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The Pilotage Foundation is grateful to John Lawson who was the author of all our Passage Planning routes flowing out from the South Coast of England to Iceland, The Baltic, the Atlantic Islands and the Mediterranean.

This Route was updated by Mike Redfearn & Jeremy Parkinson in 2008

Route 4 English Channel to Shetland via Dover Strait and East Coast including Firth of Forth, Inverness and Orkney

For text version, see below

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General

The direct route from Cowes to Lerwick is 670 miles. The longest unsupported leg is 463 miles from Great Yarmouth to Lerwick. Diversion westward to follow the coast up to Peterhead will reduce the crossing from there to Lerwick to 160 miles and only increase the total distance by about 50 miles.

The yachtsman is well served with marinas and suitable ports as far as Great Yarmouth but they become increasingly further apart and in some cases less yacht-friendly as northing is made.

Installations and associated activities in oil fields in the north and gas fields in the south are all clearly marked and can be safely passed through with the aid of larger scale charts; however, only slight diversions are needed to avoid the fields completely.

The route chosen may be influenced by the weather. Hugging the weather shore along the E coast in the event of prolonged and strong westerly winds will be attractive; this will not be sensible in easterly weather as ports of refuge in these conditions are few and far between and a good offing in deep water should be maintained. Any passage up or down the east coast will be a compromise between port hopping and longer passages in deep water.

Weather and sea states

Most of the major North Atlantic depressions pass through the N of this region carrying frontal troughs to the S which sweep across the North Sea or up the Channel. Some of these fronts develop secondaries which can become vigorous systems moving quickly E. The progress of the warm fronts is often held up in crossing the UK allowing the cold front to catch up and become occluded when the contrast in weather on each side of it will be much less pronounced. Winds from the SW or NE will be accelerated through the Dover Strait.

The frequency of E winds is at its highest in the spring but these are increasingly rare after May when the predominant airflow is from between SW and NW throughout the summer. Gales are unlikely on average to exceed more than 2 days a month over the same period but this increases in the autumn especially in the N. Calms occur at the same frequency.

Swell is not usually a feature in the shallow North Sea and is predominantly from the N sector and less than 2m in height. Swell is rare in the Dover Strait, only of consequence in E or NE gales and of relatively short duration.

Sea temperature increases quickly from an average of 6° C in the winter to 13° in the N to 17° in the Dover area in the summer before slowly declining.

Fog in the summer offshore varies from 3% in the S to 4% in the N. Coastal area however can be more affected especially off the NE coast of Scotland where it is known as a *haar* and is caused when E or SE winds bring warm

and moist air into colder coastal waters. It can persist for several days. Fog in the busy Dover Strait is thankfully less frequent especially in the late summer and is most likely to occur in settled anticyclonic conditions.

Currents

These are of little significance throughout the area and are masked by the tidal streams.

Tidal streams

Tidal streams are complex over the whole of the route to the extent that they need not be part of advanced planning. (However see the first two paragraphs in “Routeing Recommendations – Going North”) below. A close study of the flow is essential in day to day planning to make the best of the favourable streams especially past headlands and a study of the following Tidal Stream Atlases can be rewarding:-

- NP 250 English and Bristol Channels
- NP 233 Dover Strait
- NP 251 North Sea, Southern portion
- NP 252 North Sea, Flamborough Head to Pentland Firth
- NP 209 Orkney and Shetland Islands

Additionally:-

NP 249 Thames Estuary should be carried if there is any likelihood of diverting from the direct route North Foreland to Lowestoft.

Generally the flood stream in the North Sea sets southwards and the ebb northwards. The times that the streams change along the coast have a constant relationship with the times of HW or LW on the coast and with HW Dover, to which all times are related.

The maximum rates generally decrease further N. The maximum spring rates are:-

To the E of Shetland – 1 knot.

Off Peterhead – 2 knots.

This is not exceeded to the Norfolk coast when -

Off Great Yarmouth – 3 knots

From where the rate decreases slightly to Dover and down Channel.

The streams in general run parallel to the coast or along offshore channels but there are anomalies in the Thames Estuary.

Tides

The Spring ranges vary over the route as follows:-

Shetland	1.6m
Off Peterhead	3.0m
Off the Humber	5.7m
Off the Wash	5.2m
Off Harwich	3.6m
Off Dover	6.0m
Solent	4.0m

The North Sea is prone to storm and negative surges when the predicted heights of tides can be greatly affected. Storm surges occur when a deep depression tracks across the N part of the North Sea driving water S; sea levels rise progressively southwards as the result of the surge.

Negative surges are caused by local S or SW winds in the southern part of the area and affect it and the Thames Estuary only.

Storm and negative surges are infrequent in summer and when expected are included in the weather forecasts.

High pressure throughout the summer months may reduce levels by up to 0.3m

A good latitude should be allowed in all depth calculations S of Peterhead.

Formalities

Scotland has not yet added to the usual bureaucratic requirements for yachtsmen in England.

Nearly all the oil and gas rigs, installations, well heads, moorings and operations have a 500m exclusion zone round them which should be respected.

Search and rescue

The whole route is within the UK Search and Rescue Region (SRR) and is covered by three Maritime Rescue Co-ordination Centres (MRCCs) at Dover, Great Yarmouth and Aberdeen. There are sub stations (MRSCs) at Solent, Thames, Humber, Tyne/Tees, Forth, Pentland(Orkney) and Shetland. The DSC coverage is total over the route unless the direct track is taken from Great Yarmouth to Shetland when it will be within MF DSC and EPIRB coverages.

All-weather and inshore lifeboats are maintained at frequent intervals along the route and there is helicopter coverage for most of it.

Further details can be found in Admiralty Maritime Communications (UK and Mediterranean), NP 289.

Navtex and weather forecasts

The whole route is covered by Navtex broadcasts from Niton (E & K), Oostende(M) and Cullercoats(G).

Further details of the many weather forecasts now available can be found in Admiralty Maritime Communications (UK and Baltic) NP 291 and RYA Weather Forecasts G5.

Routeing recommendations

Timing is all-important in the southern part of the route to make the best use of the tidal streams off the points where they are strongest. The streams continue to be of importance if keeping close to the coast N of Great Yarmouth but have little overall effect if taking the direct route from there to Shetland.

Going North

The leg up Channel from the Solent to Dover is 110 miles and should be timed where possible to carry the stream through the Dover Strait, up the Downs and clear of the Gull Stream before it turns foul at the North Foreland at HW Dover +0500. Slow or low-powered vessels should therefore aim to be off Dungeness at HW Dover -0200 as the stream turns in favour.

Going E carries a considerable tidal advantage. Coming from the Solent the E-going stream starts off the Owers at HW Dover +0530. Provided 9-10 knots over the ground can be maintained, 11 hours fair stream will be carried eastwards and up the Downs. Slower vessels will have to start relatively earlier and face progressively more foul stream in the early stages from the Solent to gain advantage.

The route from the Nab, round the Owers and Royal Sovereign, along the English Inshore Traffic Zone, up the Downs and Gull Stream is well known and clear of unmarked dangers. A short cut through the Looe Channel off Selsey might save a mile or two but is hardly worth it except for navigational amusement in good visibility.

From the vicinity of the North Foreland a route clear of the dangers can now be taken across the Thames Estuary passing to the E of Kentish Knock, Shipwash and the banks off Lowestoft and Great Yarmouth, leaving South Falls, Galloper, the Gabbards, Cross Sands and Newarp all well to the eastward.

The decision must be made at this point whether to take the direct route of 478 miles to Shetland or to turn north westward to cross the mouth of the Wash and hug the coast. The former will pass through a number of gas fields and offshore installations for the next 100 miles which are all clearly marked but might cause problems in bad visibility with no radar. Further N to the E and NE of Peterhead a slight diversion to the W will avoid the oil fields.

If hugging the coast, a wide and clear route can be found offshore clear of dangers and inside the gas rigs until they are cleared in the latitude of Flamborough Head. The track then followed up the E coasts of England and Scotland will depend on the weather and which ports en route are to be visited.

On clearing Peterhead, the direct route of 160 miles can be taken to Lerwick or further diversions made into the Moray Firth or to Orkney. Some ports in the Moray Firth and E Orkney are shown in the "Ports on the Route" section below. Tidal streams are now of less significance unless going to Orkney which should not be undertaken without a clear awareness of their dangers in the Pentland Firth and through the islands.

Going South

The same considerations apply on the southward voyage as on the northward, until the Thames Estuary is crossed. The prospect of a long period of westerly winds will make a course to get under the lee at Peterhead, and then close to the weather shore to Great Yarmouth attractive, and only about 20 miles will be added to the total. The converse is that the stronger tidal streams inshore could have a delaying effect if the timing is wrong at headlands.

The essential deadline for the slower or low-powered vessel is to be off the North Foreland at the entrance to the Gull Stream at HW Dover +0500 when the stream is slack, turning S. This will give 6 hours fair and should see the yacht past Dungeness. From here there is no tidal advantage as when going east.

Distance table

	SOLENT	BRIGHTON	DOVER	RAMSGATE	Harwich	Lowestoft	Gt. Yarmouth	HUMBER	Whitby	HARTLEPOOL	TYNE	Blyth	South Queensferry	Dundee	Peterhead	Inverness	Kirkwall	Lerwick
SOLENT(Cowes)	***	45	110	126	166	196	208	295	351	375	396	403	515	497	526	616	572	671
BRIGHTON	45	***	65	81	121	151	163	250	306	330	451	358	475	452	481	571	527	626
DOVER	110	65	***	16	56	86	98	185	241	265	286	293	405	387	416	506	462	561
RAMSGATE	126	81	16	***	41	71	83	169	225	249	270	277	389	371	400	490	446	545
Harwich	166	121	56	41	***	30	42	129	185	209	230	237	349	331	360	450	406	505
LOWESTOFT	196	151	86	71	30	***	12	99	155	179	200	207	319	301	330	420	376	475
Gt. Yarmouth	208	163	98	83	42	12	***	87	143	167	188	195	309	289	318	408	364	463
HUMBER(Spurn)	295	250	185	169	129	99	87	***	56	80	101	108	220	202	231	321	277	376
Whitby	351	306	241	225	185	155	143	56	***	24	45	52	164	146	175	265	221	320
HARTLEPOOL	375	320	265	249	209	179	167	80	24	***	21	28	140	122	151	241	197	296
TYNE	396	280	286	270	230	200	188	101	45	21	***	7	119	101	130	220	176	275
Blyth	403	358	293	277	237	207	195	108	52	28	7	***	112	94	123	213	169	268
South Queensferry	515	475	405	389	349	319	309	220	164	140	119	112	***	57	124	214	224	269
Dundee	497	452	387	371	331	301	289	202	146	122	101	94	57	***	75	182	175	233
Peterhead	526	481	416	400	360	330	318	231	175	151	130	123	124	75	***	107	100	160
Inverness	616	571	506	490	450	420	408	321	265	241	220	213	214	182	107	***	127	185
Kirkwall	572	527	462	446	406	376	364	277	221	197	176	169	224	175	100	127	***	99
Lerwick	671	626	561	545	505	475	463	376	320	296	275	268	269	233	160	185	99	***

The distances are direct between any two ports in different columns. Interpolated distances between ports in the same column will not necessarily be correct.

Ports on the route

Port names in capital letters below indicate a port with major marina facilities including slipping and all kinds of repair, electricity and water on the pontoons, fuel available and with the resources of a town or city nearby. Other ports will have many of these facilities but with any omission noted. Calor and Camping Gas are available unless otherwise stated.

Port categories

Ports are categorised for their accessibility in all weathers and the security of their shelter.

- A Port of refuge in storms; complete shelter.
- A* Qualified storm port of refuge and haven.
- B Port accessible in gales with good shelter.
- B* Qualified gale port of refuge and haven.
- C Entry subject to wind, sea and tidal conditions with some shelter inside.

BRIGHTON A*

Not a safe entrance in SE gales. Depth is 2.7m in the approach and 2m in the entrance; berths are always found for visitors up to 30m and 3m draught to which the outer berths are dredged; larger vessels can be accommodated subject to arrangement and draught limitation; 50 ton travel lift and every possible facility close by; duty-free diesel and other fuels available 24 hours.

Good rail and road connections with London; security is good; a safe place to leave a yacht.

DOVER A*

A very busy ferry port with good facilities for yachts in perfect shelter. It is only qualified as the western entrance can become unmanageable for small craft in W gales; there is deep water in the entrance and outer harbour and the entrance channel to the yacht basins is dredged to 5m; 50 ton boat hoist; 24 hour duty-free diesel and other fuels.

Good rail and road connections with London, frequent ferries to the Continent; reasonable security and a safe place to leave a yacht.

RAMSGATE A*

An alternative to Dover but not in storms from the E. A busy ferry port with excellent shelter and facilities for yachts; the tidal marina is dredged to 2m and the outer approaches are dredged to 7.5m; yachts up to about 25m and 3m draught can be accommodated in the locked inner basin in perfect shelter; duty-free fuel during working hours seven days a week.

Good road and reasonable rail connections with London, frequent ferries to the Continent; reasonable security and a good place to leave a yacht but only in the inner basin.

Harwich A

A port of refuge in all conditions but a 17 mile diversion from the direct route; good shelter in Shotley marina or Suffolk Yacht Harbour at Levington 4M up the river; limited facilities and shopping below Ipswich.

Lowestoft A*

In E gales entry should be restricted to near LW when the outer banks provide a breakwater. The entry channel is dredged to 4.7m; new and first class facilities in yacht harbour run by the Royal Norfolk and Suffolk Yacht Club for yachts up to 20m and 2.5m draught; larger vessels up to 5m draught and big multihulls can be accommodated in commercial docks or above the bridge; craneage only, diesel during working hours seven days a week; no petrol but all other facilities.

A convenient overnight stop; good security and a safe place to leave a boat; average road and good rail links.

Great Yarmouth B*

The entrance should not be attempted in strong SE winds especially on the ebb. A very busy gas rig and support base with no special facility for yachts. Uncomfortable alongside berths in the middle of town. No fuel in yacht quantities; a possible provisioning stop.

HUMBER B*

The Humber is an appreciable diversion from the direct route from Great Yarmouth to Flamborough – 17M in to Spurn Head, a further 6M to Grimsby marina and 15M to Hull marina in a large estuary where the streams run at up to 5 knots. Not recommended unless necessity dictates in which case Category B* because the entrance by Spurn Head can be dangerous to small craft in strong winds from NW through E to S.

Grimsby marina can be entered HW \pm 2 hours or HW \pm 3 hours with a locking fee, few yacht facilities except provisioning.

Hull marina at Kingston-upon-Hull can be entered HW \pm 3 hours via a lock, but entrance is exposed in adverse weather conditions from W through S to E. It has full facilities and is close to good road and rail connections.

Whitby C

A dangerous entrance with any strength in winds from the N sector. Least depth in the entrance 1.4m, 1.5m in the marina; access to marina via swing bridge which opens HW \pm 2 hours, more at week-ends; normal facilities in centre of town; not for multihulls.

HARTLEPOOL AND WEST HARTLEPOOL A

Access is only safe to the commercial port of **Hartlepool** in E gales where there are limited yacht facilities

West Hartlepool. A major yacht facility where visitors are always welcome but entrance is somewhat open to strong E winds; entry channel to lock is dredged to 0.8m with access into lock at any time or stage of tide if depth sufficient to enter channel; maximum length 50m, draught 5m but lock width is 9m; large multihulls must go to Hartlepool; 40 ton travel lift and all repair and other facilities; diesel and all services 24 hours seven days a week; adequate road and rail connections.

RIVER TYNE A*

The entrance will be dangerous to small craft in E gales especially on the ebb, otherwise excellent shelter inside with a modern marina 2M up river at Royal Quays Marina. Lock at all stages of tide, sill -3.3m, maximum length 40m, beam 8m; 30 ton travel lift; chandler and provisions nearby; duty-free fuel 24 hours outside lock; good road, rail and air connections via Newcastle; ferries to Scandinavia.

Blyth A*

Approach and entrance dredged to 8.5m but dangerous to small craft in SE gales. A commercial port with yacht facilities in good shelter inside the entrance run by Royal Northumberland Yacht Club which could be a more convenient stop than Tyne 7M south; a visitors pontoon with maximum length about 20m, draught 4.4m; water on pontoon, fuel from fishing facility up harbour; basic provisions close by but some distance to more extensive shopping.

From Blyth northwards it is 30M to the Farne Islands which should be given a good berth to the E. From here the coast trends increasingly to the westward in to the Firth of Forth and all the ports and anchorages are fair weather ones suitable only for short stays. One yachting facility in the Forth below the bridges is **Granton** which has been included in the Distance Table for those wishing to divert there; it has most services and yacht facilities.

On the River Tay **Dundee** has also been included in the Distance Table but it is not a good stop-over port – Dundee is commercial, Tayport dries and the bar is dangerous in E winds.

There are no ports in the 112 miles between the Farne Islands and Peterhead (except Granton) that are approachable in strong Easterlies. **Montrose** and **Aberdeen** are possible in fine or westerly weather but neither cater specifically for yachts; **Stonehaven** is small, open to the E and only carries 1.8m in the outer harbour.

South Queensferry A*

Port Edgar Marina at South Queensferry just above the Forth bridges (clearance 44m) has 24hr access and all facilities. The marina is subject to silting and surges can occur at LW especially in east winds. Granton 7M further east has plans for a marina in the West Harbour but at present has limited berthing and limited access to pontoons on the east side of the middle pier in 2m and is exposed in Northerlies.

On the River Tay **Dundee** is commercial, Tayport dries and the bar is dangerous in E winds.

There are no ports in the 112M between the Farne Islands and Peterhead (except South Queensferry) which are approachable in strong Easterlies. **Montrose** and **Aberdeen** are possible in fine or westerly weather but neither cater specifically for yachts; Stonehaven is small, open to the E and only carries 1.8m in the outer harbour.

Peterhead A

A busy commercial, oil rig support and fishing port with a small marina with some facilities. Its position and accessibility in all weathers make it a popular stop-over; 2.3m in entrance to marina, 1-2.8m inside; electricity and water on pontoons but ½ mile for provisions; no travel lift but heavy craneage; fuel in any quantities by road tanker on demand; lengthy road and no rail connections; Aberdeen airport 25M.

From Peterhead to Lerwick is 145 miles and worth taking in one leg. Progressing along the N Moray shore and then NE up the Caithness coast adds considerably to the distance and there are only small fishing harbours en route except for **Cromarty** which now has some yacht pontoons. Even diverting to **Kirkwall** in Orkney still leaves 100 miles to Lerwick.

For those wishing to divert to Inverness for the Caledonian Canal or to visit Orkney brief details of the Moray Firth ports are :- **Fraserburgh, Macduff, Buckie, Burghead, Whitehills** and **Lossiemouth** are all small fishing ports which do not dry but have some depth restrictions and entry may be restricted from their aspect to the prevailing weather; possible overnight stops.

Inverness A

The entrance to sea lock of Canal may not be possible in strong northwesterlies; access to River Ness which is dredged to 3m and Inverness town with a small marina and good provisioning, can be made in all weathers; fuel and yacht facilities at canal entrance in Muirtown Basin; good road and rail connections plus airport.

Caledonian Canal runs 60M from Corpach to Inverness via 3 lochs and 29 locks; transit takes at least 2 days; access to sea locks usually HW±4 hours; operates 0800 – 1800 seven days a week; limitations 45m LOA, 10m beam, 4m draught and maximum mast height 27.4m.

Further N, **Wick** is a sheltered fishing and oil support port but a dangerous entrance in strong easterlies; good air and rail links.

Kirkwall A

A landlocked harbour 11M from the open sea to the E giving good shelter in all conditions and now with yacht facilities; provisioning, and fuel only in cans; ferries and air connections.

Lerwick A

A busy fishing and oil rig support port which makes considerable effort to welcome visiting yachts. 6.8m in the entrance with 1.5m to 6m alongside a pontoon for up to 15m in yacht harbour which is centre of the town; yachts of almost any size can be accommodated somewhere; water on the pontoon and fuel in any quantity by road tanker; craneage up to 140 tons; handy and very good provisioning; ferry and air connections to the mainland with summer ferries to Norway, Denmark, Faeroe and Iceland.

Scalloway on the W side of the island is a good alternative and may be preferable if going from or to the W or NW.

Route 4 Waypoint Table

THESE WAYPOINTS SHOULD BE USED FOR PLANNING ONLY AND NEVER FOR NAVIGATION

Waypoints are given to the nearest minute of latitude and longitude and are positioned in clear water off the ports or headlands.

Turning Points (TP) are also noted in the table to avoid land or navigational hazards.

The symbol * between two ports denotes that the direct route between them passes over or close to land or other navigational dangers.

Port or point	Lat	Long
SOLENT (Cowes)	50 46N	01 17W
*		*
BRIGHTON	50 48	00 06W
TP Beachy Head	50 42	00 15E
*		*
DOVER	51 06	01 20E
TP South Foreland	51 09	01 25E
RAMSGATE	51 19	01 26E
*		*
LOWESTOFT	52 28	01 45E
Great Yarmouth	52 34	01 45E
*		*
HUMBER(Spurn)	53 32	00 05W
TP Flamborough Head	54 06	00 00
*		*
Whitby	54 30	00 36W
*		*
HARTLEPOOL	54 41	01 10W
*		*
TYNE	55 01	01 23W
Blyth	55 06	01 28W
TP Farne Islands	55 40	01 32W
St Abbs Head	56 00	02 00W
*		*
South Queensferry	50 00	03 25W
*		*
TP Fifeness	56 17	02 30W
*		*
Dundee	56 27	02 37W
*		*
Peterhead	57 30	01 45W
*		*
TP Rattray/Kinnaird	57 40	01 43W
*		*
Inverness	57 30	04 13W
*		*
TP Copinsay	58 45	02 35W
*		*
Kirkwall	59 00	02 57W
*		*
Lerwick	60 07N	01 10W

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