the steepness of the cliff, which would almost certainly have depended on a funicular railway or lift to provide access for all but the fittest resident or visitor. Few of the building plots were sold and the company went into liquidation in 1913. Today,

apart from the small number of houses actually built and Raven Hall, now a hotel, only the remains of kerbed streets and drains show the extent of the proposed layout. The station has been dismantled.

Plate 267 Modern artwork decorating former Peak Station platform built for Ravenscar development, Staintondale the trackbed is now a popular footpath and cycleway

Plate 268 Platform of railway station built for short-lived resort at Hayburn Wyke

To the south of Ravenscar, the small late 19th-century development of Hayburn Wyke also appears to be linked to the opening of the coastal railway. A series of countryside walks were laid out in the area around the Hayburn Wyke Hotel, radiating out along the cliff top towards Cloughton Wyke to the south. A major attraction was a picturesque waterfall tumbling to the beach. The walks were created for Victorian visitors to the hotel allowing them to experience the countryside, sea views and access to the beach without having to negotiate undergrowth or forge their own paths.

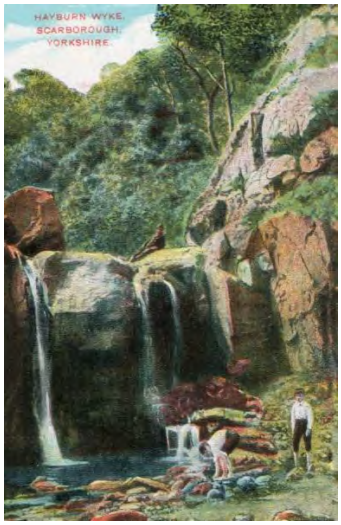


Plate 269 Early 20th-century coloured postcard, Hayburn Wyke

The recovery of numerous pieces of partly worked late 19th- early 20th-century jet pieces from a site near Little Cliff to the south of the Wyke may have come from a booth selling souvenir items. Further possible evidence can be seen where the public footpath that runs up from the beach at Hayburn Wyke follows a gentle, winding course with areas on both sides that appear to have features partially dug into the hillside which may represent the site of booths or grottos.

Further supporting evidence for the size and significance of this as a tourist destination can be seen in the large size of the hotel considering its remote location and the fact that it was built near a railway station which seems to have been built almost solely to serve the beauty spot: the 'resort' was advertised by typical interwar railway posters extolling the virtues of the htoel and its grounds.

'Tea Grounds' were also established in the late 19th century in the disused alum quarries at Saltwick Nab, including pavilions and viewpoints, which survived well into the 20th century. A building used as a tea house played a part in acting as an emergency hospital and providing hot drinks for survivors of the hospital ship *HMHS Rohilla*, which ran aground below the Nab in October 1914.

At Scalby Mills was a picturesque stream tumbling to the beach, reached from Scarborough by Scalby Mills Road. The owner of the Low Mill next to the beach seems to have already been a 'victualler' from at least 1823, and shortly afterwards a 'Tea Grounds' is listed there as well, with the mill being converted into a public house by 1854. The 1892–3 1:2500 Ordnance Survey shows the 'Scalby Mills Hotel & Tea Gardens'

which appear to have some landscaped paths and terraces, remaining in truncated form into the second half of the 20th century when a seawall promenade was built, connecting the area to Peasholm and the resort of Scarborough. Residential development had already begun to appear along Scalby Road after the First World War which eventually connected the area to the town, ending its separate existence.

Nearby on part of the late 19th-century Rifle Range site were the 1950s clifftop chalets and facilities of Colley's Camp, while a reclaimed area behind the 1960s extension of the seawall incorporated a tidal swimming pool and a later amusement arcade which had external attractions including an Astroglide. The former Low MIll is still open as The Old Scalby Mills while a Sea Life Centre replaced the amusements in the 1990s.

Scarborough

Like Whitby, the development of Scarborough beyond its existing modest boundaries had already begun some time before the arrival of the railways, encouraged by the rising popularity of sea bathing and the presence of a renowned spa, which attracted wealthy visitors. While Whitby had a better port and was a larger shipbuilding centre, it was Scarborough which was to develop into the largest holiday centre on the north-eastern coast and become the administrative centre for a large post-1974 local authority borough which included neighbouring Whitby and Filey within its orbit.

Early visitors would have been housed in lodgings and inns located within the existing town centre, but new buildings more appropriate to the town's status began to be built in the late 18th century, including Cliff End House. This was adjoined by the more imposing neo-classical stuccoed Cliff Bridge Terrace (c 1840) overlooking the wooded ravine of Ramsdale Valley, with further houses extending around the corner, now forming the St Nicholas Hotel and neighbouring properties on the south side of St Nicholas Cliff.

The next notable development came with the construction nearby of Belvoir Terrace and The Crescent by R.H. and S. Sharp of York between 1832–57, continuing the line of development along the top of Ramsdale Valley. They were fronted by the Crescent Gardens, which extended to the base of the ravine. Although the buildings were in a similar late Georgian neo-classical style to the Cliff Bridge Terrace, the use of sandstone gave them a more austere appearance; the choice of stone instead of cheaper stuccoed brick may have been influenced by other spa towns such as Harrogate, Buxton and Bath.

Plate 270 The Crescent (1832–57), Scarborough

Private villas were also built by the Sharps as part of these developments, including the Italianate Crescent House (1844–5; originally Crescent Villa, then Broxholme), which eventually became Scarborough Art Gallery, the neo-Grecian Sitwell family villa, Wood End (1835), later a Natural History Museum, the similar Londesborough Lodge (1839; originally Warwick Villa), and the stuccoed White House (1835; originally East Villa, later Belvoir House). Londesborough Lodge became the Medical Baths between 1925 and c 1970, before becoming a local history museum until 1981.

Nearby at the base of Ramsdale Valley was the purpose-built Rotunda Museum of 1828–9 and Museum Terrace (c 1830) opposite Grove Villa (later Park Lodge), a freestanding neo-classical stone house, both also designed by R.H. Sharp. The museum, which originally comprised just the central tower, was designed to have wings added, which was done to the original design in the 1860s. Sharp's plan for the area around the Rotunda had originally included an adjacent Bazaar and Saloon, although these were never built.

A series of paths descending from St Nicholas Cliff had for centuries formed the only access to the valley bottom, foreshore and the Spa area, but the fine cast iron Cliff Bridge was built across the end of the Ramsdale Valley in 1827, even before the Sharps' developments had begun, connecting St Nicholas Cliff and the main settlement to the South Cliff. One purpose was to improve access to the Spa itself by means of a long pathway, which survives, but the bridge also encouraged southward development along the clifftop. Vehicular access was initially possible although this was limited until the much larger Valley Bridge further up the ravine allowed a larger volume of traffic from 1865. The area below became the People's Park in 1860, renamed the Valley Gardens in 1912.

The paths descending the cliff around the Rotunda Museum and the northern bridge abutment were improved with steps and decorative wooden handrails added; both sides of the Ramsdale Valley were eventually lined by a series of attractive wooded walks with a pond close to the present Valley Bridge.

Plate 271 View across the former South Bay swimming pool (1914–15) to the 19th-/20th-century Spa complex, Valley Bridge (1827) and the Grand Hotel (1863–7), Scarborough

The massive bulk of the Grand Hotel was added to St Nicholas Cliff in 1863–7, replacing the cliffside 1842 neo-classical terrace and earlier vernacular buildings forming Wood's Lodgings, where Anne Bronte had died in 1849. Woods' Lodgings included a substantial neo-classical three-storey extension down the cliff, but this only survived round twenty years before being demolished in 1862, to be replaced by a similar arrangement when the Grand was built.

The steep paths and steps down to the foreshore were a challenge for more genteel or elderly visitors and the Central Tramway Cliff Lift (1881) was opened on the north side of the hotel, providing access to Foreshore Road, which had opened as recently as 1878. St Nicholas Gardens was laid out next to the lift in 1902, with paths and an ornamental terrace and shelter at the base of the cliff.

A much later cliff lift was added next to the Cliff Bridge and the existing paths and steps in 1929 to take passengers from the Grand Hotel/St Nicholas Cliff area to Foreshore Road near the underground People's Palace & Aquarium built below the bridge in 1875-8 (see below) and take some of the pressure off the popular Central Tramway.

Between the 1830s and 1850s the imposing neo-classical Esplanade began to extend along the South Cliff from the bridge, with stuccoed buildings continuing south before turning the corner into Prince of Wales Terrace alongside the Prince of Wales Gardens (opened as private gardens c 1860). The northern and earliest part of the development included the buildings now housing the Esplanade Hotel followed by a long section with the palace-fronted Crown Hotel (opened 1845) as its decorative centrepiece, Scarborough's first purpose-built hotel.

Plate 272 The Crown Terrace and Crown Hotel, the Esplanade, Scarborough

Subsequently, the Esplanade extended further south with further terraces and villas, stone-fronted with mansarded slate roofs as far as Holbeck Road, the relative conformity of late Regency neo-classical giving way to a broader repertoire of late Victorian and Edwardian styles. As in Whitby, the streets to the rear of the main development on the Esplanade were developed over the following half century, the houses generally having fewer floors, although still with considerable detailing, such as the 1850s stuccoed town houses lining Crown Crescent and Albion Road.

Further south, many of the later 19th-century/early 20th-century buildings were strongly influenced by the Arts & Crafts movement, red brick with half-timbered or pebble-dashed gables and sometimes tiled or rendered upper floors. This style was adopted in the area for inter-war detached and semi-detached housing and in a pastiche form for post-war buildings, including quite recent developments; the long axis of West Street/Holbeck Hill represents most of these styles. Although not directly on the seafront, many of the earlier houses were designed as lodgings, either as apartments or entire rentable houses complete with servants' quarters, kitchens and all the appurtenances of home. In the 20th century most became either bed & breakfast accommodation, private houses or flats.

Plate 273 The Italian Gardens (1912), part of the Valley Gardens (1910 onwards), Scarborough

Plate 274 King George V Coronation Memorial Clock Tower (1911), Esplanade Gardens, Scarborough

South Cliff Gardens were laid out along the cliff top in front of the Esplanade, with the Spa Gardens below, some areas initially being private gardens for residents only. The gardens more-or-less reached their present form in the years immediately before the First World War: the King George V Coronation Memorial Clock Tower (1911) stands on the Esplanade above the contemporary Valley Gardens (from 1910) and Italian Gardens (1912), although there were paths here before the gardens were developed. The southernmost section, Holbeck Gardens, was developed from c 1885, but reopened with a bowling green much later, in 1925. A cliff lift opened in 1875, Britain's oldest, providing access to the South Sands; a second lift nearby, opened in 1878, was closed in 1887 following a series of landslides and accidents in this notoriously unstable area which was to claim the Holbeck Hall Hotel in 1993.

At the base of the cliff behind a substantial seawall was the Spa complex, largely of the later 19th century with 20th-century additions. The area includes a group of smaller listed buildings comprising a café and rows of beach huts built in 1911–12, the neo-classical influenced bandstand, which replaced a more delicate and ornate 19th-centiury structure in 1913, and the flanking glazed curtain wall of the Sun Court which was built in 1954 in matching style, incorporating the bandstand. The Spa has seen considerable recent investment and improvements. Garden features including the Spa Stair survive from Sir Joseph Paxton's 1850s Spa layout.

Further south, a seawall and terrace supporting the South Bay swimming pool was built on the foreshore at the base of the gardens in 1914–15 and was filled naturally by seawater at high tide; the pool was rebuilt in the 1930s with Moderne features added to bring it up to date with the latest Lidos, including a rival site built at Peasholm in the North Bay. The pool was infilled in 2003 and the site has been landscaped to include lighting which forms the United Kingdom's largest star map at night time.

In the North Bay there were some parallel developments, with parts of North Marine Road and Castle Road built between the 1820s/1830s and 1850s, but most of the buildings in this area were added in the second half of the 19th century; Queen's Parade was built along the clifftop, fronted by large stuccoed houses and hotels such as the Norbreck, Delmont and Clifton, which provided a visual balance to those on the South Cliff; many of the houses facing the sea were built as lodgings with additional floors for guest bedrooms.

A 1000ft (305m) promenade pier was built at the foot of the cliff between 1866–9, reached by the sweeping curve of Albert Road which was cut down the cliff. The pier initially simply offered fresh air and exercise, although it included a shooting platform allowing keen sportsmen to aim at targets located at the foot of Castle cliff. In an effort to attract more fee-paying customers, the New Grand Pavilion was added at the end after 1889, together with a turreted entrance building offering refreshments. Unfortunately, like many of its kind, the pier was repeatedly damaged during its lifetime, and it was finally demolished in 1905, although the entrance building remained until 1914.

The Royal Albert Drive was completed in 1890 from Peasholm past the foot of the pier (stopping short of the pier's rifle range target area), allowing a circular carriage drive from Albert Road as well as improved access to the pier itself. It also protected the vulnerable north side of the Castle

headland from catastrophic rotational slippages and erosion (Aytoun 1891). The Marine Drive was constructed around the foot of the Castle cliffs between 1897 and 1907 to join the Royal Albert Drive with Gothic gatehouse styled toll houses at either end, of which only the southern survives. As part of this work, Sandside was rebuilt as a widened carriageway across the front of the harbour linking Foreshore Road to the completed Marine Drive. Both Sandside and Foreshore Road developed as a seafront promenade, lined by visitor attractions and facilities.

A tramway ran between the Spa to the harbour from 1904 but was never extended around the Marine Drive; the route was replaced by cheaper buses in 1931, including an open-top seafront service. The completed route opened in 1908, providing a continuous scenic driveway between the town and Peasholm where amusement parks and gardens have been located since the early 20th century with mixed fortunes.

Plate 275 Early 20th-century postcard of Peasholm Park, Scarborough

At Peasholm, oriental gardens were opened in 1912, including a large boating lake complete with a bandstand and an island with a pagoda reached by an oriental bridge; the gardens remain a major attraction and have recently been refurbished, still hosting large-scale model naval battles throughout the summer season. The nearby Alexandra Gardens was laid out from 1908, with a glazed Floral Hall (demolished 1989) added three years later as a conservatory, but later acting as a small theatre. This development was followed in the early 1930s by the creation of the Northstead Manor Gardens, which were completed in 1935 and included an Open Air Theatre (1932) with the stage and extensive backstage buildings located on an island in a large lake. The buildings were demolished in 1977 and the theatre site closed completely in the 1980s following a long period of decline. It has recently been rebuilt and was reopened by the Queen in 2010 as a major new attraction.

The Corner Café complex opened on the seafront at Peasholm in 1924–5, and for many years housed a model railway layout, but the building was demolished in 2007 to make way for The Sands development, consisting of two large modern blocks of apartments with ground-floor retail units. The development includes 160 new, traditionally styled beach huts. The late Moderne North Bay Lido north of Peasholm Park opened in 1938, eventually becoming the Atlantis water park but this finally closed in 2007 and has been partly cleared with the pools filled in. Some typical interwar features do remain, including late Art Deco entrances and a range of pavilions in front of the modern water slide.

On the cliff above the apartments, the clifftop Scarborough Zoo and Marineland which opened in 1969 was closed in 1984, to be replaced by Mr Marvel's Theme Park; this also closed in 1999 and the site has been demolished, although remains of the attractions are visible, including parts of a 1960s cable car system. On a neighbouring site was the Kinderland children's park, opened 1985, closed 2003. Further redevelopment of the Atlantis, Mr Marvel and Kinderland sites is, however, planned, as part of The Sands development, including a modernistic £16m water park, a hotel, leisure facilities, forest lodges and holiday homes.

The 20-inch gauge North Bay Railway between Peasholm and Scalby Mills opened in 1931 and has also been extensively refurbished, running four scale steam locomotives. A cliff lift built in the North Bay in 1930 closed in 1996 and has since been dismantled. More recent features include stone-fronted toilets and a Victorian style shelter built at the foot of the cliff. The raised floor of the shelter was presumably designed to allow a view over the top of a parapet which replaced the original cast-iron railings along the seafront when rock armour was added in front of the seawall c 2005.

From Peasholm a pedestrian promenade lined by traditional beach huts continues along the base of the cliff to Scalby Mills where there was a cluster of tourist attractions built following post-war sea defence improvements including a 1960s café, amusement arcade with a small funfair and a tidal paddling pool in Scalby Beck, as well as a public house and souvenir shop in the historic lower mill buildings. The cliff above Scalby Mills was formerly home to the post-war Colleys Holiday Camp, based on wooden army-style huts, replaced after a major fire by chalets, but the site was cleared in the 1970s and is now housing. The amusement complex was demolished and replaced in 1991 by the modern Sea Life Centre

which presents and conserves marine life; the pool has also been cleared due to repeated storm damage. The northern terminus of the miniature railway is still located here.

As well as the attractions described above, the many amusements and diversions provided for visitors included the vast and innovative underground People's Palace and Aquarium which was built under the People's Park, Ramsdale Valley in 1875–7. Above ground were several glazed pavilions; below, the Palace had an elaborate interior built in Indian style, with motifs influenced by Hindu temple architecture; as well as an aquarium boasting the largest water tank in the world, the site originally included a concert hall, reading room, dining room, fernery, and a highly topical replica Japanese theatre and houses. There was a nearby camera obscura.

These early attractions quickly lost their appeal and some were replaced subsequently by a monkey house, aviary, seal and alligator ponds. Later additions included a swimming pool (1893), theatre (1907) and skating rink (1909). An underground entertainment complex, Galaland remained here until closure in 1966 and demolition in 1968 to make way for the current underground car park.

A little further north on Foreshore Road, the Olympia Theatre was built in 1895, becoming a ballroom with a sprung timber floor in 1919; this closed in 1968 and was destroyed by fire in 1975, to be replaced by a modern indoor leisure complex of contemporary design.

Plate 276 The Futurist Theatre, Scarborough (1920) showing the 1960s panelling with the roof of the original neo-classical building visible above

Kiralfy's Arcadia was built in 1903, incorporating a mountain railway and Fairy River, with grottoes, separated from the Olympia by the St Nicholas Gardens, an outdoor attraction. The Arcadia was demolished in 1909 and rebuilt, housing Catlin's Pierrot troupe, before being replaced in 1920 by the Futurist Cinema in late Italianate neo-classical style, although the colonnaded faience frontage was hidden by unattractive panelling in the 1960s; the building has operated since 1957 as the Futurist Theatre, a reversal of the normal transition from theatre to cinema and/or bingo hall. In 2013, plans to demolish the theatre were approved as a part of a large redevelopment scheme. Next door to the rebuilt Arcadia was the Palladium Picture House, renamed the Arcadia Cinema when the 1909 building was demolished in 1920; this remained open until 1968 when the Futurist was expanded.

Other facilities were scattered through the town for the benefit of visitors and residents alike, including the 1908 (Royal) Opera House, located in St Thomas Street until demolition in 2004 and replacement by a casino. The opera house was built on the site of a wooden circus (1876) and a replacement brick theatre (1877). Other attractions now include the Woodend Art and Craft Gallery located in the Sitwells' former home, Wood End Villa, while the Rotunda Museum has been entirely refurbished and modernised.

Most of the buildings on the Foreshore Road and Sandside frontage were converted from the late 19th century onwards to provide shops, cafés, and from around the middle of the 20th century, amusement arcades, to add to the attractions of the Olympia, Futurist and other sites.

Plate 277 No 45 Sandside, Scarborough ('The Lancaster' public house) & late 20th-century amusement arcade

As in other resorts, many of these buildings became increasingly run down n the later 20th century, but in recent years there has been a significant attempt to improve the appearance and standard of maintenance, with some sympathetic restoration and conversion work.

Plate 278 Sympathetic restoration of former Bethel Mission Chapel, Sandside, Scarborough to create new restaurant

Plate 279 North Wharf, Scarborough, modern restaurant and Tourist Informtation Centre fronting Sandside behind a stack of more traditional lobster pots

Plate 280 The popular tourist attraction of Scarborough Castle behind the castellated Castle by the Sea Hotel

A permanent funfair and amusements, Luna Park, was established at the east end of the harbour in the post-war period, built on a platform extending over the foreshore between the East Pier and Vincent's Pier. More recent additions to the harbour area have included general refurbishment of street furniture and surfacing, the addition of sculptures and a new restaurant and Tourist Information Centre.

Finally, of course, the walls and keep of Scarborough Castle have long provided a premier regional attraction and continue to be a major draw with many events taking place throughout the year, including themed historical re-enactments and educational activities. The grounds include the preserved site of the Roman signal station.

Filey

Post-medieval Filey was a relatively small settlement clustered around Queen Street, the heart of the fishing community. The discovery of a mineral spring on the north side of the Brigg around the 1670s attracted fashionable early visitors, although it does not appear to have been developed until the 1820s. A disadvantage was its location: the Spa Well was part way down the upper slope of the cliff, reached by an oblique path, and was said to be difficult to find, although there were plans to pipe the water to a more convenient location where there would be an option to heat it (Cole 1828, 114–7). The 1892 Post Office Directory refers to a decline in visitors owing to disputed access; the well continued to be shown on 20th-century Ordnance Survey maps, but was eventually lost as the till cliff receded, although 'Filey Spa' still appears as a placename.

Visitors to the Spa would have stayed as boarders in ordinary houses until the early 19th century when Filey still only consisted of around 100 houses with a population of under 600. Several lodgings were probably located in the fine houses lining Church Street. The Foords Hotel opened in Queen Street as the first purpose-built hotel, taking guests from the Hull–Scarborough coach which started to call at Filey during this period; it does not appear in Baines' 1823 trade directory, but is thought to date from c 1815. Although of vernacular style, the Foords has a porch with Doric columns, an early sign of the pretensions Filey was to adopt within two decades.

In the 1830s, plans were drawn up by the West Riding businessman J.W. Unett to build 'New Filey' to the south of the existing core. Roads were laid out, including Murray Street, West Avenue, and The Crescent, to provide a

framework for new houses, hotels, boarding houses, shops, pubs and other buildings in a series of land purchases from the Hunmanby estate. The arrival of the railway from York to both Filey and Scarborough and southwards to Bridlington in 1846–7 meant that it was now possible to attract day-trippers from the industrial West Riding, although Filey remained relatively 'select'. The town developed rapidly with the 'New Filey' area expanding quickly, eventually joining 'Old Filey' at Hope Street.

Plate 281 The Crescent (1840 onwards), Filey

Elegant stuccoed neo-classical houses were built along The Crescent in front of the new development from 1840–1, the designer of the first houses (J. Barry) also involved with the contemporary development of The Crescent in Scarborough (Pevsner & Neave 1995, 418). The main part of The Crescent was developed until the 1850s, with the centrepiece being the Royal Crescent Hotel with its fine symmetrical façade, which opened in 1853. The houses in the southernmost block were added in the 1860s, with the southern half not added until 1890 in a complimentary style, all with canted bays characteristic of the second half of the century, but not of the earlier buildings. Several groups of houses were later converted into hotels, including the Hyland and the Victoria, both now apartments. Opposite the houses, formal gardens on the cliff continued down towards Foreshore Road in a series of paths and steps.

Among the mid 19th-century private houses close to the cliff north and south of The Crescent were North Cliff Villa (replaced by Northcliffe House in the 1890s), the South Cliff Villas (1833; converted to town council offices), Ravine Villa (1838), South Crescent Villa (c 1850; now the White Lodge Hotel) and the smaller classical Langford Villa (c 1840). Ravine Villa was demolished in the 1970s apart from some outbuildings; the grounds remain as the public Glen Gardens.

Plate 282 Outbuildings at Ravine Villa, Filey

A number of buildings were also constructed at the base of the cliff on what became Foreshore Road before substantial sea defences were built. These included the sandstone Downcliff House, now Downcliff Hotel, built for Unett in 1863 in a more-or-less vernacular style, used later as a rentable holiday home for the wealthy, and the imposing adjacent stuccoed Ackworth House, now a nursing home but built in the French Renaissance style as the Spa Saloon, also in 1863. This building resembles a French or Belgian spa with its mansard roof, baroque gables, prominent quoining and partly glazed verandah. The Saloon was used for public events, with surviving adverts from 1881 for a 'lime-light' diorama (magic lantern slide show) and a ventriloquist's act, but it also housed public baths and is listed as such in the 1892 Post Office Directory.

Some early sea defences were added between Crescent Hill and Cargate Hill in the mid 19th century, probably built of a mixture of dumped Brigg stone, timber or earth, but photographs and illustrations of the period show that these were not likely to be effective in the long term. The northern end of the town, where there were already hardstandings for fishing boats and boatyards along what is now the Coble Landing, seems to have been virtually unprotected. In 1889, a series of well-built timber revetments were constructed by estate owner Edward Martin along the base of the cliff between Church Ravine and Martin's Ravine.

Stone seawalls were finally constructed between 1893–4 to replace Martin's Barrier although the south end of the earlier work beyond Crescent Hill to Martin's Ravine remained in place into the 1950s. The new wall also extended beyond Church Ravine in the north, terminating in a long ramp to create the Coble Landing at the north end for storing fishing boats and gear, as well as

housing the new lifeboat station, formerly located at the foot of Cargate Hill. The seawall also allowed a new promenade, Foreshore Road, to be laid out to the rear, effectively completing the main framework of the tourist infrastructure and encouraging further buildings to add to the Spa Saloon (by now Ackworth House) and Downcliff House in the 1890s, including short terraces of tall lodging houses and a number of private dwellings.

Plate 283 Filey seafront extending south of Church Ravine

Plate 284 Post-war amusements, café and lifeboat house, Coble Landing, Filey

Tourist developments continued into the 20th century, although the town itself retained much of its character. The Coble Landing area maintains a small number of low-key visitor facilities which were mainly established in the second half of the 20th century, including an amusement arcade beach huts, food and retail kiosks, a cafeteria and the present modern lifeboat station. Roundabouts, vending kiosks, public conveniences, crazy golf and other facilities, including a paddling pool at Crescent Hill, are spread along the promenade as far as the Corner Café at the south end of the town.

In 1971, a museum showcasing the town's history was opened in two late 17th-century former fishermen's cottages in Queen Street.

Plate 285 Former fishermen's cottages (1696), now a Folk Museum, 8–10 Queen Street, Filey

Plate 286 Beach access from Crescent Hill and 20th-century paddling pool, Filey

A golf course was created in former fields north of the town in 1897, removing areas of former ridge-and-furrow. The area now includes a clifftop car park with visitor facilities. The course was moved south of the town in 1899 and extends along the cliff from Filey to Primrose Valley, where a holiday village near Fowthorpe Lodge has been expanded to comprise an extensive self-contained tourist centre.

Bordering this site on Hunmanby Moor was Butlin's Filey camp. With construction starting immediately before the war in late 1930s Moderne style, the site was transferred to the War Office at the outbreak of hostilities as an RAF training camp with the understanding that it would be returned to Butlin's ownership at the end of hostilities. Building works therefore continued, with the chalets being used as barracks, the theatre as a camp cinema, the lake as a parade

ground, and the dining halls as messes. The camp reverted to civilian use at the end of the war, divided into two for its first season in 1945, with demobilised servicemen holidaying on one side of the fence, and others still awaiting 'demob' on the other.

The site had its own railway line, and flourished until the changing holiday market brought a decline in trade in the 1970s, and despite the start of modernisation, this led to closure in 1984. A brief attempt to revive the site as Amtree Park failed, and the area has been cleared in recent years to make way for a new residential and leisure village, while the northern portion has been absorbed by an expansion of Primrose Valley.

East Riding of Yorkshire

Bridlington

At the core of the modern seaside resort is Bridlington Quay, a port and fishing settlement which grew around the mouth of the Gypsey Race, an intermittently-flowing chalk stream. Although a medieval settlement, Bridlington Quay was largely rebuilt from the 17th century onwards, with a number of substantial houses built for leading shipowners and merchants along Prince Street and King Street, as well as early residential and commercial developments; a short terrace of imposing houses, Cliff Terrace, was built next to the North Pier in the late 18th or early 19th century.

The town began to develop as a resort in the late 18th/early 19th century, with the first hotel, the George, opening next to the harbour in 1805, followed in 1811 by the discovery nearby of a tidal chalybeate spring and the opening of the Britannia Hotel (1812; destroyed by bombing 1940). The railway station was built in 1846, encouraging development between the station and Bridlington Quay, and northwards towards the old market centre, which lay some distance inland.

The nearby Brunswick opened as an early temperance hotel in 1846 in a late 18th century building, although the town already had a temperance hall, built in 1833; the Brunswick was subsequently licenced.

The construction of elements of the North Promenade from the 1860s onwards, including the (Royal) Prince's Parade (the Sea Wall Parade of 1866–7), Victoria Terrace, the Beaconsfield Wall and Alexandra Wall, followed finally by the Sewerby Sea Defence (North Marine Parade), allowed the expansion of settlement along Garrison Street which had previously stood over an unprotected cliff, including a series of hotels and boarding houses. The seafront promenades also effectively fixed the position of the seafront, creating a flat terrace for pleasure gardens, walks and new buildings.

Plate 287 Post-war conversion of houses to create amusements, Garrison Street, Bridlington

As Baine's Directory of 1823 makes clear, by that date thirteen hotels and a large number of lodging houses were being operated, the latter scattered in existing properties around Bridlington Quay; most claimed sea and land views, although this is unlikely given some of the locations. A larger number of lodgings are listed in White's Directory of 1840.

Plate 288 Late 19th-century Albion Terrace, Bridlington

The mid 19th-century growth in tourism and the construction of the North Promenade led to much new development north of the original core of the Quay and the harbour, including the 1840s Belle Vue Terrace on the west side of The Promenade, which despite its name was some distance inland parallel to the seafront. Imposing neo-classical terraces were built by local architect Joseph Earnshaw after the railway arrived between The

Promenade and Garrison Street on Cliff Street, including Marlborough Street and The Crescent (1869–71), and further north the Beaconsfield Estate (1878) in similar style, including Carlisle Terrace, Albion Terrace, Royal Crescent, Bright Crescent and the earliest of these developments, Sewerby Terrace on Alexandra Drive (1855–9).

Plate 289 Seafront shelter below Royal Crescent, refurbished South Promenade, Bridlington

South of the harbour, Windsor Terrace (Earnshaw, 1870s) and the eastern part of Pembroke Terrace (late 1880s) were built, but most of this area was developed in the 1890s. South of here, streets were laid out west of South Marine Drive c 1910 but were not in the main developed until after the First World War in a late version of pre-war Arts & Crafts Tudor/Stuart styling, showing elements which were to become familiar on suburban estates of the late 1920s/30s, but still mostly too early to show any sign of Moderne influences.

In 1892, Bulmer's Directory listed c 250 lodging house keepers at the Quay, many of them located in the new terraces, which are still popular as boarding houses, small hotels and apartments. Among the town's notable hotels from this period was the large and imposing Alexandra (built 1863–6, demolished 1975).

There were initially few indoor places of entertainment, the castellated Victoria Rooms (built 1848, destroyed by fire 1933) next to the North Pier and Cliff Terrace being a notable exception. Immediately south of the harbour, the New Spa was built on the site of earlier gravel pits in 1896, with the existing seawall extended to create the Spa Promenade, the start of the South Promenade, followed by the Princess Mary's Parade in 1928 with Belvedere Promenade being the final section of frontage built. The Spa was replaced twice before the present structure was hastily constructed in 1932; the complex closed for extensive renovation in 2005, reopening in 2008 as a much-improved facility, which retained much of its Art Deco styling.

Plate 290 Rebuilt Spa complex (1932), Bridlington

Near the Spa, the Ozone Hotel was built in 1898, rebuilt in streamlined Moderne styling to resemble an ocean liner in 1939 when it became the HQ of the Royal Yorkshire Yacht Club; T.E. Lawrence stayed at the Ozone in the mid 1930s during his time with the harbour's RAF marine craft unit. At the north end of the town on North Marine Drive, the balconied Expanse Hotel was built in 1937 in a version of the Moderne style, although it lacks the flowing lines of many other buildings of the period. Also in 1896, the People's Palace, later the Hippodrome was built in the middle of the ornamental gardens of the substantial mid 19th-century Rosendale villa north of the harbour. The building was gutted by bombing in 1940 and the cleared site remained as the Palace Car Park for many years, with the original entrance arches on Quay Road extant until 1996.

Plate 291 Rebuilt Floral Pavilion complex (1904 onwards), Bridlington

The glazed Floral Pavilion was constructed on the North Promenade in 1904 next to an existing

bandstand of c 1860, which was incorporated by an extension of the Pavilion c 1907; although extended again in the 1960s and the late 20th century, the building survives as a rare example of early Edwardian seaside architecture.

After the First World War, the fine late neo-classical Colisseum Theatre was built on the Promenade (1921–2; later the Winter Gardens Cinema, demolished 1991) followed by the contrasting Moderne Regal Cinema (1938; now Gala Bingo), which retains much of its internal and external detailing. Although built less than twenty years apart, the two buildings show how architectural styles and the choice of materials altered in the late 1920s/early 1930s.

The harbour area was, and remains, the central focus for the tourist industry. One of the earliest facilities was a fine late 19th-century shelter with cast iron columns near the South Pier, the roof forming a terrace. This has been maintained and restored for its original purpose and will presumably form part of the proposed redevelopment of the west end of the harbour.

Plate 292 19th-century harbour shelter, Bridlington

Behind the harbour and to the north are amusement arcades, cafés, shops, kiosks and other facilities located on Harbour Road, Garrison Street and Prince Street.

Extending either side of the harbour, the North and South Promenades have, however, been improved with new surfacing rebuilt pools, artworks and other facilities added in the late 1990s as far south as the Headland Café; this building with the surrounding landscape of new steps, railings and a jetty forms a very successful south end to Bridlington's seafront, evoking the 1930s. Alongside these are traditional outdoor fairgrounds which provide colour and movement.

Plate 293 21st-century remodelling, South Promenade, Bridlington

Plate 294 Modern outdoor amusements, North Promenade, Bridlington

Plate 295 Late 20th-century Leisure World building, Beaconsfield Promenade, Bridlington, closed for redevelopment in 2014

As a further part of the regeneration of the town the utilitarian Leisure World, which was was built next to the seafront in the 1980s, has closed for replacement by a new £20m complex which will

include three swimming pools and other amenities.

Plate 296 Fishermen's Steps, formerly used to collect tourists for boat rides, and modern kiosks replacing earlier wooden structures, Bridlington harbour

The harbour itself remains a working facility, with an important shellfish industry, but pleasure craft and tripboats remain. In the late 19th and mid 20th centuries, large numbers of fishing cobles operated sailing trips, from c 1900 principally from the Fishermen's Steps, a wooden platform which still exists in poor condition. Postcards of the period show how important this was as an addition to fishermen's income. Alongside the cobles at any one time the town maintained several larger steamers, the first, the Hull paddle tug *Frenchman*, arriving in 1899. These traditions have been maintained, with *Yorkshire Belle* now the sole steamer, while the place of the cobles has been taken, to a degree, by a small number of speedboats.

A new marina has been planned for many years, and a number of proposals have been made, mainly requiring the extension of the harbour to the south and involving some rearrangement of the interior. The purpose of the marina would be to assist the regeneration of the town, adding several hundred new berths and providing additional facilities, which may include a hotel.

New kiosks at the back of Crane Wharf belowan upper café terrace represent the latest in a line of small souvenir and snack booths extending back into the late 19th century. West of Ship Hill, the landscaped Garden Walk has replaced buildings relating to the harbour and Pool's former public baths and laundry demolished in the 1950s–60s. A new attracton above here is the Beside the Seaside visitor attraction, 34–35 Queen Street, a housed within a traditionally-styled refacing of a reinforced concrete mid 20th-century electricity showroom.

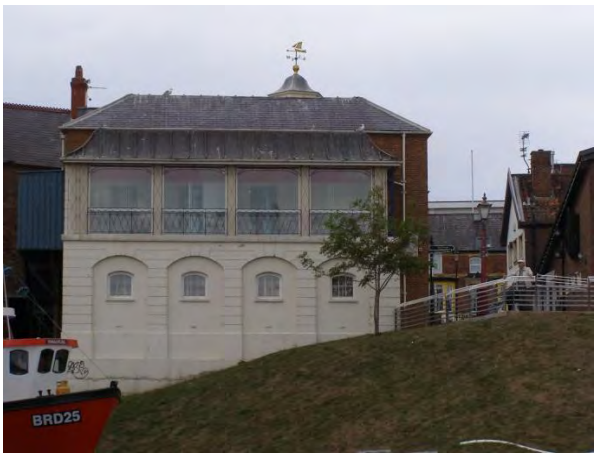


Plate 297 The rear elevation of the Beside the Seaside attraction overlooking the landscaped Garden Walk

Hornsea

Until the early 19th century, Hornsea was a small market town located some distance from the sea close to the eastern shore of Hornsea Mere, now the only surviving natural post-glacial lake in Holderness. The smaller coastal settlement of Hornsea Beck, located on the line of the outlet from the Mere to the sea, acted as a port for the town and also supported fishing, the two being connected by road. Hornsea Beck had a pier before 1558, and although there is no mention of it as a port after 1565, a pier is shown on Burleigh's navigation chart of c 1560, apparently lost by 1609.

Unfortunately, Hornsea Beck stood at the centre of one of the most rapidly eroding coastlines in Europe, and the lack of maintenance of the pier and perhaps adjoining waterfronts led to the rapid destruction of the village: thirty-eight houses were destroyed between 1547 and 1609 and in 1637, twenty were said to have gone 'within living memory'. By 1695 all but one or two houses had been washed away. A smaller settlement further south, Hornsea Burton, was also lost: in 1663 there were still c 8 houses, lying close to a small common or green, but in 1697 the hamlet was described as 'wasted by the sea'.

The loss of Hornsea Beck left the town isolated from the sea, although enclosure of the remaining open fields and commons in 1809 led to the straightening and rerouting of roads in the parish, including the creation of Sands Lane and Cliff Lane, extending the lines of Eastgate and Newbegin to the seafront. This encouraged some modest development to take advantage of the

growing popularity of sea bathing, assisted by the discovery of a spring credited with medicinal properties.

The Marine Hotel on the Promenade had already been built in 1837 before a rail connection from Hull arrived in 1864. With the town now in commuter distance of Hull, Hornsea became popular as a middle-class residential area; the area around the new station and between the old town and the sea rapidly began to fill with housing. The line was double-tracked in 1903 to increase capacity.

The town became popular as a middle-class holiday destination, although it never developed as a major tourist centre on the scale of Bridlington, which had the advantages of an existing harbour and a developed shoreline. Despite this, a 1072ft (327m) promenade pier was constructed between 1878–80, following an abortive start in 1871 and a rival plan for a 2454ft (75m) second pier with a tramway on a different site.

Both pier bills were passed by the House of Commons in 1877, but the company behind the more ambitious scheme was bankrupted before construction began. This was damaged by collision with a steamer the same year, destroying the end of the pier and reducing it to a length of 754ft (228m).

Plate 298 Modern marker for end of Trans Pennine Trail at the entrance to the former Hornsea Pier (1878–8)

Even after repairs the pier only re-opened occasionally, mainly on 'Regatta Days', and was finally demolished in 1897, although the small entrance building was converted into an amusements and remained until the 1920s. Today, the entrance site is marked by a large modern sculpture marking the start of the 215 mile Trans Pennine Trail between Southport and Hornsea.

In 1891 an area along the cliff edge north of the Marine Drive was laid out as a cliff walk, and in 1897, the land was converted into the Promenade Gardens to celebrate Queen Victoria's Diamond Jubilee, complete with seats, shelters, flowerbeds and a bandstand. Meanwhile, the largely unprotected shoreline continued erode rapidly: Hornsea's first permanent seawall and promenade finally opened in 1907 near the Marine Hotel.

The glazed Floral Hall opened in the summer of 1913 as the town's main indoor facility, with a café added later, while Hornsea Mere was opened to the public in 1885, allowing rowing and sailing.

Plate 299 Entrance to much-altered Floral Hall (1913 onwards), Hornsea

Plate 300 Interwar café and toilets, seafront promenade, Hornsea

Close to the seafront, the Hornsea Imperial Hydro (later Granville Court) opened in 1913 as a luxury

hotel, with sixty bedrooms and facilities including a theatre, a ballroom, Turkish baths and an indoor swimming pool. During the First World War the hotel was used by the Army and did not reopen to the public until 1936, when it was purchased by the Friendship Holiday Association. The hotel was commandeered again during the Second World War and although it reopened, the numbers of guests never made the establishment a financial success, not assisted by the closure of the railway line in 1964 and the contraction of the holiday industry. The former Hydro was converted into flats, being demolished after a fire in 1990.

Plate 301 Guesthouse and shop conversions, Marine Drive, Hornsea

Apart from the Floral Hall and the few main hotels, there was relatively little new smaller-scale private construction specifically aimed at the tourist market, with many facilities, including boarding houses, cafés and restaurants being located in converted houses; Hornsea still has a relatively undeveloped seafront compared with some other resorts.

In 1923–4, the sea wall and adjacent promenade were extended southwards from the Marine Hotel to the end of New Road, followed in 1930 by the construction of a sea wall and road which continued southwards to Hornsea Burton Road. This protected the low-lying land behind from flooding and further erosion, allowing later development, including the construction of a restaurant, amusement arcade, seafront shelter, kiosks, and a concrete boating lake.

The post-war opening of the renowned Hornsea Pottery created a new tourist attraction, with factory tours and a gift shop attracting visitors from a wide area, although this was a considerable distance from the seafront. The gifts business was expanded in 1995 and survived the closure of the pottery in 2000 as the Hornsea Freeport shopping village, which still contributes to the local tourist economy. A popular rural life museum opened in Newbegin in 1978.

As elsewhere, much of the architecture of the post-war period was not distinctive, and was mainly in the rectilinear, utilitarian style characteristic of the 1960s and 1970s, relieved only by bright signage.

Plate 302 Typical 1960s/1970s building housing amusement arcade, Hornsea

Despite a general decline in the home holiday market from the 1970s, there has been considerable recent investment in the seafront, including the construction of a leisure centre in 1995, the strengthening of the sea defences to the south and the improvement of the promenade with better facilities. As in other recently-improved coastal resorts, these include new vending and catering kiosks, modern beach huts, paving, seating, landscaped areas and a number of artworks, which combine to create a more contemporary environment.

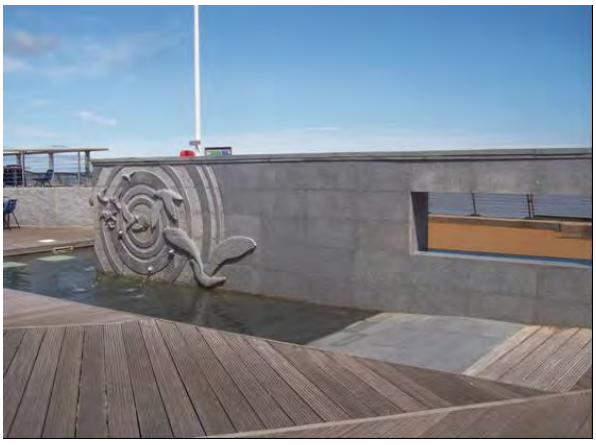


Plate 303 Modern artwork, Hornsea seafront

Plate 304 Modern beach huts, central promenade, Hornsea

Traditional activities remain, including boat hire on the Mere and entertainment in the Floral Hall, which has survived redevelopment and is now in the hands of a community group, although the original structure is now unrecognisable due to later alterations and additions.

Withernsea

Unlike Hornsea, medieval and post-medieval Withernsea was located on the eroding coastline, and by the early modern period much had already been lost to erosion and the former haven of Withernsea Mere had also silted up, although was still visible as an extensive hollow.

The single-track Hull–Withernsea line was built in 1854 and is shown on the First Edition Ordnance Survey at a period when redevelopment of the area was yet to happen: the landscape looks very empty, with much of the area between the station and the sea being built in the years following, although like Hornsea, it was destined to be filled with commuter housing rather than facilities for visitors. The imposing Queen's Hotel was built next to the station in 1853–4 to accommodate the expected better-off visitors to the resort, but in practice it never saw the level of trade required to maintain such a large building; the hotel was converted into a convalescent home and hospital in 1902 and the name transferred to another building. Like the neighbouring station, the fine building was finally demolished and replaced by a modern hospital in 1999, leaving just the stable block.

In 1870 the Withernsea Pier, Promenade, Gas and General Improvement Company was established to promote the development of the town as a seaside resort and a number of attractions were established in support of this, including pleasure gardens behind a new seawall promenade completed in 1875, sealing off the silted entrance to the old mere which became a sunken pleasure gardens. In 1875–7 a 1196ft (364m) pier was built with a saloon at the end; however the pier was badly damaged by collision with two vessels in the storms of 1880; the pier end and saloon were lost after a further collision in 1882. Further collisions in 1890 and 1893 reduced the remaining pier to c 300ft (91m) and finally 50ft (15m) before it was finally demolished in 1903 during the construction of a seawall. All that remains are the recently restored yellow brick original castellated towers of the prominent pier gateway, which was modelled on Conway Castle, although a scale model of the pier has been created nearby.

Plate 305 Entrance to former Withernsea Pier (1875–7) and pier model

The lighthouse was completed in 1894 and was itself a much-photographed attraction; the tower remains although the light was closed in 1976. By this time the town had developed most of the features expected of a late Victorian resort, with an ornate raised bandstand providing concerts, wandering pierrots, funfair and donkey rides. A Floral Hall was built close to the seafront in public memorial gardens, but burnt down during the Second World War; its main claim to fame is probably a pre-war concert which gave Winifred Holtby the idea for a scene from *South Riding*. After the war, the land was used for a succession of visitor attractions including a boating lake, funfair with ferris wheel, helter-skelter, rides and briefly a small zoo, but was landscaped as new gardens in the 1980s. The site of the Mere was developed in 1910 as Valley Gardens, with a bowling green and bandstand, while an open air swimming pool was built on the seafront at the end of Lee Avenue in 1911. Originally filled with seawater, by the 1960s–70s the pool was heated, with a paddling pool and café pavilion at one end and a kiosk at the other. The site is now a car park.

Plate 306 General view south along refurbished Withernsea promenade

Plate 307 Monument commemorating historical Holderness

The closure of the railway line in 1965 and the contraction of the holiday industry led to inevitable decline in the town, with facilities suffering from lack of investment and eventually closing. The town has largely lost most of the tourist infrastructure which was still apparent in the post-war period; the modern Pavilion leisure centre is some distance from the seafront near the former station. The long sandy beach and promenade remain Withernsea's greatest assets, but as in Hornsea and Bridlington, recent landscaping has improved the appearance of the seafront. A popular addition is the artwork, 'Pier Piece' representing a scale model of the pier in its original form.

Aldbrough

Aldbrough developed as a minor resort which began to attract visitors in the early 19th century. A beerhouse was established near the sea on Seaside Lane in 1832, probably next to the junction with the main coast road where there was also a coastguard station. This area has now been lost to erosion because of its proximity to the fastest eroding stretch of the coast, but the original location close to the beach meant that Aldbrough was able to encourage the development of sea bathing; this was established by 1836, with bathing machines provided by 1851. Trade was sufficiently good to allow the construction of the Talbot Hotel, which had been established by 1844 and appears on the 1855 1:10560 Ordnance Survey next to the Spa Inn, which was mentioned from 1846. By 1851 there were three boarding houses nearby and another located some distance away in the village itself. Although remote, the site was connected to Hull by an omnibus service, augmented by private hackney carriages. The remoteness of the site was its eventual undoing and the Talbot Hotel, by then known as Sea View, closed around 1915 as the First World War brought about a downturn in the holiday market.

By 1927, however, lengthy rows of small wooden chalets had been built along the cliff to the north and south along the old coast road, some residential, others built by by holidaymakers. An amusement hall and tea rooms were built while the surviving Spa Inn was refurbished as the Royal Hotel. By the 1950s coastal erosion was beginning to affect the area, particularly south of the Royal Hotel and many of the early chalets, which were little more than huts, were cleared and replaced by more permanent structures a little further inland, while others extended along Seaside Road towards the village. The hotel was also demolished and replaced by another built inland c 1930.

A caravan site was established in the 1970s and has been expanded, while the bungalows built next to the cliff have been demolished as erosion has increasingly affected Seaside Road. Nothing of the original resort now remains.

North-East Lincolnshire/Lincolnshire

Cleethorpes

Cleethorpes originated as three separate medieval fishing and agricultural settlements, Clee, Oole and Utterby, which came together in the 19th century as the population expanded rapidly. This growth was partly due to its proximity to its larger maritime and industrial neighbour, Great Grimsby, for which Cleethorpes provided new housing.

Although it still supported a substantial oyster fishery for a time, Cleethorpes developed as a holiday destination in the early 19th century, with a medicinal spa at Isaac's Hill. The Dolphin Hotel

had been built by 1798, and was possibly originally the Cleethorpes Inn referred to by the traveller John Byng in his *Torrington Diaries*, 1791. The Dolphin operated several bathing machines by 1828. The town was still described in Lewis's *A Topographical Dictionary of England* (1831 edn), as a fishing hamlet, popular for sea-bathing, but by his 1848 edition, it had become

> '...much resorted to as a bathing-place, for which it is highly eligible; the air is pure, the scenery good and besides a few lodging-houses and smaller inns, there is a large hotel, built some years since, on an eminence embracing extensive views of the sea, the Humber, and the Yorkshire coast. Many of the population are employed in the oyster-fisheries'.

This suggests a rapid change in the town's circumstances in the intervening years. By 1838 the Crown & Anchor had been built and was also operating bathing machines; the overall number in Cleethorpes had reached 40 by 1861, by which time the town also had two warm bath houses.

Plate 308 Former Cleethorpes Station (1863)

A branch line from Grimsby connected Grimsby Docks, New Clee and Cleethorpes in 1863, providing a route for holidaymakers from the industrial towns of the West Riding and North Midlands, although it never became a complete loop, which would have allowed trains from the south to arrive directly from Boston and Skegness.

The expansion of the line and the station capacity in the late 1880s/early 1890s fuelled a rapid increase in popularity; the Manchester, Sheffield & Lincolnshire Railway Company itself invested heavily in improvements, and constructed a 1200ft (365m) promenade pier in 1873 at a cost of £8000, with a pier end pavilion added in 1888. The pavilion burnt down in 1903 and was replaced by a new structure located closer to the shore. In 1940 a section of the pier was removed seaward of the pavilion to prevent its use by invaders, and the isolated section was demolished after the war to create the present 335ft (102m) pier.

Plate 309 Pavilion, Cleethorpes Pier (1873) and Pavilion (1903)

In addition to the pier, the resort benefited from novelty rides, including a late 19th-/early 20th-century bicycle railway and switchback railway, the short-lived Clee Park Gardens & Pleasure Grounds with its pavilion, opened by the future Edward VII in 1885, the Art Deco Olympia, originally a sports hall, later the Winter Gardens (1934, demolished 2007), with the seafront attractions connected by a promenade. In 2003, the 19th-century Cliff Hotel was demolished and replaced by a modern apartment complex, The Point, completed 2005.

Plate 310 Ross Castle (1885), Cleethorpes, built by the Manchester, Sheffield & Lincolnshire Railway Company as an added visitor attraction

A medieval-style folly, Ross Castle, was also built by the Railway Company in 1885 as a seafront attraction, forming part of the pier gardens and promenade improvements. The level of the top of

the castle marks the original height of the cliffs before the promenade was built.

Plate 311 General view south along Cleethorpes seafront

The town also gained a number of theatres and indoors entertainment facilities including the Theatre Royal (closed 1963 and demolished), the Alexandra Hall Theatre, later the Empire Theatre (c 1896, closed 1960 and converted into a bingo hall/amusements), and the glazed Café Dansant. Hotels included the late 18th-century Dolphin Hotel (still operating), while the Clee Park Hotel (1890, demolished 1990) was constructed on part of the Clee Park Gardens, which had been closed and built over only a few years after opening. A large part of the town centre dates from the Victorian expansion, including the late 19th-century No 41 Alexandra Road (Woodliffe Villa), now a house and restaurant, and the neighbouring Nos 42–45, a row of shops and houses in Arts & Crafts style, with cast or wrought iron balconies and arcades, facing the sea.

In the post-war period, a zoo was added to Cleethorpes' attractions, opening in 1966, but closing in 1974; the site is now the Pleasure Island amusement park which opened in 1993, offering a range of modern rides and other attractions. An indoor amusements, Wonderland, also opened, eventually becoming a covered market. This has also closed as a result of the recent recession and awaits redevelopment.

A major feature of the North Sea coast between Cleethorpes and Skegness is the enormous number of caravans contained in a series of large parks. In 1974 these were estimated to contain 21000 units, 8% of the national total, and this is likely to have increased considerably since (Brodie & Winter 2007, 61). Although this stretch of coastline cannot be described as particularly attractive, the visual and potential environmental impacts of such large developments are tangible. Severe storm damage to the area in the winter of 2013/14 has cast some doubt over the long-term viability of such developments unless there is very considerable investment in improved sea defences.

Saltfleet

The nascent tourist industry in Lincolnshire included the small coastal settlement of Saltfleet, which had been a saltmaking centre, fishing station and port since the medieval period. An early hotel, the Grade II listed New Inn was established as early as 1673, and this expanded with the addition of a new wing in the middle of the 18th century. The hotel catered for sea bathing as well as passing trade.

Plate 312 18th-century New Inn, Saltfleet

The potential of Saltfleet was unfortunately limited as the silting of the Haven led to economic decline in favour of larger harbours, exacerbated by the opening of the Louth Canal:. The growth of saltmarsh and later reclamation left the site some distance from the sea in the 19th century and Saltfleet never developed further as a resort ceasing to be a market town in 1791.

In recent years Saltfleet has suffered further from recession, with many shops reported as closed in 2013. The present settlement depends largely on the proximity of several caravan parks to provide seasonal income. Also nearby are the Donna Nook and Saltfleetby–Theddlthorpe National Nature Reserves which attract some visitors.

Mablethorpe and Sutton-on-Sea

Mablethorpe and Sutton-on-Sea probably both started as sites promoting seawater bathing, with the late 18th-century Book in Hand Hotel (later the Mablethorpe Hotel, now rebuilt and housing an amusement arcade) and the Jolly Bacchus Hotel,

originating as a late 17th-century coaching inn, both providing facilities.

Plate 313 The rebuilt Book in Hand, Mablethorpe

The later development of Mablethorpe and Sutton-on-Sea was greatly assisted by the construction of a short-lived narrow gauge tramway from Alford to Sutton (1884–9) and standard gauge lines from Louth (1877) and Willoughby (1888) which provided through trains to join the East Lincolnshire Railway between Boston and Grimsby until closure in 1970.

Both towns retain obvious trappings of modern tourism such as amusement arcades, restaurants and takeaways. Three highly unusual holiday homes were built in Furlongs Road, Sutton in 1901 using panels from dismantled Great Eastern Railway carriages, Marsoville, Lindum and Wavelands.

Plate 314 Wavelands behind Lindum, Mablethorpe, built from former railway carriages

Plate 315 Concrete and asbestos beach huts, Mablethorpe

In addition there are a number of beach huts; these simple vernacular buildings once played an important role in the development of the resorts, reolacing the wheeled bathing machines of the 18th and 19th centuries. One unusual row of fifteen huts appears to have been built from prefabricated sections of reinforced concrete with concave moulded asbestos sheet roofs, upswept at the eaves.

Skegness and Ingoldmells

Skegness was an early resort, beginning to develop at the end of the 18th century with the construction of the Skegness Hotel in 1770, and renamed the Vine Hotel in 1784, although the present building includes later wings. The slightly later New Hotel (later Hildreds Hotel), was demolished in the late 20th century, despite being Grade II listed, although the original building had been rebuilt in 1897. The town's growth was facilitated from 1873 by the arrival of the Wainfleet & Firsby Railway, connected to the East Lincolnshire Railway (1847–9) from Boston to Louth and Grimsby.

Other attractions in Skegness included the Pleasure Gardens (now the Tower Gardens) which opened in 1878, a miniature railway, opened in 1923, but relocated and rebuilt twice, the last version closing in 1993, and the Embassy Swimming Pool, an outdoor lido which opened in 1928 as part of the promenade development and was replaced by modern indoor/outdoor facilities in the 1980s. The Tower Gardens included a pavilion and matching bandstand which still exist, although the pavilion, latterly a public house, has been empty since 2007 and was under threat of demolition in January 2014. The style of the pavilion resembled contemporary railway stations, with its slate roof and decorative canopies supported by cast iron columns.

Another tourist landmark is the octagonal 1898 brick clock tower, built near the seafront in Lumley Road to commemorate Queen Victoria's Diamond Jubilee.

Plate 316 Skegness Clock Tower (1898), built to commemorate Queen Victoria's Diamond Jubilee

Skegness pier was opened in 1881 and was originally 1843ft (562m) long with a concert hall at the pier end; like most British piers it had a chequered history, being damaged by a drifting vessel in 1891 and partly dismantled as part of the 1940 anti-invasion strategy. Storm damage in 1953 and 1978 led to the main part of the pier being separated from the landward section. The isolated end, which included the concert hall/theatre, was dismantled in 1985–6, although even this process was interrupted by a fire. The remaining 387ft (118m) section has been restored to form a simple promenade pier.

Plate 317 Skegness Pier (1881), much shortened from the original structure

Early in the history of mass tourism, Skegness was already being marketed using its 1908 Jolly Fisherman logo and the slogan 'Skegness is *so* bracing!', which cleverly made an asset of the area's exposed location; the logo still forms an important part of the town's tourist promotion, with a statue placed in the station to welcome visitors and another close to the seafront.

Plate 318 20th-century medieval style fortifications and Astroglide' slide, Skegness

Perhaps the most influential leisure site on the coast, certainly in the inter-war and immediate post-war periods was Butlin's holiday camp, now Butlin's Resort, Skegness, constructed in 1935–6 at Ingoldmells. The site is still in operation, although much modernised: an original restored chalet (Grade II listed) remains on the site as a separate attraction, but everything else has been replaced. This innovative site brought immediate and lasting recognition to the town.

Among other town assets, the Ship Hotel (1935), Castleton Boulevard, is a good example of the Moderne style, in concrete around a steel frame.

Plate 319 Moderne Ship Hotel (1935), Skegness, replacing an earlier building

Close to Butlin's, Skegness Water Leisure Park opened in 1990, which houses the Lincolnshire Coast Light Railway; this started operating in 2009 using track, historic engines and rolling stock transferred from Humberston in the 1990s, where it had been located between 1960–85, transferring holidaymakers from Humberston station to the beach and the Fitties Holiday Camp. The railway site has a small museum housing First World War trench railway rolling stock, but much of the existing .

A modern pleasure park, Fantasy Island, opened at Ingoldmells in 1995, but a recent decline in visitor numbers has not been assisted by three separate fires along the Skegness seafront between 2007–8 which destroyed a number of bars, a nightclub, amusement arcade, and food outlets. The largest of the sites lost included the late 19th-century Parade Hotel and Callow Park House hotel, together with an integral row of houses, Frederica Terrace, all built in 1879 as part of the earliest development of the seafront. Some rebuilding had begun in 2013 as part of a much-needed regeneration scheme.

Freiston Shore

At Freiston Shore on the northern bank of the Wash, the construction of several late 18th-/early 19th-century buildings, including the Marine Hotel (originally The Anchor), the Plummers Hotel (originally the Coach House) and a nearbly bathing house, represent a speculative attempt to create a small coastal resort for sea bathing. Both premises had stabling for a total of 46 horses by the middle of the 19th century, with space for coaches.

Plate 320 Late 18th-century Plummers Hotel, Freiston Shore, Freiston

A regular omnibus connected the resort to Boston, which was connected to the growing rail network.

The early date places the site in the same period as the Vine Hotel and Hildreds Hotel, Skegness.

Horse racing on the beach had been introduced there by the mid 19th century, operating at least four times a year, but generally attracting the local lower middle classes and tradesmen rather than the hoped-for weathier echelons of society. By this time the area was beginning to suffer as a result of saltmarsh growth as silt accumulation continued between the resort and the sea and the resort ceased to be much visited in favour of much larger sites on the east coast, connected directly to the railway.

Plate 321 Remains of late 18th-/early 19th-century Marine Hotel, Freiston Shore

Of the original facilities, only Plummers Hotel remains in use, the Marine Hotel having been abandoned and the bathing house demolished, while reclamation has enclosed the saltmarsh in front, leaving the former resort further from the sea.

The reclamation process has been partly reversed by controlled breaching of the 20th-century seabank locally in 1999–2000 as part of a flood prevention scheme to protect Boston. This allowed the creation of an RSPB wetland reserve nearby in 2002, which now attracts visitors to the area. Another reserve had already been created at Frampton Marsh in 1984, with addtional wetlands added in 2005–6. Otherwise, the northern and western coastlines of the Wash have remained largely undeveloped with regards to tourism, possibly because of their generally remote location; the main areas of development have been concentrated on the more visited Norfolk coastline around Hunstanton, Heacham and Snettisham.

ACKNOWLEDGEMENTS

This overview was commissioned and carried out on behalf of the English Heritage. The general background and much of the original monument information was derived from the results of previous desk-based assessments undertaken for English Heritage, which were the work of many hands.

The main report was written and edited by Trevor Brigham, who also undertook additional research. The figures were produced by Doug Jobling and David Atkinson.

Thanks are extended to these individuals and to the staffs of the various record offices for their assistance.

SELECT BIBLIOGRAPHY

Allison, K.J., 1970 *East Riding Water–Mills*, E.Y. Local Hist Series 26, East Riding Local Hist Soc

Ambler, R.W., 1990 *The Historical Development of Grimsby*, in Ellis & Crowther (eds), 227–49

Bacilieri, C., Knight, D., & Radford, S, 2008 *North East Coast Rapid Coastal Zone Assessment Survey. Air Survey Mapping Report*, Archaeol Research Services Ltd

Barker, R., 2007 *Whitby, North Yorkshire. An Extraordinary Town*, Blackthorn Press, Pickering

Barnwell, P.S., Butler, L.A.S., & Dunn, C.J., 2003 'The confusion of Straeanaeshalch, Strensall and Whitby and the Northumbrian Church, in Carver, M.O.H. (ed), *The Cross Goes North: The Process of Conversion in Northern Europe AD 300–1300*, York Med Press, Woodbridge, 311–26

Bradley, T., 1889 (1988 edn) *The Old Coaching Days in Yorkshire*, Smith Settle, Otley

Brigham, T., 1990 'The Late Roman Waterfront in London,' Britannia 21, 158–9

Brigham, T., 2009 *Updated Project Design for a Rapid Coastal Zone Assessment Survey of the Yorkshire and Lincolnshire Coast English Heritage Project 3729, Phase 2* (version 3)

Brigham, T., 2011 *Burlington Parade Redevelopment, Bridlington, East Riding of Yorkshire, Assessment of Archaeological Potential*, Humber Archaeol Rep 382

Brigham, T., 2012 *Updated Project Design for a Rapid Coastal Zone Assessment Survey of the Yorkshire and Lincolnshire Coast English Heritage Project 3729, Phase 3* (version 4)

Brigham, T., Buglass, J., & George, R., 2008 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Bempton to Donna Nook, English Heritage Project 3729*, Humber Archaeol Rep 235

Brigham, T., & Jobling, D., 2011a *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Bempton to Donna Nook, English Heritage Project 3729, Phase 2*, Humber Archaeol Rep 324

Brigham, T., & Jobling, D., 2011b *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Donna Nook to Gibraltar Point, English Heritage Project 3729, Phase 2*, Humber Archaeol Rep 325

Brigham, T., Buglass, J., & Jobling, D., 2013 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Field Survey, Selected First and Second World War Monuments, North Yorkshire, East Riding of Yorkshire, Lincolnshire, Phase 3*, Humber Archaeol Rep 415

Brigham, T., & Fraser, J., 2013 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Site Survey and Historical Summary, Flamborough Medieval Harbour, Flamborough, East Riding of Yorkshire, Phase 3*, Humber Archaeol Rep 416

Brigham, T., & Jobling, D., 2013a *Grimsby Docks, Flood Risk Management Scheme, Grimsby, North-East Lincolnshire, Assessment of Archaeological Potential*, Humber Archaeol Rep 412

Brigham, T., & Jobling, D., 2013b *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Historical Audit, Bridlington Harbour, Bridlington, East Riding of Yorkshire, Phase 3*, Humber Archaeol Rep 417

Brigham, T., & Jobling, D., 2013c *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Site Investigation and Assessment, Selected Palaeoenvironmental and Archaeological Sites, East Riding of Yorkshire, North-East Lincolnshire, Phase 3*, Humber Archaeol Rep 421

Brodie, A., & Winter, G., 2007 *England's Seaside Resorts*, English Heritage

Brunskill, R.W., 1990 *Brick Building in Britain*, Gollancz, London

Buglass, J., 1997a *Report on Five Intertidal Wrecks at Sutton-on-Sea and Mablethorpe,*

Lincolnshire, report for Lincolnshire County Council

Buglass, J., 1997b *The Remains of Six Sailing Ships and Other Archaeological Features in the Intertidal Zone between Sutton-on-Sea and Mablethorpe, Lincolnshire*, report for Lincolnshire County Council

Buglass, J., 1999 *Ships' Timbers from Church Street Car Park, Whitby, North Yorkshire (CSW98)*, Humber Archaeol Rep 42

Buglass, J., 2005 *The Archaeological and Historical Background to Filey Bay and its Environs. Filey, North Yorkshire*, unpublshed report for Filey Town Council

Buglass, J., & Bradley, J., 2006 *Archaeological Excavations on land at Immingham Combined Heat and Power Plant Killingholme, North Lincolnshire Phases 1 and 2*, Humber Archaeol Rep 80

Buglass, J., & Brigham, T., 2007 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Gibraltar Point to Sutton Bridge, English Heritage Project 3729*, Humber Archaeol Rep 237

Buglass, J., & Brigham, T., 2008a *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Donna Nook to Gibraltar Point*, Humber Archaeol Rep 236

Buglass, J., & Brigham, T., 2008b *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Whitby to Reighton, English Heritage Project 3729*, Humber Archaeol Rep 238

Buglass, J., & Brigham, T., 2011 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Whitby to Reighton, English Heritage Project 3729, Phase 2*, Humber Archaeol Rep 327

Buglass, J., & Brigham, T., 2012 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Field Survey and Historical Assessment, Cayton Cliff Mill and Filey Brigg, North Yorkshire, Phase 3*, Humber Archaeol Rep 420

Buglass, J., & Brigham, T., 2013a *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Historical Audit, Scarborough Harbour, Scarborough, North Yorkshire, Phase 3*, Humber Archaeol Rep 418

Buglass, J., & Brigham, T., 2013b *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire, Historical Audit, Whitby Harbour, Whitby, North Yorkshire, Phase 3*, Humber Archaeol Rep 419

Butlin, R.A. (ed), 2003 *Historical Atlas of North Yorkshire*, Westbury Publishing, Otley

Cole, A., 2011 'Place-Names as Travellers' Landmarks', 51–68, in Higham, N.J., & Ryan, M.J (eds), *Place-Names, Language and the Anglo-Saxon Landscape*, Boydell Press, Woodbridge

Cole, J., 1828 *The History and Antiquities of Filey, in the County of York*, privately published, Scarborough

Coles, B.J., 1998 'Doggerland: a speculative survey', *Proc Prehist Soc* 64, 45–81

Cox, T., Hall, A., & Morden, R., 1738 *Magna Britannia, Antiqua et Nova, Vol 6: Westmorland–Yorkshire*, London

Crebbin-Bailey, J., Harcup, Dr J., & Harrington, J., 2005 *The Spa Book. The official guide to spa therapy*, Hairdressing & Beauty Industry Authority

David Tyldesley & Associates, 1983 *The Rollback of Caravan and Holiday Home Parks from the Eroding East Yorkshire Coastline. Final Report*, DTA Rep 1455 for East Riding of Yorkshire Council

Defoe, D., 1927 edn *A tour thro' the whole island of Great Britain, divided into circuits or journies Letter 1 part 3: Norfolk and Cambridgeshire, 1727*, J.M. Dent & Co, London

Eaton, D., 2005 *The Settlement of North Filey*, Filey Bay Initiative, http://www.fileybay.com/buckhouse/buckindex.html, last accessed 25/3/2013

Ellis, S., & Crowther, D.R. (eds), 1990 *Humber Perspectives: a region through the ages*, Hull University Press, Hull

Faull, M.L., & Stinson, M., 1986 *Domesday Book. Yorkshire (Part One)*, Chichester

Faull, M.L., & Stinson, M., 1986 *Domesday Book. Yorkshire (Part Two)*, Chichester

Golding, F., 2001 *Building in Context: New development in historic areas*, English Heritage & CABE

Gardiner, M., & Mehler, N., 2007 'English and Hanseatic Trading and Fishing Sites in Medieval Iceland: Report on Initial Fieldwork', *Germania* 85, 385–427

Gerrish, M., 1993 'Following the fish to Grimsby', *Local Population Studies* 50, 39–50

Grady, D., 1998 'Medieval and Post-Medieval Salt Extraction in North East Lincolnshire', in Bewley, R., (ed), *Lincolnshire's Archaeology from the Air*, Soc Lincs Hist & Archaeol, 81–95

Griffiths, B., 2008 *Fishing and Folk: Life and Dialect on the North Sea Coast*, Northumbria University Press

Hallam, H.E., 1965 *Settlement and Society: A Study of the Early Agrarian History of South Lincolnshire*, Cambridge Studies in Economic History, Cambridge University Press, Cambridge

Hinderwell, T., 1832 (3rd edn) *The History and Antiquities of Scarborough, With a Brief Memoir of the Author*, J. Bye, Scarborough

Jackson, G., 1983 *The History and Archaeology of Ports*, World's Work Ltd. Tadworth

Jelgersma, S., 1979 'Sea-level changes in the North Sea basin', in Oele, E., Schuttenhelm, R.T.E., & Wiggers, A.J. (eds), *The Quaternary History of the North Sea*, Acta Universitatis Upsaliensis: Symposium Universitatis Upsaliensis Annum Quingentesimum Celebrantis 2, 233–48

Jobling, D., & Brigham, T., 2011 *Rapid Coastal Zone Assessment, Yorkshire and Lincolnshire: Gibraltar Point to Sutton Bridge, English Heritage Project 3729, Phase 2*, Humber Archaeol Rep 326

Johnson, M., 1998 'The medieval and post-medieval port of Filey', *YAJ* 70, 73–84

Jones, S., 2006 'The coastal exposures of Boulder Clay and erratics in Holderness', *Humberside Geologist* 14, 113–21

Jones, S.K., 1982 *A Maritime History of the Port of Whitby 1700–1914*, doctoral thesis, University College London

Knowles, G.C., 1990 'The Humber and its People during the Medieval Period', in Ellis & Crowther (eds), 357–72

Lewis, S. (ed), 1831 *A Topographical Dictionary of England*, Lewis & Co, London

Lewis, S. (ed), 1848 *A Topographical Dictionary of England*, Lewis & Co, London

Marcus, G.J., 1980 *The Conquest of the North Atlantic*, Boydell, Woodbridge

Mathison, P, 2008 *The Spurn Gravel Trade: A Conflict between Commerce and Coastal Erosion?*, Dead Good Publications, Newport

Maybury, T., 2011, *A Century of Change on the Lindsey Marshland Marshchapel 1540–1640*, PhD Thesis University of Hull

McAvoy, F., 1994 'Marine Salt Extraction: the Excavation of Salterns at Wainfleet St Mary, Lincolnshire', *Med Archaeol* 38, 134–63

McKee, E. (ed), 1978 *The English Coble, a monograph based on the journals of the late H. Oliver Hill*, Maritime,Monographs & Reports 30, National Maritime Museum, London

Membery, S., 2000 *An archaeological resource assessment of the Palaeolithic and Mesolithic periods in Lincolnshire*, East Midlands Archaeological Research Frameworks

Miller, I. (ed), 2002 *Steeped in History. The Alum Industry of North-East Yorkshire*, North York Moors National Park Authority

Mills, A.D., 1998 *Dictionary of English Place-names*, Oxford University Press, Oxford.

Mott, L.V. 1997 *The Development of the Rudder: A Technological Tale*, Chatham Publishing., London

Nielsen, B.G., 2010 *Converted clinker vessels from the 16th – 17th century: A case study of the Ostsee Bereich IV, Fischland, FPL 77*, Maritime Archaeology Programme, University of Southern Denmark

Norfolk, R.W.S., 1965 *Militia, Yeomanry and Volunteer Forces of the East Riding 1689–1908*, E.Y. Local Hist Series 19, East Yorks Local Hist Soc

Oldfield, E., 1829 *A Topographical Account of Wainfleet and the Wapentake of Candleshoe in the County of Lincoln*, Noble, Boston

Osborne, M., 2008 *Pillboxes of Britain and Ireland*, Tempus, Stroud

Owen, A., & Coates, R., 2004 'Traiectus/Tric/Skegness: a Domesday name explained', *Lincs Hist & Archaeol* 38, 42–4

Papworth, J.B., 1813 *Poetical Sketches of Scarborough*, Ackerman, London

Pawley, S., 1984 *Lincolnshire Coastal Villages and The Sea c. 1300 – c. 1600: Economy and Society*, unpub PhD Thesis, University of Leicester

Pearson, T., 2005 *The Archaeology of Medieval Scarborough, Excavation and Research 1987–2004*, Scarborough Archaeological and Historical Society, Res Rep 12. Scarborough

Pevsner, N., & Neave, D., 1995 *The Buildings of England. Yorkshire: York and the East Riding (2nd edn)*, Penguin, Frome & London

Powell, J., 2012 *Strategic Stone Study. A Building Stone Atlas of North Yorkshire East and York*, British Geological Survey report for English Heritage

Robinson, R., 1987 *A History of the Yorkshire Coast Fishing Industry 1780–1914*, Hull University Press, Hull

Smith, T.P., 2001 'Bricks, Tiles and Ballast: a sceptical view', *British Brick Society Information* 85, 5–9

Starkey, D.J., Reid, C., & Ashcroft, N., (eds), 2000 *England's Sea Fisheries, The Commercial Sea Fisheries of England and Wales since 1300*, Chatham, London

Strang, A., 1997 'Explaining Ptolemy's Roman Britain', *Britannia* 28, 1–30

David Tyldesley & Associates, 2003 *The rollback of caravan and holiday home parks from the eroding East Yorkshire coastline*, DTA Rep 1455 for East Riding of Yorkshire Council

van Osta, W, 1996 'Drecht en drecht-namen', *Naamkunde* 28: 1–2, Peeters, Leuven, 51–77

Vickers, N., 1987 The Structure of the Whitby Jet Industry in 1871, http://www.localpopulationstudies.org.uk/PDF/LPS38/LPS38_1987_8-17.pdf

Went, D., 2011 *Introduction to Heritage Assets: Pre-Industrial Salterns*, English Heritage

Whitfield, M., 2009 *Grimsby Fish Docks: an Assessment of Character and Significance*, English Heritage

Wise, P.J., 1990 'The Archaeology of the Grimsby-Cleethorpes Area', in Ellis & Crowther (eds), 213–26

Wright, N.R., 2000 *An Archaeological Resource Assessment of Modern Lincolnshire 1750-1960*, draft East Midlands Archaeological Research Framework

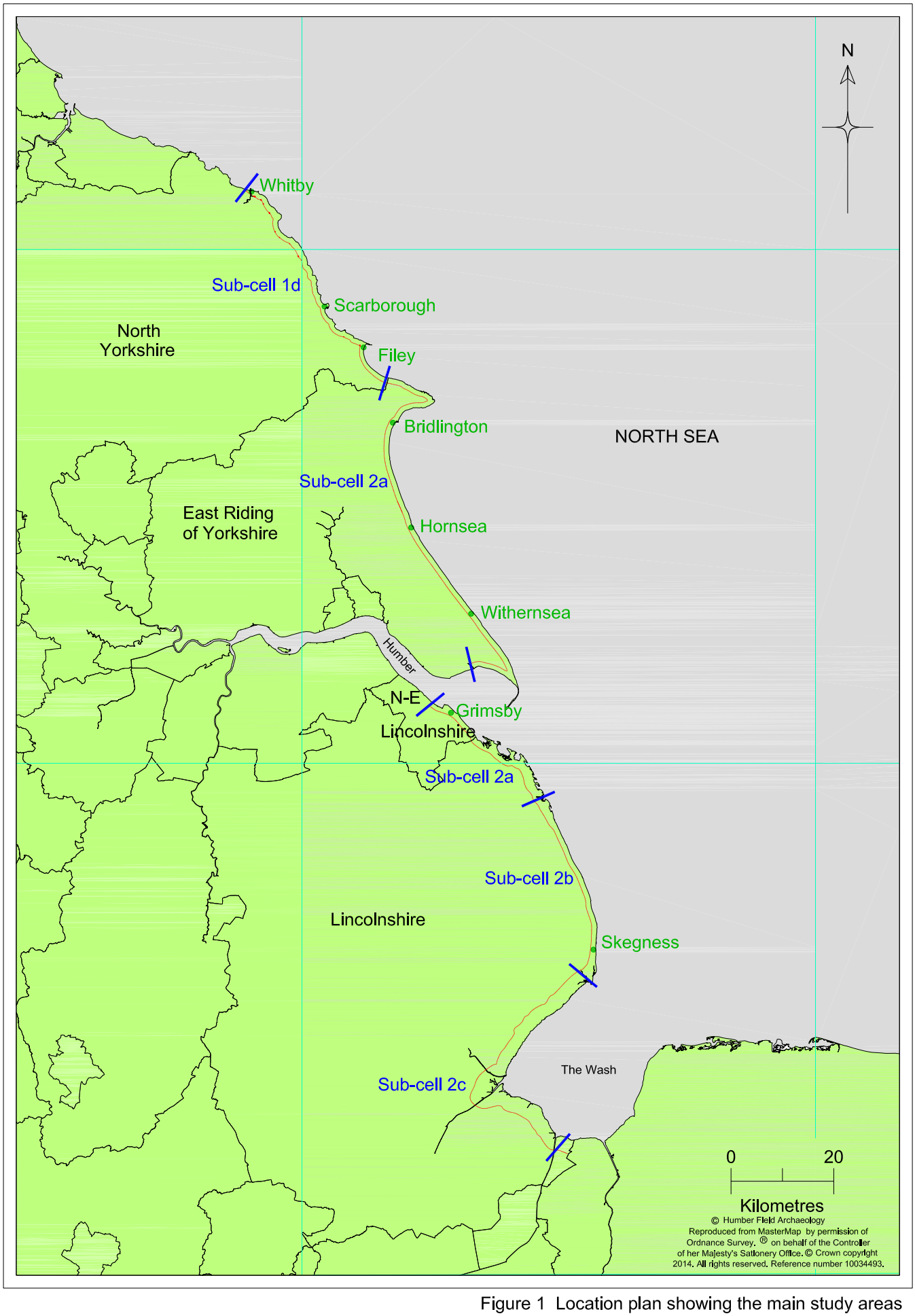
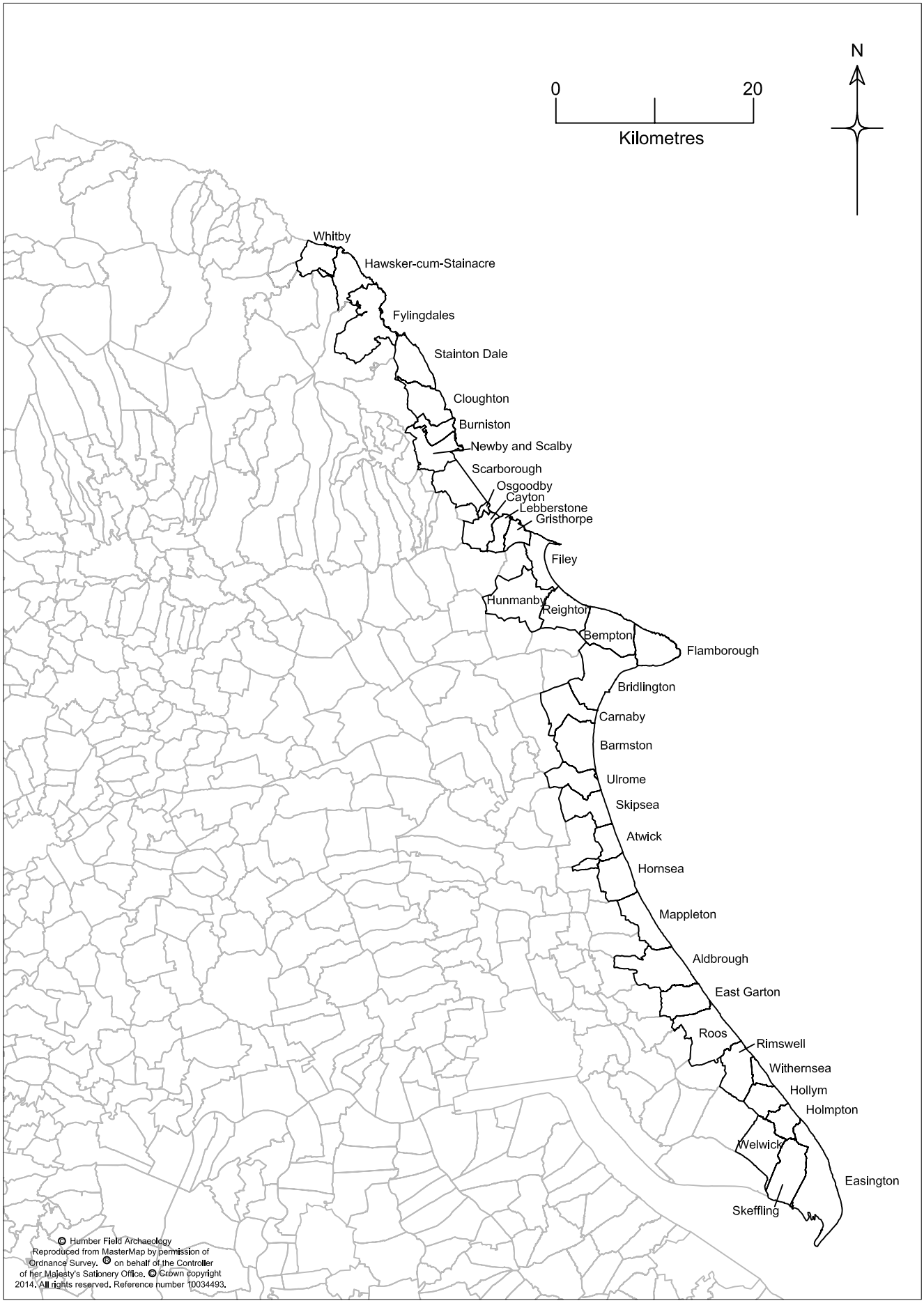
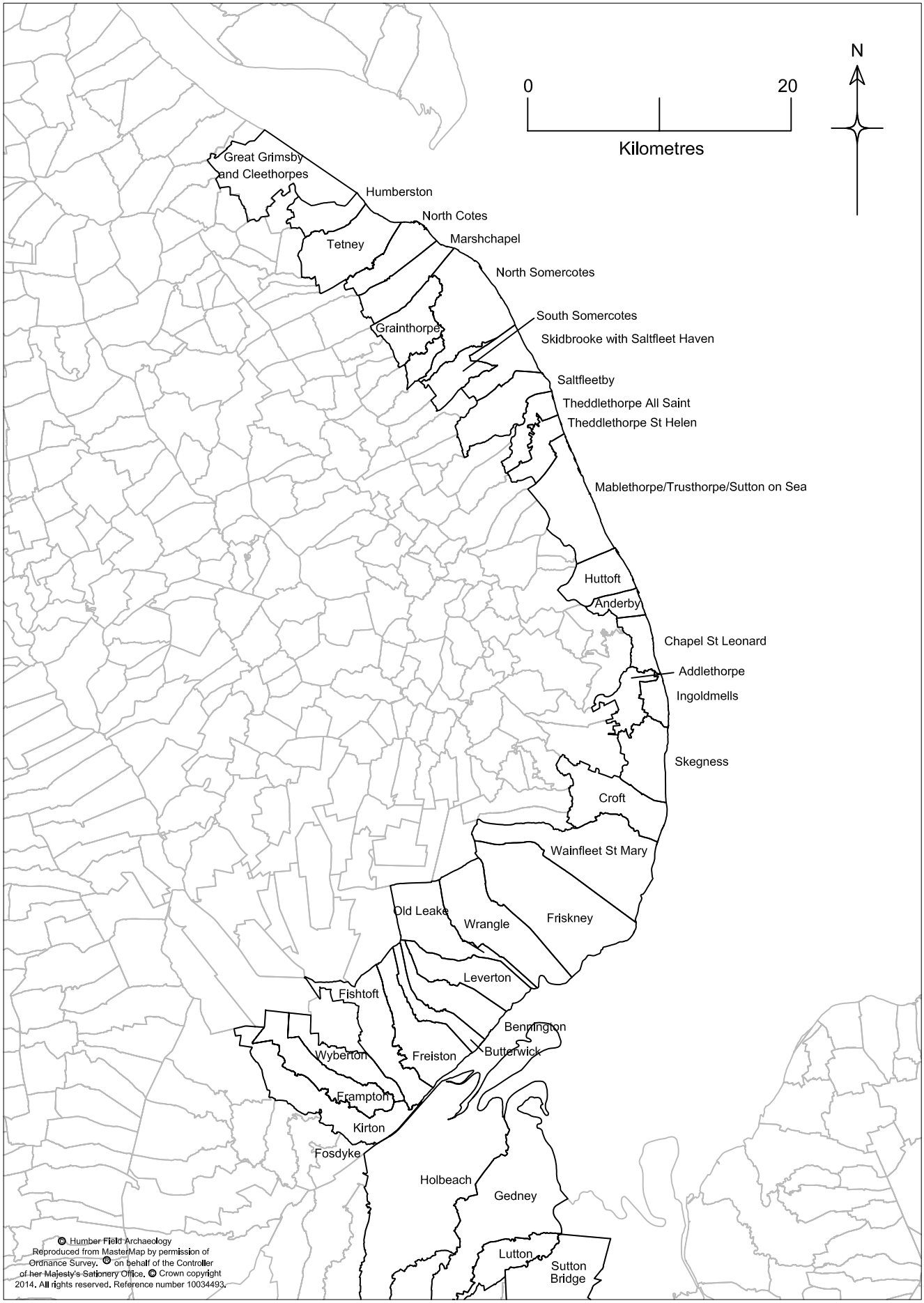


Figure 1 Location plan showing the main study areas

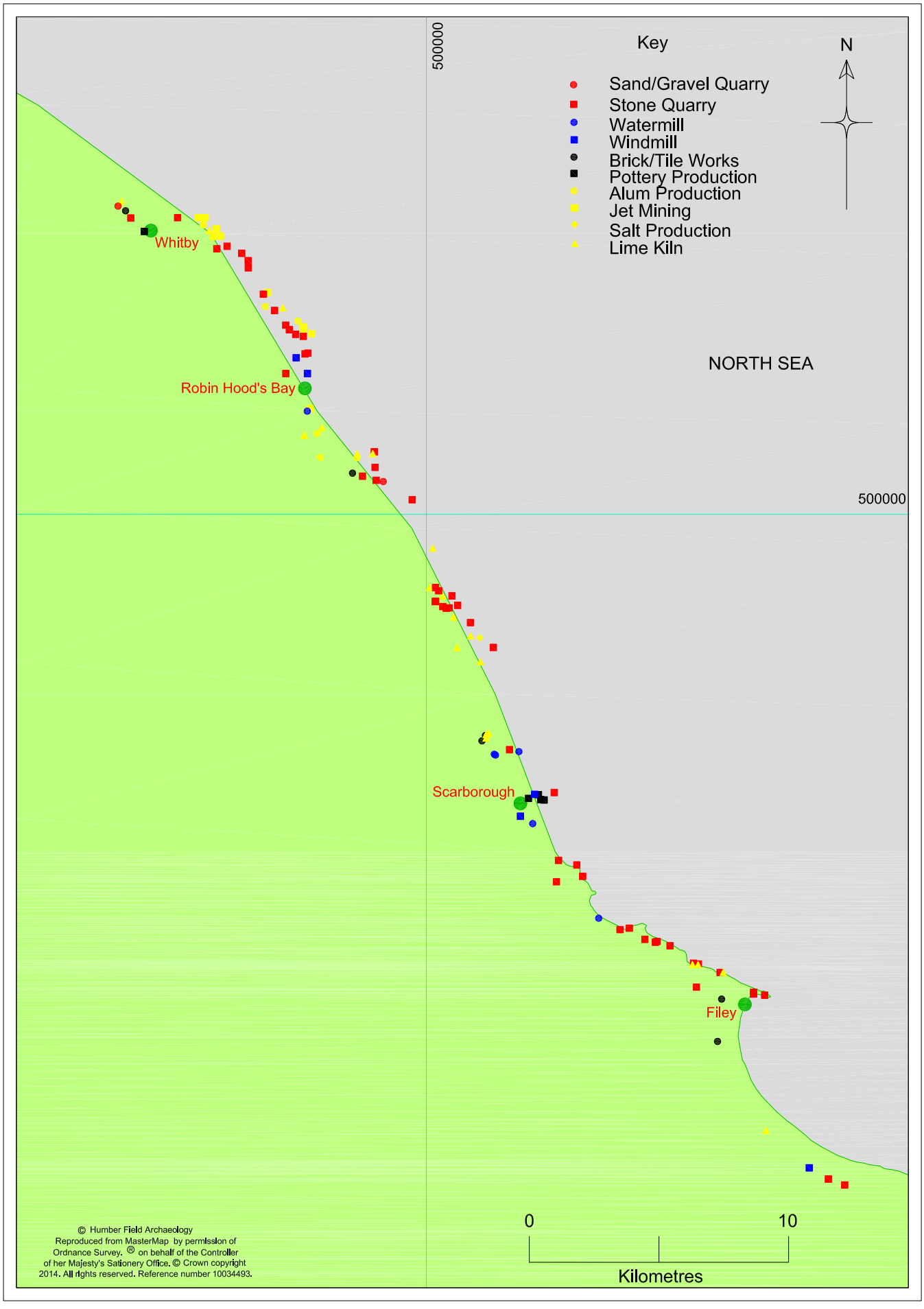


scale 1: 750 000 @ A4 Figure 2 Plan showing parish boundaries, North Yorkshire and East Riding of Yorkshire



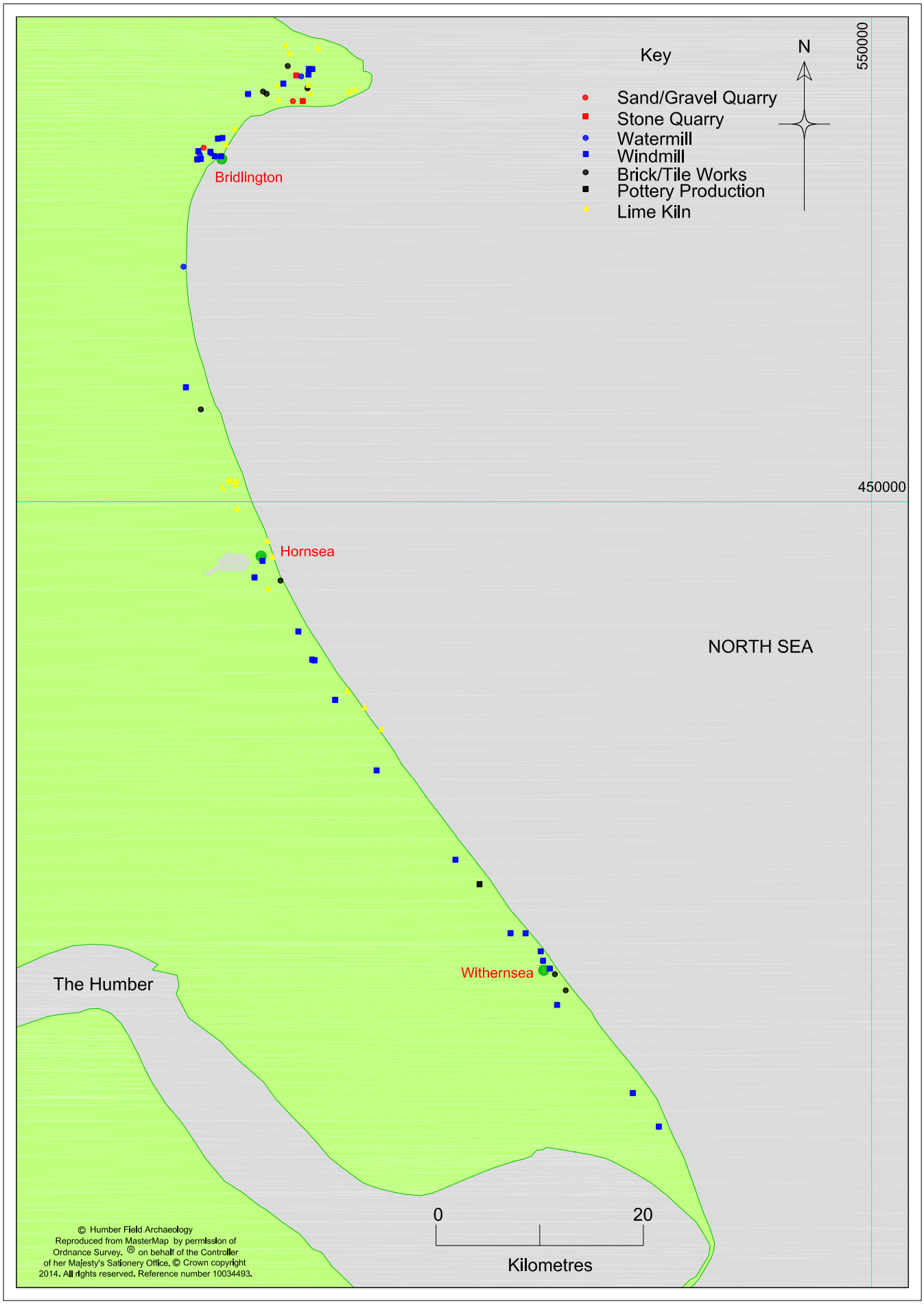
scale 1: 500 000 @ A4

Figure 3 Plan showing parish boundaries, North East Lincolnshire and Lincolnshire



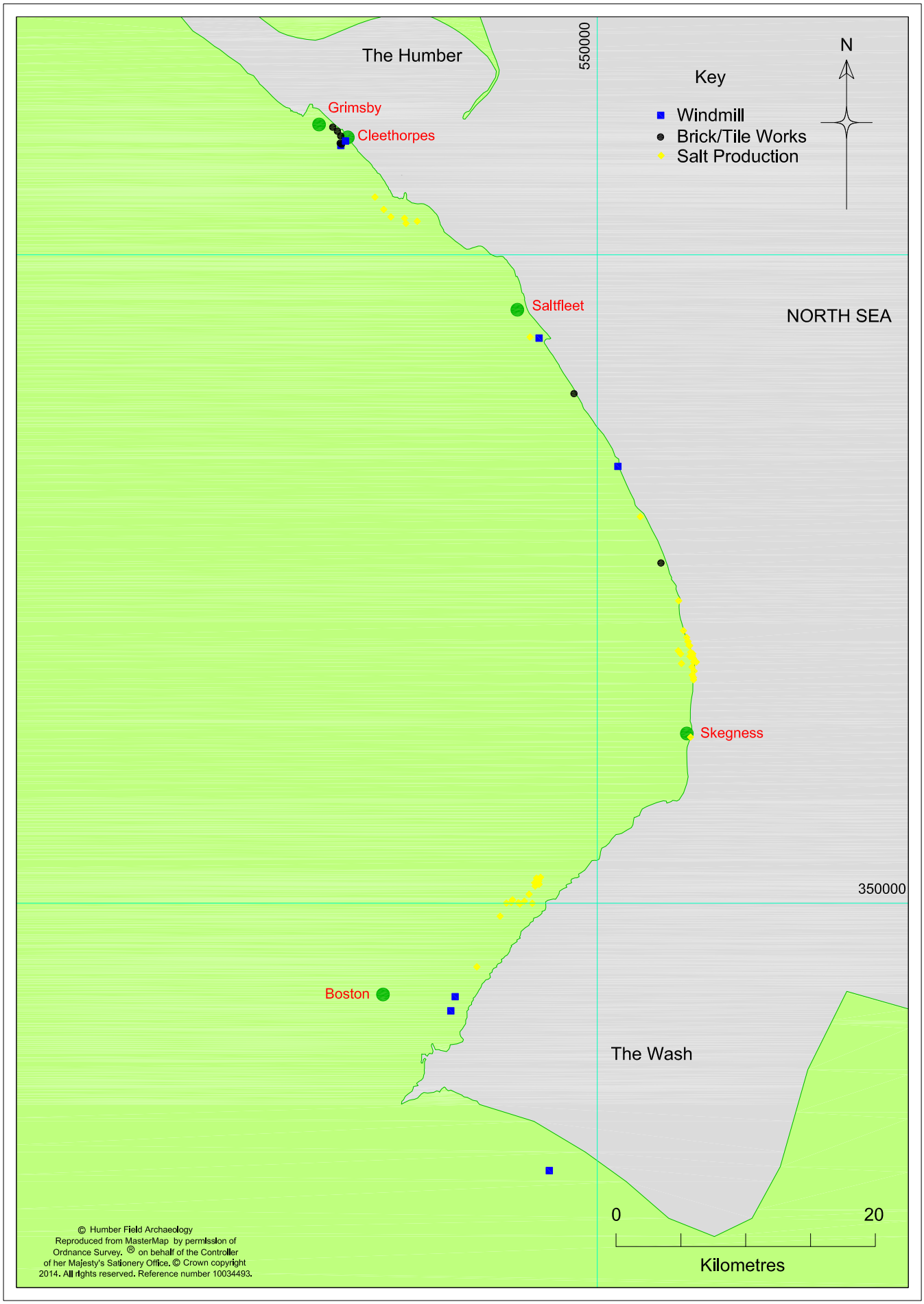
scale 1: 200 000 @ A4

Figure 4 Location plan of recorded industrial sites in North Yorkshire



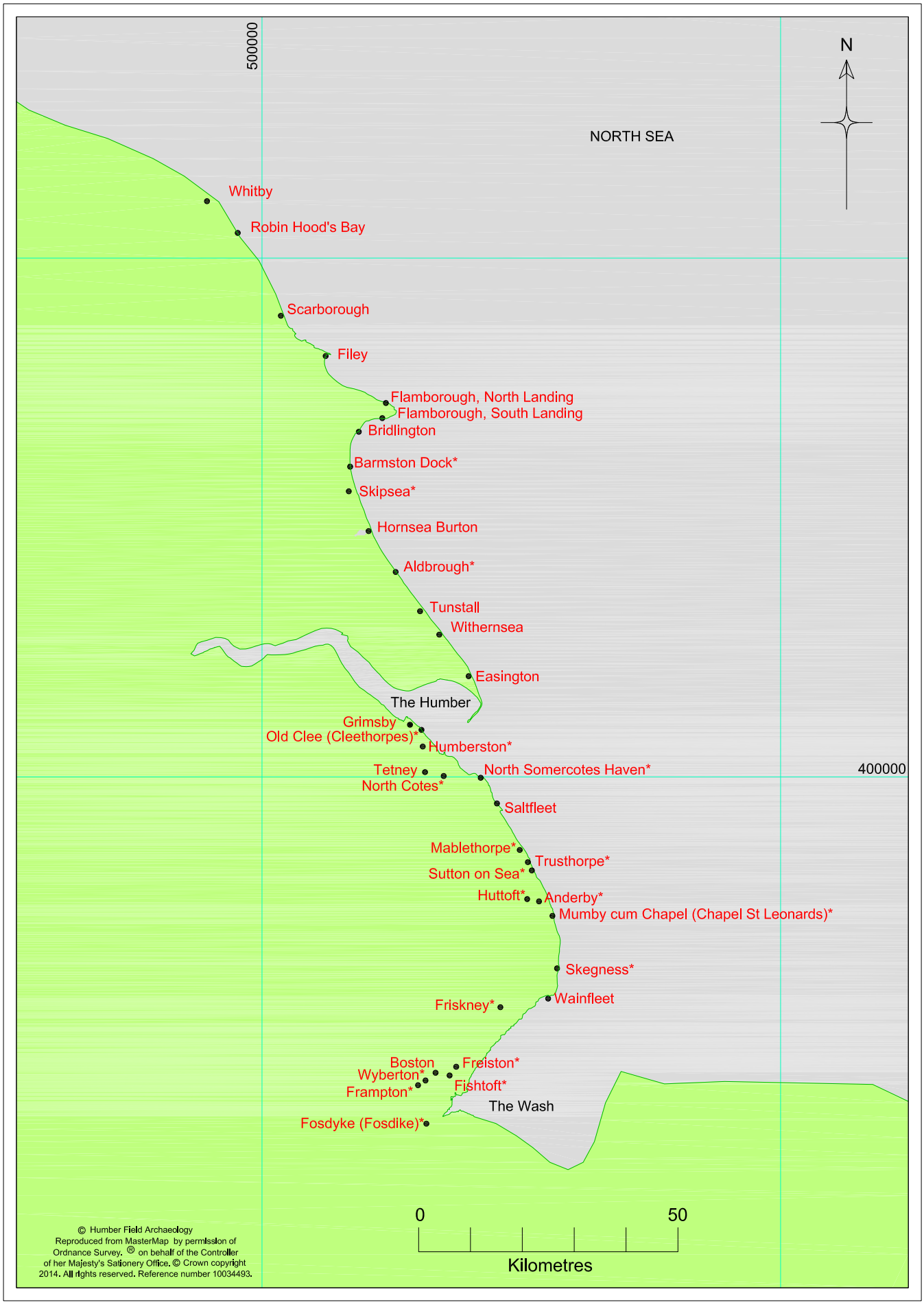
scale 1: 250 000 @ A4

Figure 5 Location plan of recorded industrial sites in East Yorkshire



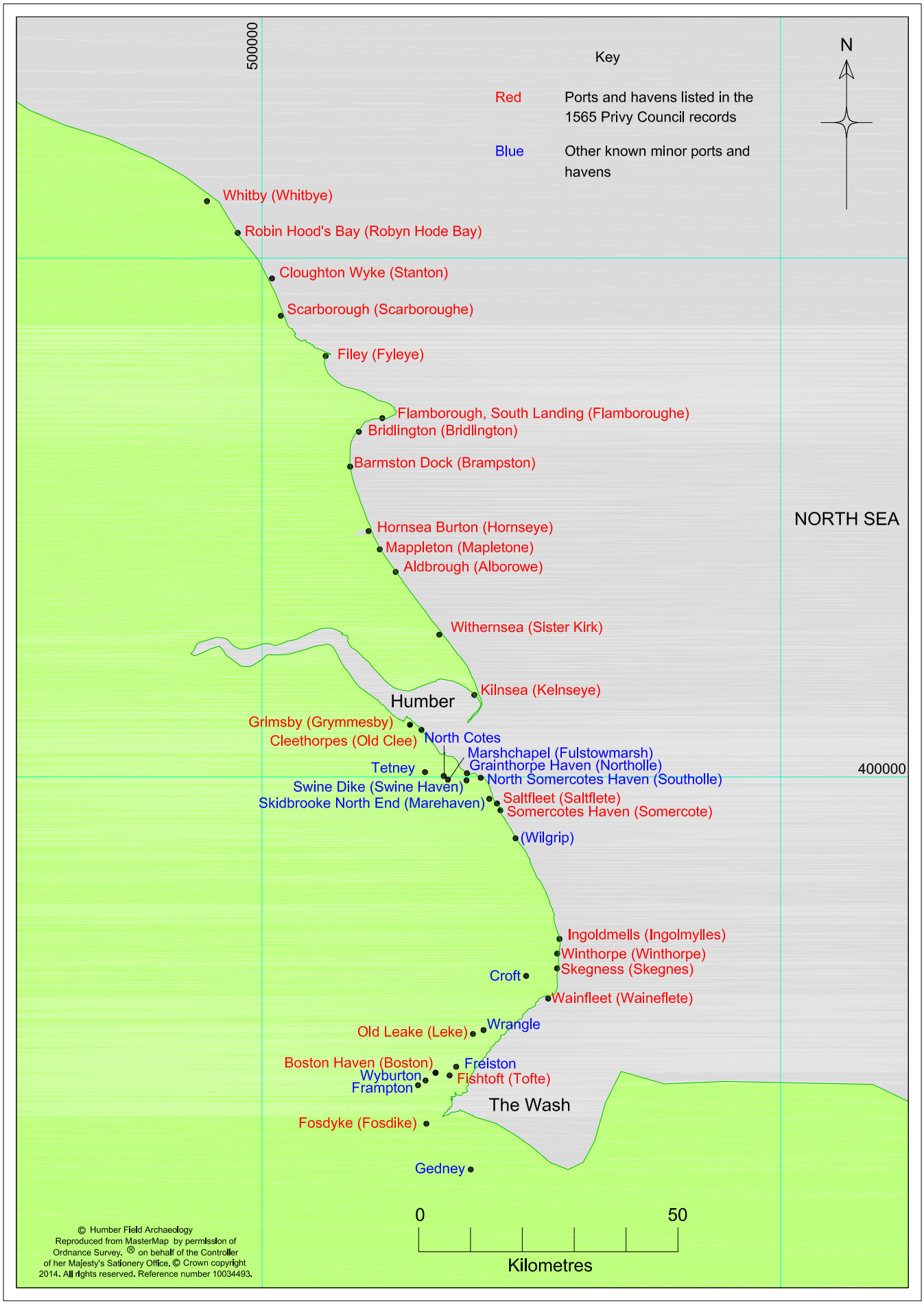
scale 1: 400 000 @ A4

Figure 6 Location plan of recorded industrial sites in North East Lincolnshire, Lincolnshire and The Wash



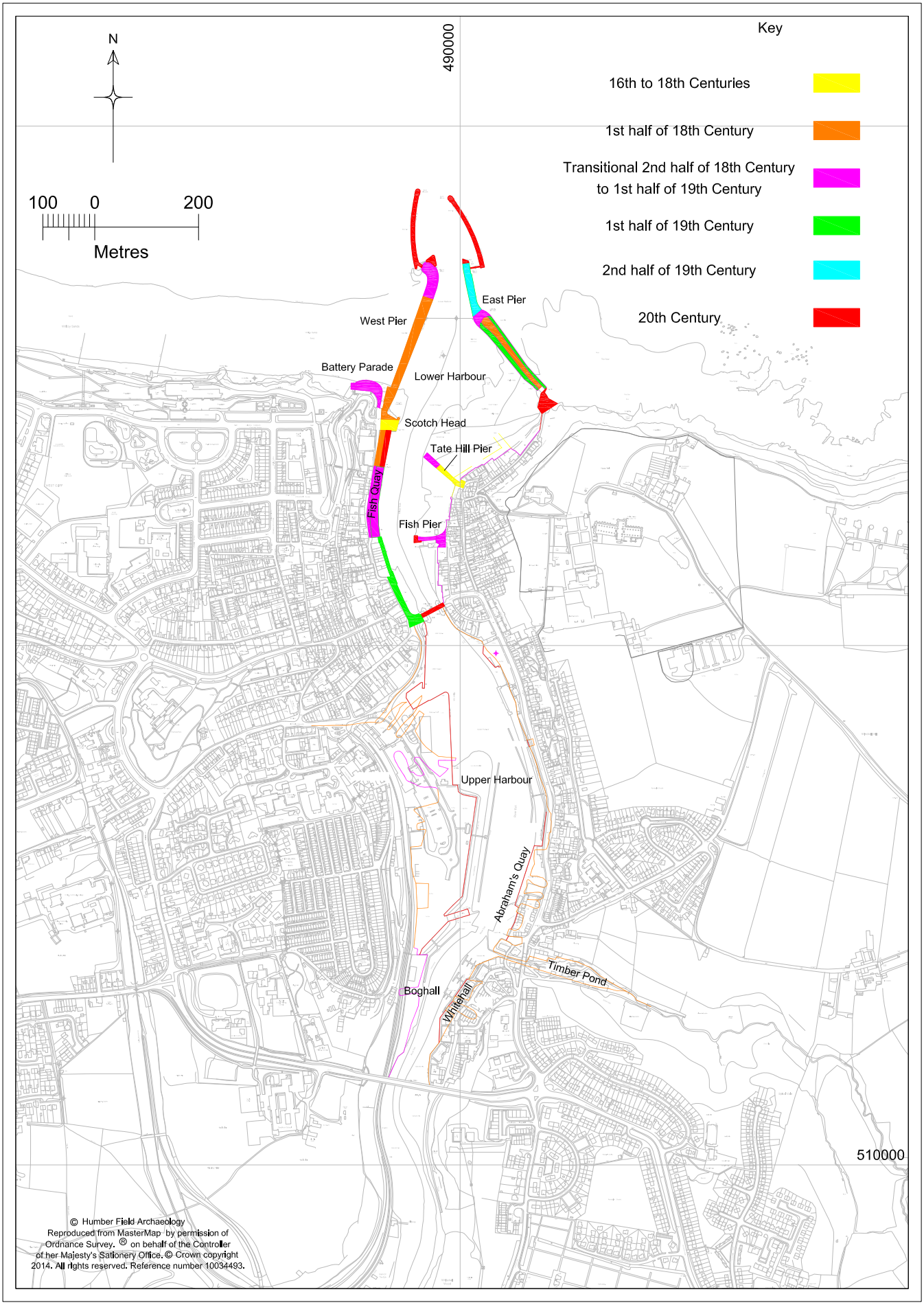
scale 1: 1 000 000 @ A4

Figure 7 Location plan of principal fishing centres and known minor fishing stations (asterisked sites are historic)



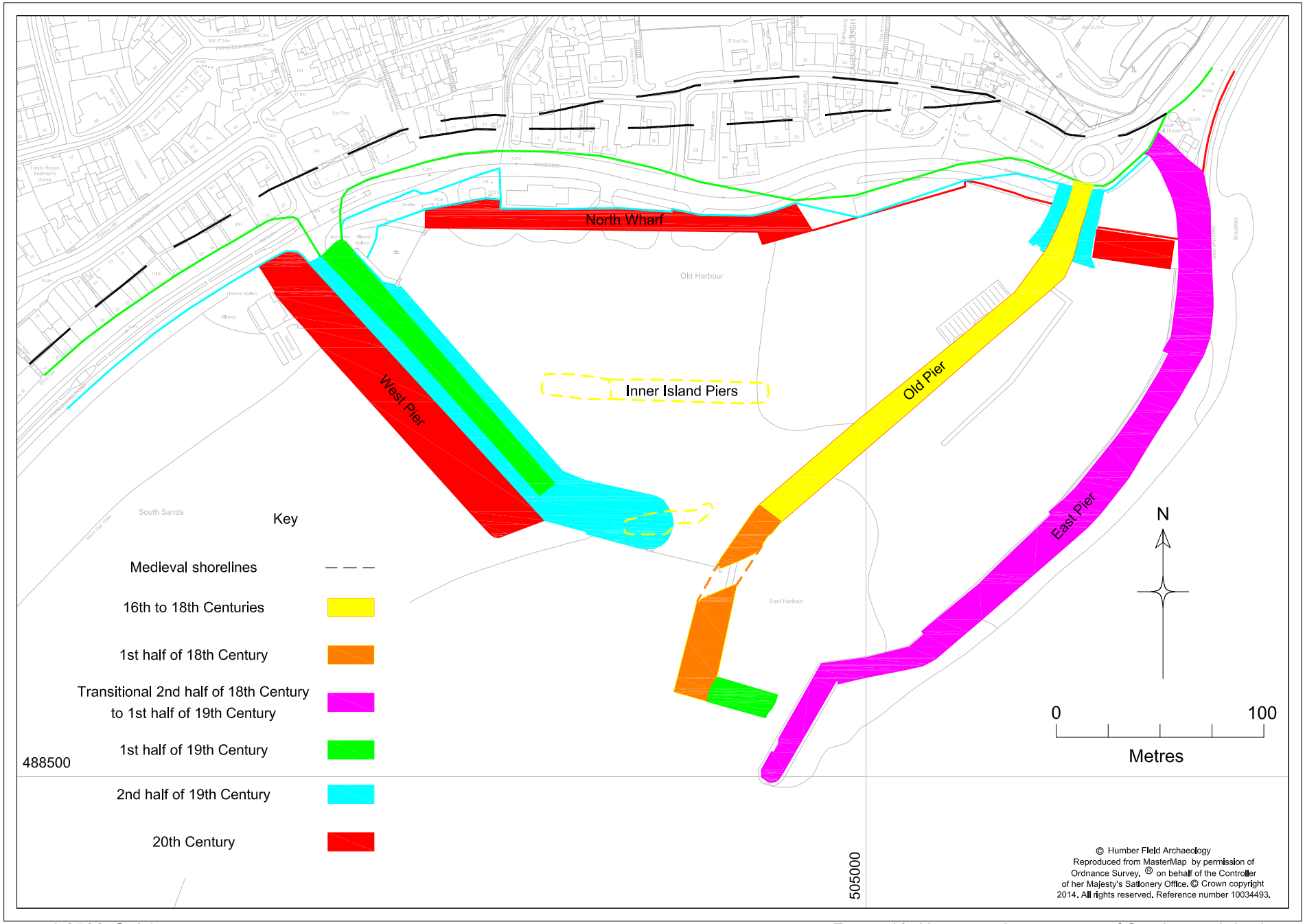
scale 1: 1 000 000 @ A4

Figure 8 Location plan of principal medieval/early post-medieval ports and known minor havens



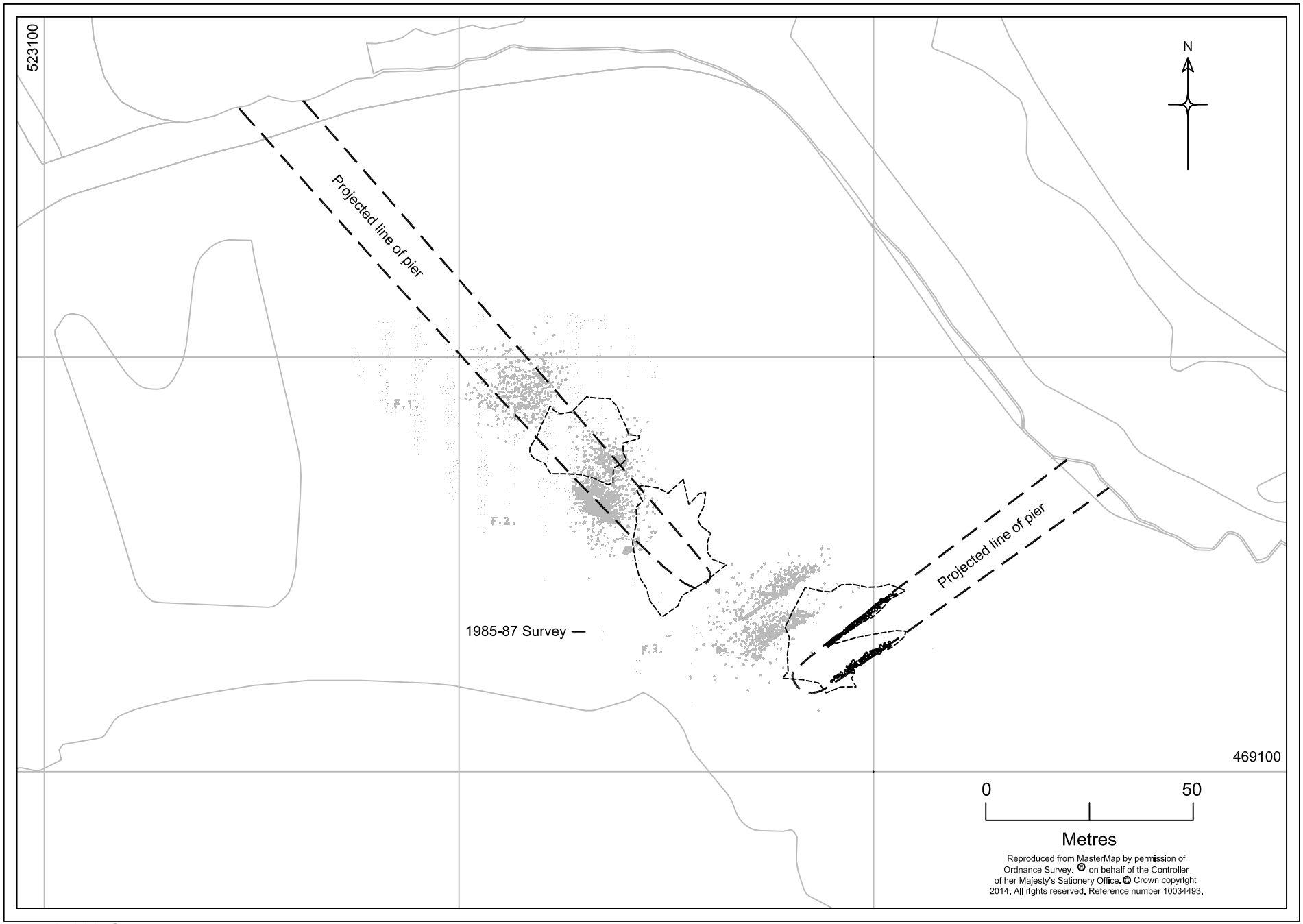
scale 1:10 000 @ A4

Figure 9 Historical development of Whitby harbours



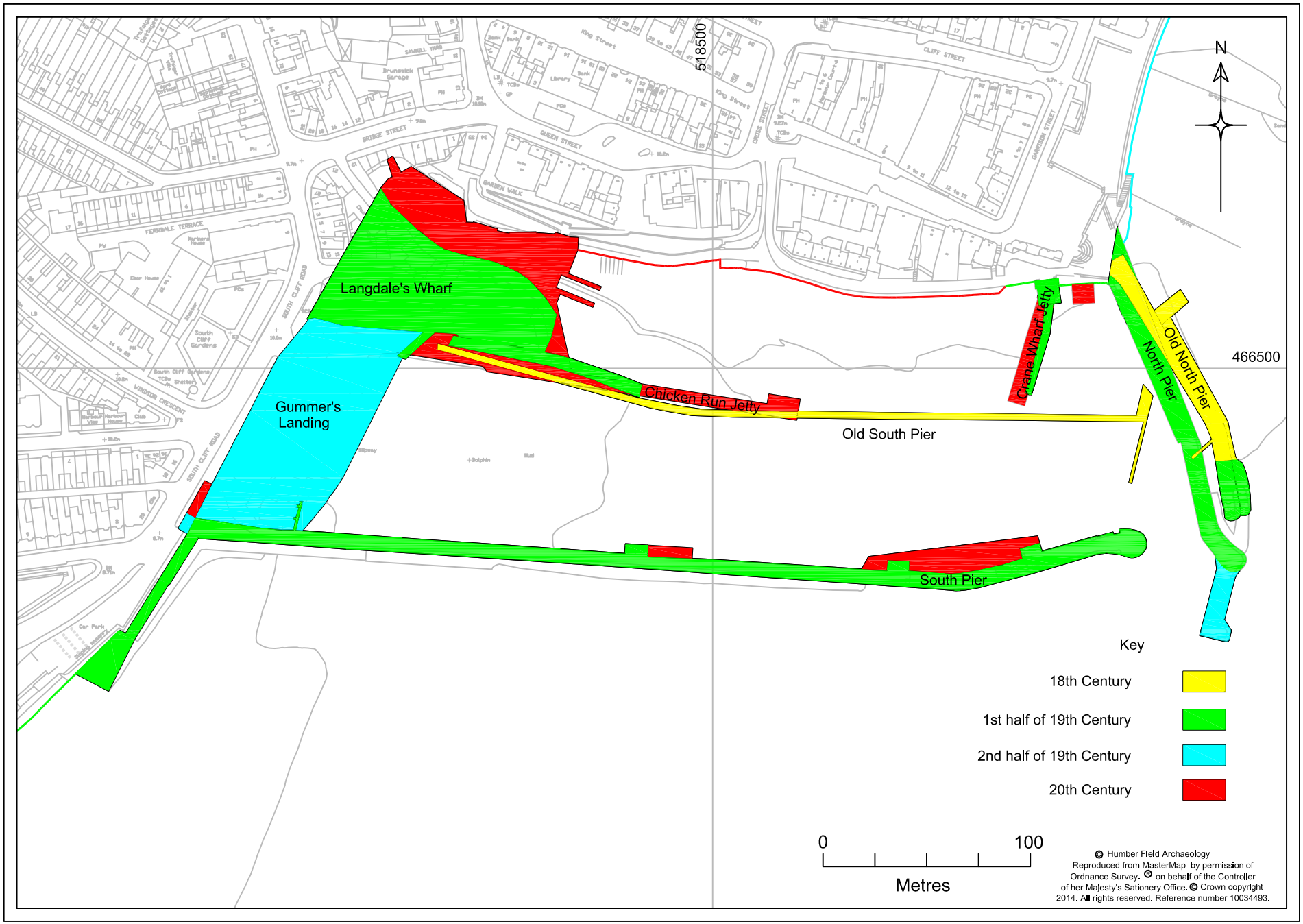
scale 1:2500 @ A4

Figure 10 Historical development of Scarborough harbour



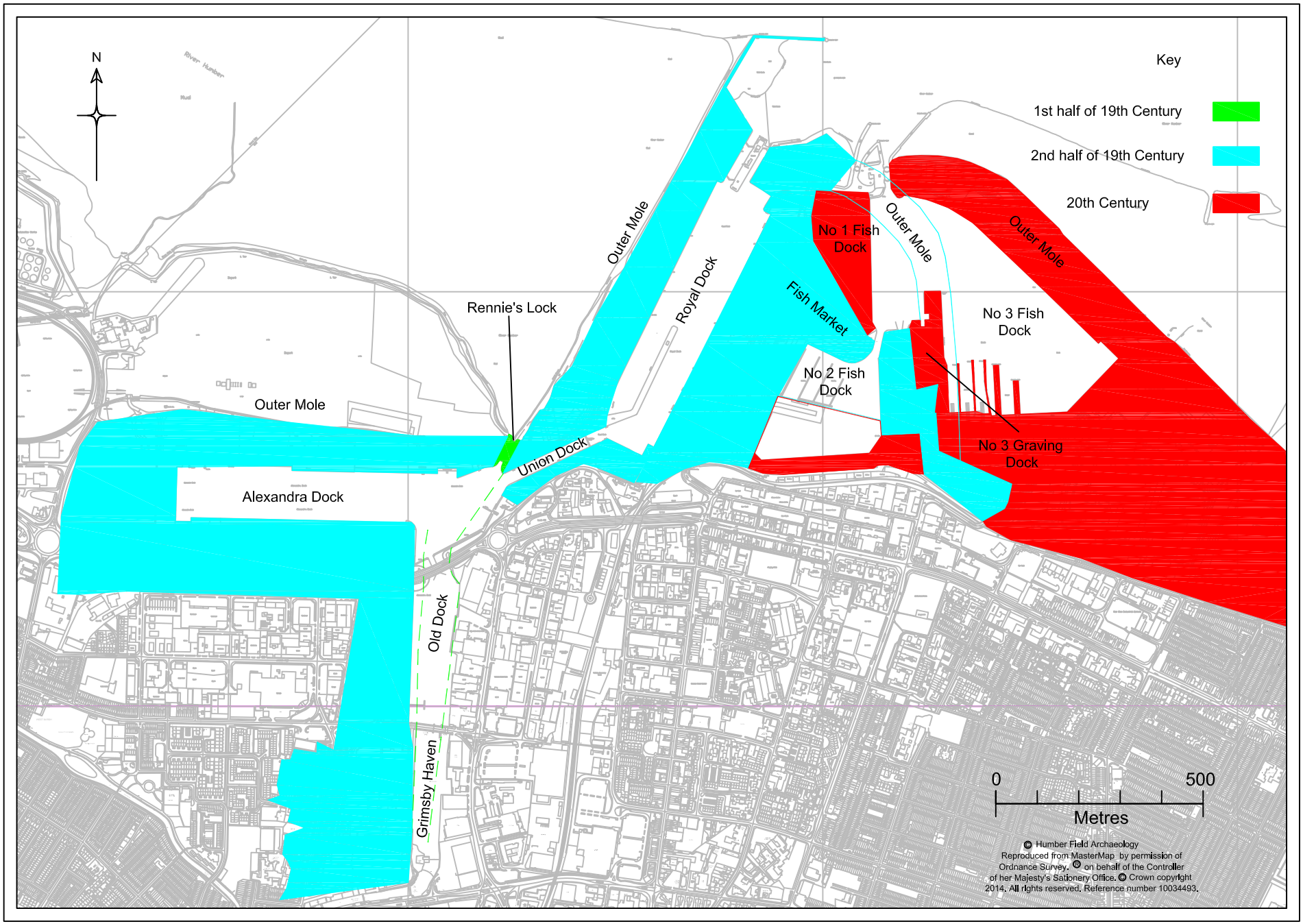
scale 1: 800 @ A4

Figure 11 Reconstructed plan of medieval Flamborough harbour



scale 1:2500 @ A4

Figure 12 Historical development of Bridlington harbour



scale 1: 8000 @ A4

Figure 13 Historical development of Grimsby harbour

scale 1: 1 000 000 @ A4

Figure 14 Location plan of principal resorts (in red) and minor former resorts (in blue)

Historic England Research and the Historic Environment

We are the public body that looks after England's historic environment. We champion historic places, helping people understand, value and care for them.

A good understanding of the historic environment is fundamental to ensuring people appreciate and enjoy their heritage and provides the essential first step towards its effective protection.

Historic England works to improve care, understanding and public enjoyment of the historic environment. We undertake and sponsor authoritative research. We develop new approaches to interpreting and protecting heritage and provide high quality expert advice and training.

We make the results of our work available through the Historic England Research Report Series, and through journal publications and monographs. Our online magazine Historic England Research which appears twice a year, aims to keep our partners within and outside Historic England up-to-date with our projects and activities.

A full list of Research Reports, with abstracts and information on how to obtain copies, may be found on www.HistoricEngland.org.uk/researchreports

Some of these reports are interim reports, making the results of specialist investigations available in advance of full publication. They are not usually subject to external refereeing, and their conclusions may sometimes have to be modified in the light of information not available at the time of the investigation.

Where no final project report is available, you should consult the author before citing these reports in any publication. Opinions expressed in these reports are those of the author(s) and are not necessarily those of Historic England.

The Research Report Series incorporates reports by the expert teams within the Investigation& Analysis Division of the Heritage Protection Department of Historic England, alongside contributions from other parts of the organisation. It replaces the former Centre for Archaeology Reports Series, the Archaeological Investigation Report Series, the Architectural Investigation Report Series, and the Research Department Report Series

ISSN 2398-3841 (Print)
ISSN 2059-4453 (Online)