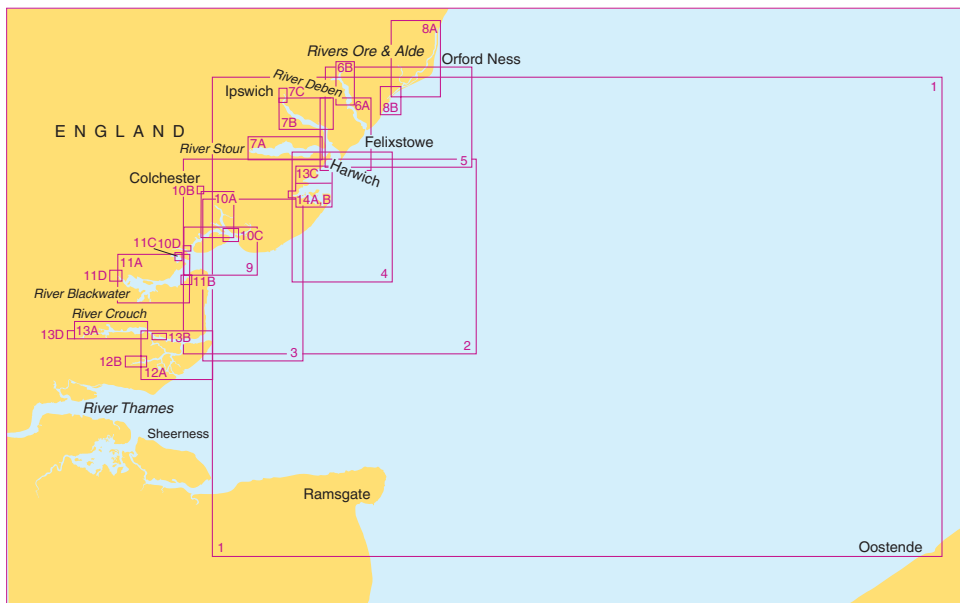




Thames Estuary - Essex and Suffolk Coast

Coverage Diagram



5607	Chart Title	Natural Scale 1:
1	Orford Ness to Oostende	250,000
2	Foulness Point to Landguard Point	100,000
3	Outer Approaches to the River Blackwater	50,000
4	Southern Approaches to Harwich	50,000
5	Harwich to Orford Ness	50,000
6A	Approaches to Harwich and Woodbridge Haven	25,000
6B	Continuation of River Deben	25,000
7	Rivers Stour and Orwell	
7B	River Orwell	25,000
7C	Ipswich	10,000
8A	Rivers Ore and Alde	25,000
8B	Orford Haven and Approaches	25,000
9	Approaches to Mersea Island and Brightlingsea	25,000
10	Harbours on the East Coast	
10A	River Colne	25,000
10B	Colchester Quays	12,500

5607	Chart Title	Natural Scale 1:
10C	Brightlingsea	12,500
10D	West Mersea	12,500
11A	River Blackwater, Bradwell to Maldon	25,000
11B	Bradwell	12,500
11C	Tollesbury	12,500
11D	Maldon	12,500
12A	Rivers Crouch and Roach	25,000
12B	Continuation of the River Roach	25,000
13A	Continuation of River Crouch	25,000
13B	Burnham-on-Crouch	10,000
13C	Entrance to Walton Backwaters	12,500
13D	Continuation to Battlesbridge	25,000
14A	Walton Backwaters	12,500
14B	Continuation of Landermere Creek	12,500

Notes

DATUM

All the charts are referred to the WGS 84 Datum. Any positions taken from GPS (referred to WGS84) or from ADMIRALTY Notices to Mariners (referred to ETRS89) can be plotted directly on all charts.

OVERHEAD CABLES

Overhead cables may conduct high voltages; contact with or proximity to these poses extreme danger. Sufficient clearance must be allowed.

SANDWAVES

Sandwaves exist in the areas indicated; depths may be less than charted.

DEPTHS AND AIDS TO NAVIGATION

The channels and depths shown on this chart are subject to frequent change. The buoyage and other aids to navigation are adjusted accordingly. For the latest information, consult the London VTS and the Medway Port Authority within the Medway Approach Area.

LIGHTS

Light stars without legends represent two fixed lights displayed vertically.

WIND FARM UNDER CONSTRUCTION

The symbols • within the wind farm construction area show the planned positions of the turbines. A safety zone of 500m becomes operational around the turbines under construction. Consult local notices to mariners issued by the wind farm developer for details of installation progress.

OMISSION OF DETAIL

Within the limit marked [] and the coastline, this chart should only be used for planning purposes as features such as depths, platforms, wrecks, pipelines, minor aids to navigation and cables have been omitted. Larger scale ADMIRALTY charts are available for mariners intending to navigate in this area.

WRECKS

In areas covered by larger scale charts some less significant wrecks have been omitted for reasons of clarity.

DREDGED AREAS

The depths shown for the dredged channels and berths within the ports of Harwich and Felixstowe are generally maintained, but silting is liable to occur. For the latest information contact Harwich Harbour Operations Service, (or Harwich VTS). Similarly, dredged depths within the River Orwell are subject to siltation and liable to change. For the latest information, mariners are advised to consult ABP Ipswich.

Positions are referred to the WGS84 compatible datum, European Terrestrial Reference System 1989 Datum.

Depths are in metres and are reduced to Chart Datum, which is approximately the level of Lowest Astronomical Tide.

Heights are in metres. Underlined figures are drying heights above Chart Datum. Overhead clearance heights are above Highest Astronomical Tide. All other heights are above Mean High Water Springs.

Navigational marks: IALA Maritime Buoyage System-Region A (Red to port)

VESSEL REPORTING

For details of the following vessel traffic services and vessel reporting systems, see ADMIRALTY List of Radio Signals:

- London VTS
- Ipswich Local Port Service
- Harwich VTS
- Sunk VTS
- Dover Strait Reporting System (CALDOVREP)

HARWICH CHANNELS

(including the Harwich Deep Water, North and South Channels)

Vessels should navigate with extreme caution in the Harwich Channels and their approaches, as deep-draught vessels and crossing traffic may be encountered. Yachts entering and leaving Harwich Harbour are recommended to keep south and west of the approach channels.

ANCHORING PROHIBITED – Anchoring is prohibited in and within 60 metres of the channels.

FISHING PROHIBITED – Fishing is prohibited in the channels inshore of an extended line through Washington Buoy, No 1 Harwich Channel Buoy and No 2 Harwich Channel Buoy.

REGULATORY SYSTEM – Vessels must use the North and South Channels unless confined by their draught to the Deep Water Channel or unless otherwise expressly permitted by the Harbour Master.

CORK HOLE – EXPERIMENTAL BUOYS

Experimental buoys may be laid by Trinity House, without notice, in the southern part of Cork Hole (51°54'N 1°26'E). They have no navigational significance.

OYSTER BEDS

Vessels should avoid grounding in areas of oyster beds.

SHOEBURYNNESS FIRING DANGER AREAS

(51°36'N 1°00'E)

Experimental firing is frequently carried out in the area between Shoeburyness and Foulness Point. Apart from certain exceptions, no vessel may enter or remain in the Inner Danger Area at any time. Entry to the Outer Danger Area is prohibited when the area is in use as indicated by red flags. For further information contact Shoeburyness Range Control on Tel: +44(0)1702 383211 or see the Range Byelaws. VHF Channel 16 should also be monitored.

LOCAL NOTICE TO MARINERS

For the latest navigational information in this area including local Aids to Navigation, mariners should also consult Notice to Mariners issued by the Port of London Authority (PLA). These are available at the PLA website: www.pla.co.uk/notices-mariners and Harwich Haven Authority (HHA). These are available at the HHA website: www.hha.co.uk

FINGRINGHOE FIRING RANGE

(51°49'N 0°58'E)

No restrictions are placed on the right to transit the firing practice area at any time. The firing practice area is operated using a clear range procedure: exercises and firing only take place when the area is considered to be clear of all shipping.

HISTORIC WRECKS

The sites of historic wrecks are protected from unauthorised interference.

WETREP

Tankers of more than 600 dwt carrying heavy crude oil, heavy fuel oil or bitumen and tar and their emulsions are required to participate in the Western European Tanker Reporting System (WETREP). See ADMIRALTY List of Radio Signals for further details.

OIL AND GAS FIELDS

Production platforms and associated structures, including tanker moorings, storage tankers and platforms on pipelines, generally exhibit Mo(U) lights, aircraft obstruction lights, and audible fog signals. Unauthorised navigation is prohibited within 500 metres of all such structures. Within the areas covered by larger scale charts, certain fixed structures, pipelines and cables have been omitted due to their complexity and frequent change. The appropriate larger scale charts should be used in these areas.

MILEAGE MARKS

The approximate distances in sea miles from Sea Reach No 1 buoys (51°29'·5N 0°52'·6E) and the Medway buoy (51°28'·8N 0°52'·8E) are shown

through the channels thus: **30M.**

DESIGNATED ANCHORAGES

Vessels requiring to wait at anchor must do so only in the designated anchorage areas. Within these areas, mariners are requested to occupy the anchor berths shown. Vessels may not anchor in a fairway except in an emergency or for the purpose of manoeuvring. For further details, see ADMIRALTY Sailing Directions.

SUBMARINE CABLES AND PIPELINES

Mariners should not anchor, trawl or engage in seabed operations in the vicinity of submarine cables and pipelines. Submarine cables support national infrastructure; damage to them may affect critical services and can result in serious consequences, as well as creating a potential hazard to mariners. Wilful or neglectful damage to a cable may result in legal action. Pipelines are not always buried and their presence may significantly reduce the charted depth. They may also span seabed undulations and cause fishing gear to become irrecoverably snagged, putting a vessel in severe danger.

Notes

PRECAUTIONARY AREAS

1. SUNK INNER & OUTER (51°51'N 1°41'E)

Vessels entering these areas should navigate with extreme caution as vessels embarking and disembarking pilots may be encountered, some of which may be constrained by their draught. VHF Channel 14 should be monitored, see ADMIRALTY List of Radio Signals.

2. FISHERMAN'S GAT (51°37'N 1°20'E)

Within this area, manoeuvring traffic may be encountered entering or leaving Fisherman's Gat. Extra care should be exercised when approaching the confluence of Black Deep and Fisherman's Gat and when approaching Knock John Channel.

LONG SAND HEAD TWO – WAY ROUTE

(51°43'·6N 1°41'·6E)

Only to be used by vessels entering or leaving Medway/Thames ports that meet certain pilotage requirements. This route can also be used by any vessel less than 20 metres in length, any sailing vessel, any vessel engaged in fishing activity or licensed dredgers working in designated extraction areas, irrespective of their port of origin/destination. For further details, consult ADMIRALTY Sailing Directions/Sunk VTS.

DRAUGHT RESTRICTIONS

To reduce the risk to deep-draught vessels resulting from traffic congestion, passage through the Black Deep and Knock John Channel is normally restricted to vessels with a draught of over 6 metres. Vessels with draught less than 6 metres wishing to use, or cross, the Black Deep Channel must obtain permission from London VTS before doing so.

HM Coastguard Services and Safety Information

VHF MARITIME RADIO

Coastguard Maritime Rescue Co-ordination Centres are on constant watch on Channel 16 - the distress, safety and calling channel. Initial calls should normally be on Ch 16.

HM COASTGUARD

UNITED KINGDOM

DOVER COASTGUARD OPERATIONS CENTRE (MRCC)

Tel: +44 (0) 1304 210008

MMSI: 002320010

e-mail: zone14@hmcg.gov.uk (FAO Dover Coastguard)

BELGIUM

OOSTENDE MRCC

Tel: +32 59 701000

+32 59 701100

MMSI: 002059981

e-mail: mrcc@mrcc.be

Distress and Safety Communication

Distress - Urgency

A Distress or Urgency message has absolute priority.

Make a call on VHF Channel 16 and give the following essential information:

Distress Call **MAYDAY MAYDAY MAYDAY**

- Name and Call Sign and MMSI number Position
- Nature of Distress
- Type of assistance required
- Type of boat - number of crew - intentions

Urgency (eg. if you break down in bad weather or a crewman requires medical attention)

Call **PANPAN PANPAN PANPAN** and give:

- Name and Call Sign and MMSI number Position
- Nature of Distress
- Type of assistance required
- Type of boat - number of crew - intentions

Other Distress Signals

Other recognised signals are:

- Red flares (parachute, multi stars or hand held) Orange smoke signal
- The flag signal NC
- The morse signal SOS ... --- ... by light
- An article of clothing on an oar
- Slowly and repeatedly raising and lowering outstretched arms
- A square flag with anything resembling a ball above or below it
- Continuous sounding of a siren or whistle will also be recognised, or smoke and flames from the vessel
- The carriage of an Emergency Position Indicating Radio Beacon (406 EPIRB) will improve your chances of being located if conventional means fail. 406 EPIRBs are detected by satellite, in addition to aircraft, and transmitted to a Coastguard Maritime Rescue Co-ordination Centre.

THE USE OF MOBILE TELEPHONES IN DISTRESS AND SAFETY COMMUNICATIONS

The use of mobile telephones in the marine environment offshore is now well established, with users in all areas of the commercial, fishing and leisure communities.

Incidents have occurred where vessels requiring assistance from rescue services have used the inland emergency service, or alternatively telephoned direct to request assistance. (e.g. Lifeboat services). This procedure through a mobile telephone is strongly discouraged.

Use of mobile telephones by-passes the existing dedicated well-established international marine distress communications systems.

Mobile telephone coverage offshore is limited and does not afford the same extensive safety coverage as VHF Channel 16. Consequently a greater risk exists of communications difficulties or even a complete breakdown if an accident should occur at the edge of a cell coverage area.

Subsequent on-scene communications would be restricted and delayed if mobile telephone communications were exclusively maintained throughout. There is always a risk that elements of vital information could be lost or misinterpreted by the introduction of further relay links in the communication chain. Mobile telephones are also highly susceptible to failure due to water ingress.

It is not possible to communicate direct to another vessel able to render assistance unless that vessel is also fitted with a mobile telephone and the telephone number is known. Requests for assistance cannot be monitored by other vessels in a position to render assistance. Valuable time would be lost whilst the relevant Coastguard Rescue Coordination Centre receives and then re-broadcasts the information to all ships on the appropriate distress channel(s).

In the interests of Safety Of Life At Sea (SOLAS), owners of vessels are urged to carry MARINE communications equipment onboard and to use this medium as the primary means of Distress and Safety communications.

Product Specifications

PRODUCT USAGE CAUTION

This product is specifically designed, in conjunction with other charts and publications, as an aid to the navigation of leisure craft and locally regulated workboats and fishing vessels and therefore should be used by competent (preferably qualified) maritime navigators. Although this product contains the best information available at the time of publication, the user should navigate with caution, particularly in areas of shallow or confined waters where the depth of water is likely to change due to local conditions. The information provided in this product comes from the latest source information held and is updated by Notice to Mariners upon receipt of new information critical to safe navigation. To help maintain this product for all users, users are asked to notify the United Kingdom Hydrographic Office of any differences found between what is depicted and actual conditions encountered.

KEEPING THIS CHART UPDATED

Updates for the charts are published using the Notices to Mariners Service on the ADMIRALTY Notices to Mariners page found on our website at admiralty.co.uk/msi. All updates for the latest edition of the chart are listed and can be quickly and easily downloaded. All the charts are derived from standard ADMIRALTY charts. No updates are applied to the charts by the United Kingdom Hydrographic Office or its agents after printing. For those who do not have internet access, please contact Tel. 01823 484444 for assistance.

PROVIDE UPDATED INFORMATION

To help maintain this product users are asked to notify the United Kingdom Hydrographic Office of any differences found between what is depicted and actual conditions encountered. Users can do this by submitting a Hydrographic Note form, found on our website admiralty.co.uk/msi or by downloading our H-Note App. The H-Note App is freely available to download on Android and iOS devices. For more information please see here:



IMPROVEMENTS TO THIS PRODUCT

ADMIRALTY Small Craft Charts are designed for use on leisure craft and locally regulated workboats and fishing vessels, where the smaller format charts fit more conveniently into the limited space available. Users with specific suggestions for the improvement of this product or ideas for the expansion of the series are requested to forward their comments to:

Customer Services, The UK Hydrographic Office,
Admiralty Way, Taunton. +44(0)1823 484444
E-mail customerservices@ukho.gov.uk

To view all ADMIRALTY Products and services, visit admiralty.co.uk

Tidal Stream Information

5607_1

Tidal Streams referred to HW at DOVER

Hours	Geographical Position			51°26'0N 1 38.9 E		52°01'5N 1 47.4 E		51°44'3N 1 48.2 E		51°30'5N 1 51.8 E		51°59'0N 2 05.9 E		51°32'0N 2 13.0 E		51°23'0N 2 26.7 E		51°51'0N 2 29.4 E		51°36'0N 2 36.0 E		
Before High Water	Directions of streams (degrees)	Rates at spring tides (knots)	Rates at neap tides (knots)	-6	137	0.5 0.3	023	0.5 0.3	009	0.5 0.3	0.0 0.0	073	0.6 0.4	307	0.5 0.3	270	1.1 0.6	337	0.3 0.2	293	0.7 0.4	
				-5	164	1.1 0.6	207	0.9 0.6	194	0.2 0.1	219	0.7 0.4	198	0.8 0.3	233	0.9 0.5	255	1.6 1.0	224	0.6 0.4	241	1.0 0.6
				-4	173	1.6 0.9	208	1.8 1.2	194	1.2 0.6	215	1.4 0.7	202	1.8 0.8	218	1.6 0.8	248	1.8 1.2	209	1.5 1.0	221	1.5 0.8
				-3	189	1.9 1.1	207	2.3 1.6	193	1.9 1.1	209	2.2 1.2	203	2.1 1.3	215	1.8 1.0	245	1.7 1.2	209	1.9 1.3	217	1.6 1.0
				-2	201	1.5 0.8	209	2.2 1.5	199	2.2 1.2	212	1.8 0.9	205	2.2 1.4	213	1.6 0.9	232	1.0 0.8	206	1.6 1.0	213	1.5 0.9
				-1	240	0.7 0.4	210	1.5 1.0	205	1.6 0.9	206	0.9 0.5	204	1.8 1.1	199	0.9 0.5	153	0.8 0.5	199	1.0 0.7	196	1.0 0.6
After High Water	Directions of streams (degrees)	Rates at spring tides (knots)	Rates at neap tides (knots)	0	328	1.0 0.5	213	0.5 0.3	234	0.4 0.2	006	0.2 0.1	196	0.8 0.5	102	0.5 0.3	075	1.5 0.8	176	0.4 0.3	114	0.7 0.4
				+1	353	1.5 0.8	024	0.7 0.5	010	0.5 0.3	029	1.0 0.5	063	0.6 0.3	057	1.0 0.6	064	1.8 1.0	051	0.5 0.3	067	1.1 0.7
				+2	004	1.6 0.9	031	1.7 1.2	024	1.2 0.7	032	1.8 0.9	032	1.6 0.8	044	1.5 0.8	060	1.9 1.1	036	1.3 0.9	048	1.5 0.9
				+3	016	1.3 0.7	032	2.2 1.5	024	1.9 1.0	033	1.7 0.9	027	2.1 1.2	037	1.7 0.9	057	1.6 1.0	022	1.6 1.1	037	1.6 0.9
				+4	026	1.0 0.5	029	2.0 1.4	022	1.9 1.1	036	1.4 0.7	026	2.1 1.2	030	1.4 0.7	052	0.9 0.6	027	1.6 1.1	026	1.3 0.8
				+5	044	0.6 0.3	025	1.6 1.1	018	1.6 0.9	032	0.8 0.4	026	1.6 0.9	018	1.0 0.4	007	0.5 0.3	021	1.0 0.7	005	1.0 0.5
	Directions of streams (degrees)	Rates at spring tides (knots)	Rates at neap tides (knots)	+6	107	0.3 0.2	024	0.8 0.5	010	0.9 0.5	034	0.2 0.1	024	0.8 0.6	338	0.5 0.2	297	0.8 0.4	357	0.4 0.3	318	0.6 0.4

5607_1 continued

Hours		Geographical Position			51°28'0N 2 54.5 E		51°55'0N 2 59.0 E		
Before High Water		Directions of streams (degrees)	Rates at spring tides (knots)	Rates at neap tides (knots)	-6	265	1.0 0.7	321	0.6 0.4
					-5	244	1.4 0.8	237	0.7 0.3
					-4	232	1.5 0.9	215	1.3 0.5
					-3	228	1.5 0.9	213	1.5 1.1
					-2	223	1.2 0.7	214	1.7 1.1
					-1	191	0.7 0.4	208	1.4 0.8
High Water		0	098	1.1 0.7	175	0.7 0.5			
After High Water		Directions of streams (degrees)	Rates at spring tides (knots)	Rates at neap tides (knots)	+1	069	1.6 1.0	086	0.9 0.6
					+2	058	1.7 1.0	048	1.5 0.9
					+3	048	1.4 0.9	036	1.8 1.1
					+4	033	1.0 0.6	030	1.6 1.0
					+5	340	0.4 0.5	018	1.3 0.7
					+6	280	0.8 0.6	352	0.7 0.4

5607_2

Tidal Streams referred to HW at SHEERNESS

Hours	Geographical Position			51°44'4N 1 10.2 E		51°42'1N 1 10.8 E		51°46'6N 1 24.9 E		51°40'4N 1 26.7 E		51°36'5N 1 29.9 E		51°52'1N 1 36.8 E		51°47'5N 1 39.9 E		51°39'2N 1 40.2 E		
Before High Water	Directions of streams (degrees)	Rates at spring tides (knots)	Rates at neap tides (knots)	212	0.6 0.4	249	0.5 0.3	214	0.9 0.6	204	1.6 1.0	213	1.6 1.0	211	1.1 0.7	192	1.4 0.9	209	1.4 0.9	-6
				230	1.6 1.1	242	1.6 1.1	218	1.9 1.3	198	2.4 1.5	217	2.1 1.4	212	1.9 1.3	203	2.1 1.4	205	2.0 1.4	-5
				237	1.8 1.2	241	2.0 1.3	220	2.4 1.6	199	2.6 1.6	214	1.8 1.1	214	2.1 1.4	211	2.2 1.4	205	2.0 1.4	-4
				243	1.7 1.2	244	1.8 1.2	226	2.2 1.4	204	2.2 1.4	221	1.3 0.8	218	1.8 1.2	222	1.6 1.1	206	1.6 1.1	-3
				255	1.6 1.1	250	1.4 0.9	235	1.5 1.0	230	0.8 0.5	261	0.6 0.4	226	1.0 0.7	258	0.9 0.6	211	0.7 0.5	-2
				260	0.7 0.5	270	0.5 0.3	267	0.6 0.4	348	0.7 0.5	354	0.6 0.4	286	0.2 0.1	341	0.7 0.5	030	0.5 0.3	-1
After High Water	Directions of streams (degrees)	Rates at spring tides (knots)	Rates at neap tides (knots)	036	0.5 0.3	054	0.5 0.3	024	0.7 0.5	016	1.2 0.8	035	1.5 1.0	031	0.9 0.6	020	1.7 1.2	027	1.4 0.9	0
				054	1.7 1.2	069	1.5 1.0	043	1.8 1.2	030	1.9 1.2	040	1.9 1.3	035	1.9 1.2	029	2.2 1.5	029	1.8 1.2	+1
				065	2.0 1.4	067	1.9 1.2	048	2.5 1.7	032	2.1 1.4	043	1.8 1.2	038	2.2 1.4	042	1.8 1.2	029	1.9 1.2	+2
				067	1.6 1.1	067	1.7 1.1	047	2.2 1.5	025	1.6 1.0	047	1.3 0.9	040	1.8 1.2	056	1.3 0.9	023	1.5 1.0	+3
				072	1.1 0.7	066	1.1 0.7	047	1.5 1.0	024	1.3 0.8	055	0.6 0.4	039	1.1 0.7	073	0.8 0.5	019	0.9 0.6	+4
				075	0.7 0.5	058	0.6 0.4	050	0.7 0.4	022	0.5 0.3	199	0.1 0.1	034	0.4 0.3	131	0.5 0.3	0.0 0.0	+5	

5607_3

Tidal Streams referred to HW at SHEERNESS

Hours	Geographical Position		51°44'5N 1 02.6 E		51°42'5N 1 03.4 E		51°40'3N 1 04.9 E		51°35'8N 1 07.5 E		51°44'4N 1 10.2 E		51°42'1N 1 10'8 E	
Before High Water	Directions of streams (degrees)	284	0.4 0.3	228	0.3 0.2	231	0.3 0.2	213	0.3 0.2	212	0.6 0.4	249	0.5 0.3	-6
Before High Water	Rates at spring tides (knots)	283	0.9 0.6	253	1.4 0.9	252	1.6 1.0	228	1.2 0.8	230	1.6 1.1	242	1.6 1.1	-5
Before High Water	Rates at neap tides (knots)	275	1.3 0.9	254	1.9 1.2	250	1.9 1.2	231	1.5 1.0	237	1.8 1.2	241	2.0 1.3	-4
Before High Water		275	1.4 0.9	254	1.8 1.2	250	1.8 1.1	241	1.5 1.0	243	1.7 1.2	244	1.8 1.2	-3
Before High Water		290	1.4 0.9	255	1.5 0.9	253	1.4 0.9	258	1.6 1.1	255	1.6 1.1	250	1.4 0.9	-2
Before High Water		291	0.7 0.5	255	0.4 0.3	255	0.8 0.5	269	0.6 0.4	260	0.7 0.5	270	0.5 0.3	-1
High Water		081	0.8 0.5	073	0.9 0.6	039	0.4 0.3	075	0.2 0.1	036	0.5 0.3	054	0.5 0.3	0
After High Water	Directions of streams (degrees)	100	1.5 1.0	075	2.1 1.4	070	1.5 1.0	066	1.3 0.9	054	1.7 1.2	069	1.5 1.0	+1
After High Water	Rates at spring tides (knots)	098	1.7 1.1	074	1.9 1.2	074	2.0 1.3	065	1.5 1.0	065	2.0 1.4	067	1.9 1.2	+2
After High Water	Rates at neap tides (knots)	099	1.3 0.9	065	1.2 0.8	074	1.8 1.1	060	1.6 1.1	067	1.6 1.1	067	1.7 1.1	+3
After High Water		102	0.8 0.5	066	0.8 0.5	075	1.4 0.9	061	1.3 0.9	072	1.1 0.7	066	1.1 0.7	+4
After High Water		094	0.5 0.3	071	0.5 0.3	079	0.8 0.5	066	0.6 0.4	075	0.7 0.5	058	0.6 0.4	+5
After High Water		254	0.2 0.1	207	0.1 0.1	158	0.1 0.1	187	0.2 0.1	180	0.2 0.1	281	0.1 0.1	+6

5607_4 Tidal Streams referred to HW at SHEERNESS

Hours	Geographical Position	51°47'8"N 1 20.2 E	51°46'6"N 1 24.9 E	
Before High Water	Directions of streams (degrees)	238 1.0 0.7 234 2.1 1.4 237 2.3 1.6 241 2.2 1.4 249 1.4 0.9 310 0.5 0.3	214 0.9 0.6 218 1.9 1.3 220 2.4 1.6 226 2.2 1.4 235 1.5 1.0 267 0.6 0.4	-6 -5 -4 -3 -2 -1
High Water	Rates at spring tides (knots)	050 1.1 0.7	024 0.7 0.5	0
After High Water	Rates at neap tides (knots)	060 2.5 1.7 063 2.4 1.6 065 1.9 1.3 064 1.4 0.9 066 0.6 0.4 241 0.4 0.3	043 1.8 1.2 048 2.5 1.7 047 2.2 1.5 047 1.5 1.0 050 0.7 0.4 210 0.5 0.3	+1 +2 +3 +4 +5 +6

5607_4 Tidal Streams referred to HW at HARWICH

Hours	Geographical Position	51°52'4"N 1 20.4 E	51°56'4"N 1 23.5 E	51°57'4"N 1 26.5 E	
Before High Water	Directions of streams (degrees)	189 0.5 0.3 185 1.2 0.8 185 1.4 0.9 185 1.3 0.9 186 0.9 0.6 196 0.2 0.1	229 0.4 0.3 225 1.1 0.7 226 1.3 0.8 227 1.2 0.8 233 0.9 0.6 256 0.6 0.4	206 0.8 0.5 207 1.3 0.8 209 1.3 0.8 213 1.1 0.7 216 0.8 0.5 277 0.2 0.1	-6 -5 -4 -3 -2 -1
High Water	Rates at spring tides (knots)	002 0.7 0.5	020 0.3 0.2	033 0.8 0.5	0
After High Water	Rates at neap tides (knots)	008 1.3 0.8 011 1.4 0.9 008 1.5 1.0 003 1.0 0.7 351 0.3 0.2 204 0.2 0.1	049 1.1 0.7 052 1.4 1.0 054 1.2 0.8 053 0.9 0.6 052 0.5 0.3 252 0.1 0.1	034 1.1 0.7 030 1.3 0.8 031 1.1 0.7 036 0.7 0.4 037 0.3 0.2 206 0.5 0.3	+1 +2 +3 +4 +5 +6

5607_5 Tidal Streams referred to HW at HARWICH

Hours	Geographical Position	51°56'4"N 1 23.5 E	51°57'4"N 1 26.5 E	51°59'6"N 1 29.3 E	52°03'1"N 1 31.6 E	52°00'8"N 1 31.7 E	51°58'1"N 1 34.0 E	52°04'9"N 1 38.3 E	
Before High Water	Directions of streams (degrees)	229 0.4 0.3 225 1.1 0.7 226 1.3 0.8 227 1.2 0.8 233 0.9 0.6 256 0.6 0.4	206 0.8 0.5 207 1.3 0.8 209 1.3 0.8 213 1.1 0.7 216 0.8 0.5 277 0.2 0.1	208 0.6 0.4 213 1.4 0.9 214 1.7 1.1 214 1.6 1.0 217 1.3 0.8 225 0.6 0.4	224 1.1 0.7 221 2.1 1.3 220 2.0 1.3 220 1.8 1.1 222 1.4 0.9 246 0.6 0.4	220 0.6 0.4 213 1.8 1.1 213 1.9 1.2 218 1.8 1.1 220 1.4 0.9 223 0.5 0.3	215 0.4 0.3 210 1.4 0.9 212 1.8 1.2 214 1.8 1.2 220 1.5 1.0 207 0.9 0.6	211 0.8 0.5 217 2.0 1.3 215 2.5 1.7 214 2.5 1.7 212 2.2 1.3 207 1.2 0.6	-6 -5 -4 -3 -2 -1
High Water	Rates at spring tides (knots)	020 0.3 0.2	033 0.8 0.5	026 0.5 0.3	034 1.0 0.6	041 0.6 0.4	018 0.2 0.1	053 0.3 0.2	0
After High Water	Rates at neap tides (knots)	049 1.1 0.7 052 1.4 1.0 054 1.2 0.8 053 0.9 0.6 052 0.5 0.3 252 0.1 0.1	034 1.1 0.7 030 1.3 0.8 031 1.1 0.7 036 0.7 0.4 037 0.3 0.2 206 0.5 0.3	034 1.6 1.0 058 1.9 1.2 034 2.0 1.3 034 1.6 1.0 048 1.1 0.7 041 0.6 0.4 045 0.1 0.0	058 1.9 1.2 037 2.0 1.2 035 1.6 1.0 036 1.3 0.8 040 0.7 0.4 230 0.6 0.4	037 1.9 1.2 033 2.0 1.2 035 1.6 1.0 036 1.3 0.8 040 0.7 0.4 210 0.1 0.1	018 0.2 0.1 033 1.1 0.7 036 2.2 1.5 035 1.9 1.3 036 1.4 0.9 036 0.8 0.5 033 0.0 0.0	029 2.0 1.3 031 2.9 1.9 033 2.8 1.8 033 2.2 1.5 036 1.2 0.8 033 0.2 0.1	+1 +2 +3 +4 +5 +6

5607_6 Tidal Streams referred to HW at HARWICH

Hours	Geographical Position	51°57'0"N 1 16.1 E	51°57'9"N 1 16.8 E	51°55'5"N 1 18.7 E	51°55'8"N 1 18.9 E	51°55'6"N 1 19.5 E	51°56'4"N 1 23.5 E	
Before High Water	Directions of streams (degrees)	258 0.2 0.1 273 0.5 0.3 277 0.7 0.5 277 1.0 0.6 272 1.3 0.8 262 1.3 0.8	297 0.2 0.1 339 1.0 0.6 335 1.0 0.6 341 0.9 0.6 339 1.2 0.8 338 0.8 0.6	215 0.4 0.2 315 0.9 0.6 305 1.2 0.7 302 1.2 0.7 304 1.1 0.7 313 0.8 0.5	325 1.1 0.7 325 1.8 1.1 320 1.1 0.7 326 1.2 0.8 321 1.8 1.2 320 1.1 0.7	273 0.8 0.5 263 1.2 0.8 253 1.1 0.7 252 1.2 0.7 227 1.2 0.8 233 0.9 0.6 256 0.6 0.4	229 0.4 0.3 225 1.1 0.7 226 1.3 0.8 227 1.2 0.8 233 0.9 0.6 256 0.6 0.4	-6 -5 -4 -3 -2 -1
High Water	Rates at spring tides (knots)	261 0.8 0.5	327 0.3 0.2	018 0.2 0.1	351 0.5 0.3	015 0.2 0.1	020 0.3 0.2	0
After High Water	Rates at neap tides (knots)	096 0.8 0.5 091 1.6 1.0 090 1.2 0.7 084 1.0 0.6 080 0.6 0.4 105 0.1 0.1	156 0.7 0.5 154 1.5 0.9 159 1.4 0.9 156 1.1 0.7 161 0.7 0.5 235 0.1 0.1	120 1.0 0.7 121 1.4 0.9 124 1.0 0.7 134 1.0 0.6 130 0.6 0.4 183 0.4 0.2	129 2.3 1.5 143 2.6 1.7 150 1.9 1.2 157 1.2 0.8 160 0.7 0.4 309 0.7 0.4	083 1.7 1.0 093 2.7 1.6 089 1.8 1.1 080 1.1 0.7 060 0.2 0.1 275 0.6 0.4	049 1.1 0.7 052 1.4 1.0 054 1.2 0.8 053 0.9 0.6 052 0.5 0.3 252 0.1 0.1	+1 +2 +3 +4 +5 +6

5607_7 Tidal Streams referred to HW at HARWICH

Hours	Geographical Position	51°57'03"N 1 16.09 E	
Before High Water	Directions of streams (degrees)	258 0.2 0.1 273 0.5 0.3 277 0.7 0.5 277 1.0 0.6 272 1.3 0.8 262 1.3 0.8	-6 -5 -4 -3 -2 -1
High Water	Rates at spring tides (knots)	261 0.8 0.5	0
After High Water	Rates at neap tides (knots)	096 0.8 0.5 091 1.6 1.0 090 1.2 0.7 084 1.0 0.6 080 0.6 0.4 105 0.1 0.1	+1 +2 +3 +4 +5 +6

TIDAL STREAM STATION ◆

Extensive dredging has taken place in Harwich Deep Water Channel since the observations for this table were taken. The data for this station should therefore be used with caution.

5607_9

Tidal Streams referred to HW
at WALTON-ON-THE-NAZE

Hours	Geographical Position	A 51°45'3 N 0 54.7 E	B 51°47'9 N 1 00.6 E	C 51°44'5 N 1 02.6 E	
Before High Water	Directions of streams (degrees)	085	0.1 0.1	090	0.1 0.1
		264	0.6 0.4	284	0.4 0.3
		262	0.9 0.6	283	0.9 0.6
		264	1.1 0.7	275	1.3 0.9
		263	1.2 0.8	275	1.4 0.9
		258	1.4 0.9	290	1.4 0.9
After High Water	Directions of streams (degrees)	249	0.9 0.6	291	0.7 0.5
		090	0.4 0.3	081	0.8 0.5
		086	1.0 0.7	100	1.5 1.0
		079	1.5 1.0	098	1.7 1.1
		074	1.5 1.0	099	1.3 0.9
		081	0.6 0.4	102	0.8 0.5
		086	0.4 0.3	094	0.5 0.3
	Rates at spring tides (knots)				
	Rates at neap tides (knots)				

5607_10

Tidal Streams referred to HW
at WALTON-ON-THE-NAZE

Hours	Geographical Position	A 51°47'9 N 1 00.6 E	
Before High Water	Directions of streams (degrees)	000	0.0 0.0
		012	0.8 0.5
		010	0.9 0.6
		002	1.1 0.7
		358	0.9 0.6
		353	0.6 0.4
After High Water	Directions of streams (degrees)	180	0.5 0.3
		183	1.2 0.8
		190	1.3 0.8
		187	1.0 0.7
		180	0.4 0.3
		180	0.2 0.1
	Rates at spring tides (knots)		
	Rates at neap tides (knots)		

5607_14

Tidal Streams referred to HW
at HARWICH

Hours	Geographical Position	A 51°52'5 N 1 16.0 E	
Before High Water	Directions of streams (degrees)	-6	-
		-5	168
		-4	168
		-3	168
		-2	170
		-1	173
After High Water	Directions of streams (degrees)	0	178
		+1	347
		+2	358
		+3	358
		+4	355
		+5	355
		+6	000
	Rates at spring tides (knots)		
	Rates at neap tides (knots)		

TIME & HEIGHT DIFFERENCES FOR PREDICTING THE TIDE AT SECONDARY PORTS

PLACE	Lat N	Long W	TIME DIFFERENCES				HEIGHT DIFFERENCES (IN METRES)			
			High Water	Low Water	Zone UT(GMT)		MHWS	MHWN	MLWN	MLWS
WALTON-ON-THE-NAZE	51 51	1 17	0000 and 1200	0600 and 1800	0100 and 1700	1100 and 2300	4.2	3.4	1.1	0.4
Whitaker Beacon	51 40	1 06	+0022	+0024	-0033	+0027	+0.6	+0.5	+0.2	+0.1*
Holliwell Point	51 38	0 56	+0034	+0037	+0100	+0037	+1.1	+0.9	+0.3	+0.1
<i>River Roach</i> Rochford.....	51 35	0 43	+0050	+0040	§	§	-0.8	-1.1	§	§
WALTON-ON-THE-NAZE	51 51	1 17	0000 and 1200	0600 and 1800	0100 and 1700	1100 and 2300	4.2	3.4	1.1	0.4
<i>River Crouch</i> BURNHAM-ON-CROUCH	51 37	0 48	STANDARD PORT				See Table of NON-REFERENCE STANDARD PORTS			
North Fambridge	51 38	0 41	+0115	+0050	+0130	+0100	+1.1	+0.8	0.0	-0.1
Hullbridge	51 38	0 38	+0115	+0050	+0135	+0105	+1.1	+0.8	0.0	-0.1
Battlesbridge	51 37	0 34	+0120	+0110	§	§	-1.8	-2.0	§	§
<i>River Blackwater</i> Bradwell Waterside	51 45	0 54	+0035	+0023	+0047	+0004	+1.0	+0.8	+0.2	0.0
Osea Island	51 43	0 46	+0057	+0045	+0050	+0007	+1.1	+0.9	+0.1	0.0
Maldon	51 44	0 42	+0107	+0055	○	○	-1.3	-1.1	○	○
West Mersea	51 47	0 54	+0035	+0015	+0055	+0010	+0.9	+0.4	+0.1	+0.1
<i>River Colne</i> Brightlingsea	51 48	1 00	+0025	+0021	+0046	+0004	+0.8	+0.4	+0.1	0.0
Colchester	51 53	0 56	+0035	+0025	§	§	0.0	-0.3	§	§
Clacton-on-Sea	51 47	1 10	+0012	+0010	+0025	+0008	+0.3	+0.1	+0.1	+0.1
Bramble Creek	51 53	1 14	+0010	-0007	-0005	+0010	+0.3	+0.3	+0.3	+0.3
Sunk Head	51 47	1 30	0000	+0002	-0002	+0002	-0.3	-0.3	-0.1	-0.1
HARWICH	51 57	1 17	0000 and 1200	0600 and 1800	0000 and 1200	0600 and 1800	4.0	3.4	1.1	0.4
<i>River Stour</i> Mistley	51 57	1 05	+0025	+0015	+0005	○	+0.2	+0.1	-0.1	-0.1†
<i>River Orwell</i> Ipswich	52 03	1 10	+0015	+0025	0000	+0010	+0.2	0.0	-0.1	-0.1
FELIXSTOW PIER	51 57	1 21	STANDARD PORT				See Table of NON-REFERENCE STANDARD PORTS			
WALTON-ON-THE-NAZE	51 51	1 17	0100 and 1300	0700 and 1900	0100 and 1300	0700 and 1900	4.2	3.4	1.1	0.4
<i>River Deben</i> Woodbridge Haven	51 59	1 24	0000	-0005	-0020	-0025	-0.5	-0.5	-0.1	+0.1
Woodbridge	52 05	1 19	+0045	+0025	+0025	-0020	-0.2	-0.3	-0.2	0.0
Bawdsey	52 01	1 26	-0016	-0020	-0030	-0032	-0.8	-0.6	-0.1	-0.1
<i>Orford Haven</i> Orford Haven Bar	52 02	1 28	-0026	-0030	-0036	-0038	-1.0	-0.8	-0.1	0.0
Orford Quay	52 05	1 32	+0040	+0040	+0055	+0055	-1.4	-1.1	0.0	+0.2
Slaughden Quay	52 08	1 35	+0105	+0105	+0125	+0125	-1.3	-0.8	-0.1	+0.2
Iken Cliffs	52 09	1 31	+0130	+0130	+0155	+0155	-1.3	-1.0	0.0	+0.2
LOWESTOFT	52 28	1 45	0300 and 1500	0900 and 2100	0200 and 1400	0800 and 2000	2.4	2.1	1.0	0.5
Orford Ness	52 05	1 35	+0135	+0135	+0135	+0125	+0.4	+0.6	-0.1	0.0

○ No Data

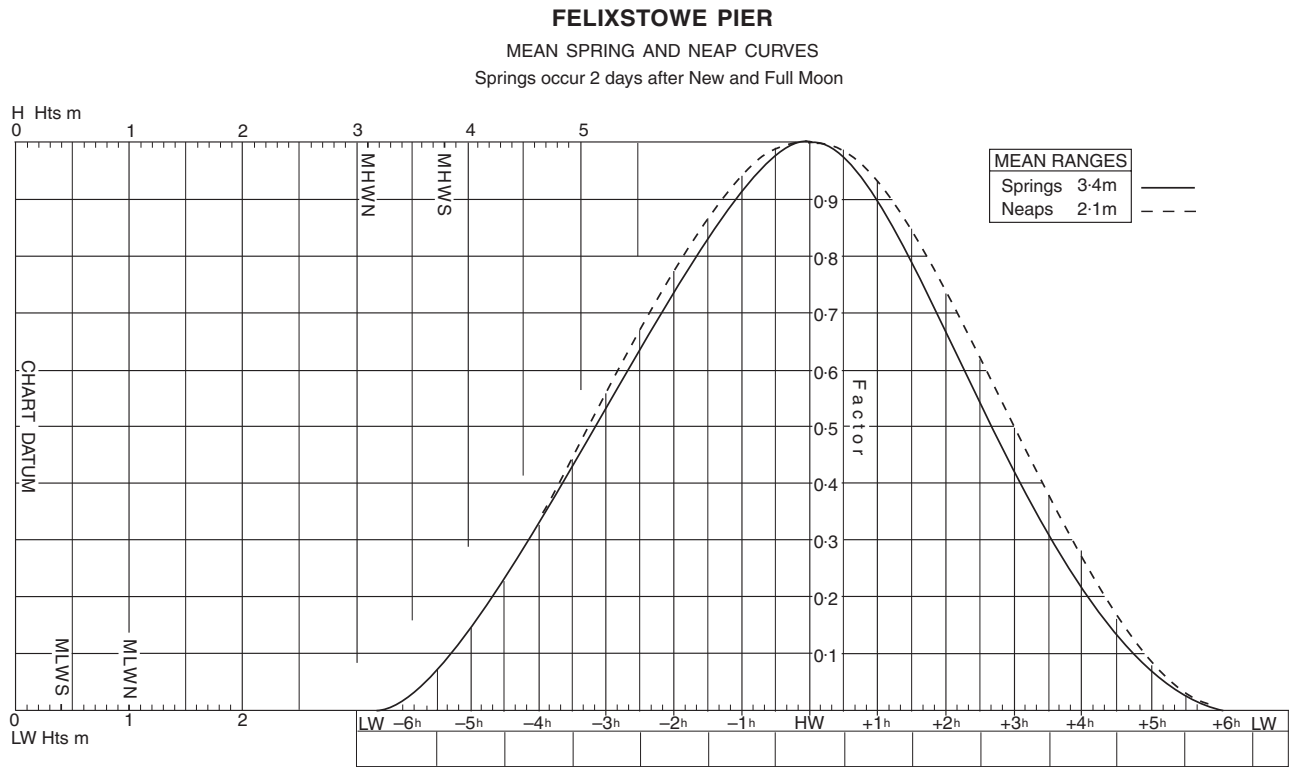
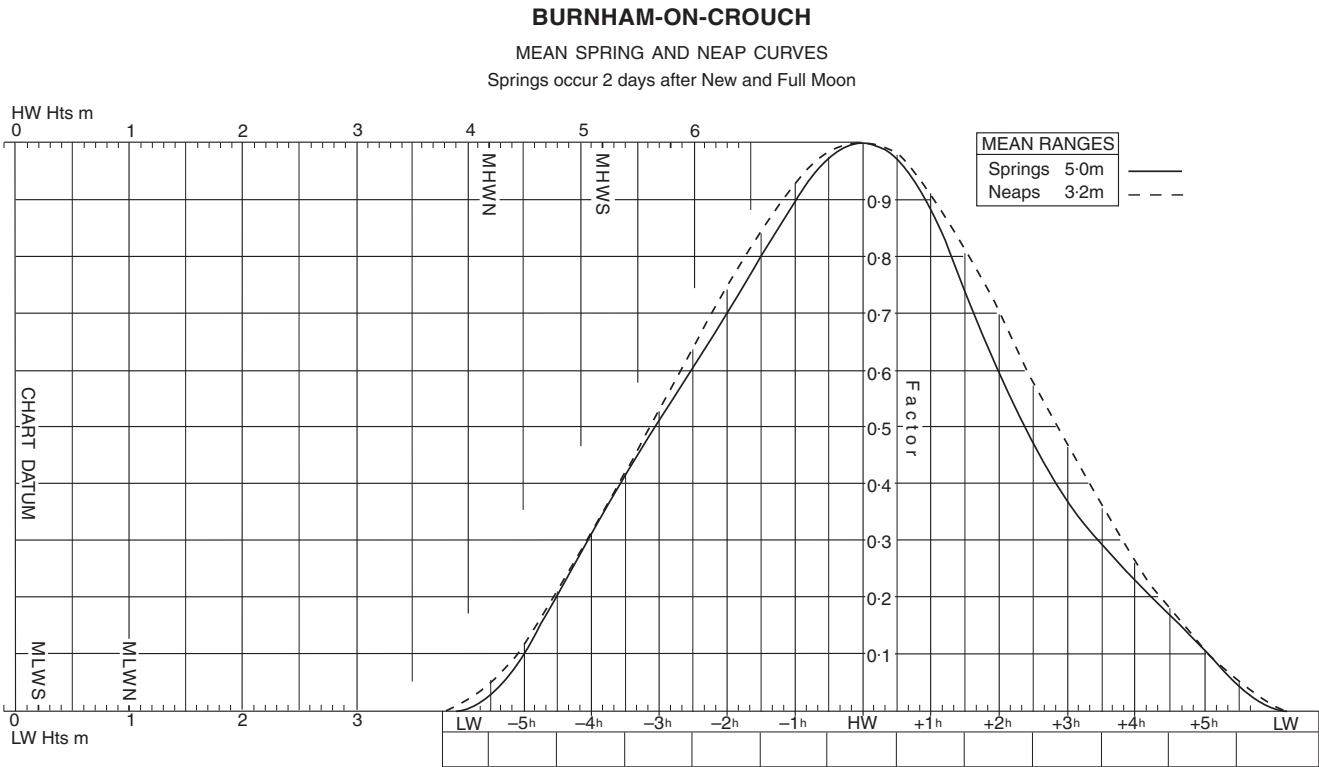
§ Dries out except for river water

† The tide does not normally fall below this level

* Tidal predictions for other places in the Thames Estuary should be obtained from the co-tidal charts contained in "Thames Estuary-Tidal Stream Atlas and Co-tidal Charts" (NP 249).

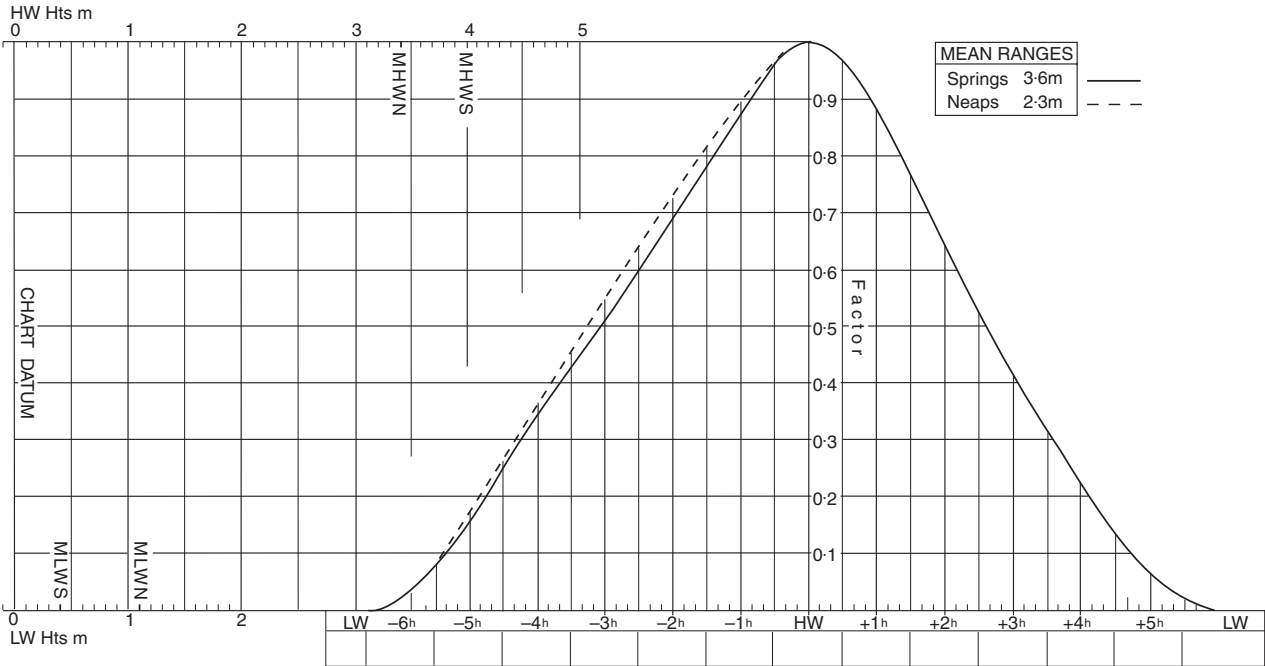
Non-Reference Standard Ports				
STANDARD PORT	MHWS	MHWN	MLWN	MLWS
BURNHAM-ON-CROUCH	5.2	4.2	1.0	0.2
FELIXSTOW PIER	3.8	3.1	1.0	0.4

Tidal Curve Diagrams



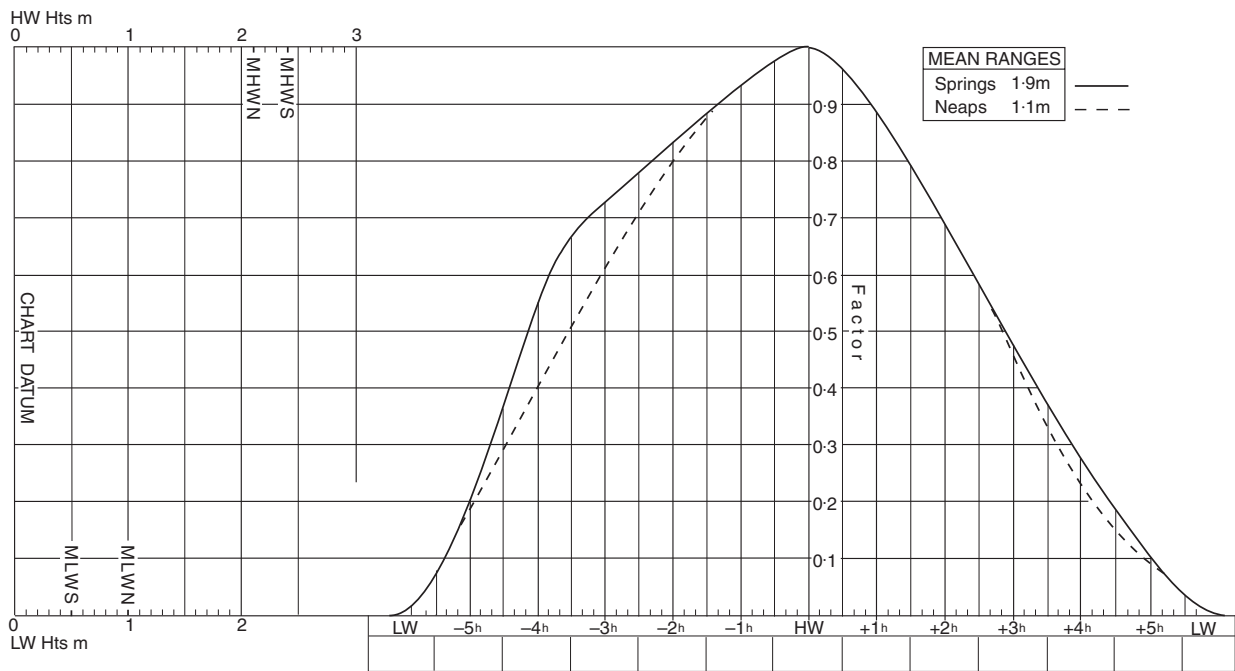
HARWICH

MEAN SPRING AND NEAP CURVES
Springs occur 2 days after New and Full Moon



LOWESTOFT

MEAN SPRING AND NEAP CURVES
Springs occur 2 days after New and Full Moon



WALTON-ON-THE-NAZE

MEAN SPRING AND NEAP CURVES

Springs occur 2 days after New and Full Moon

