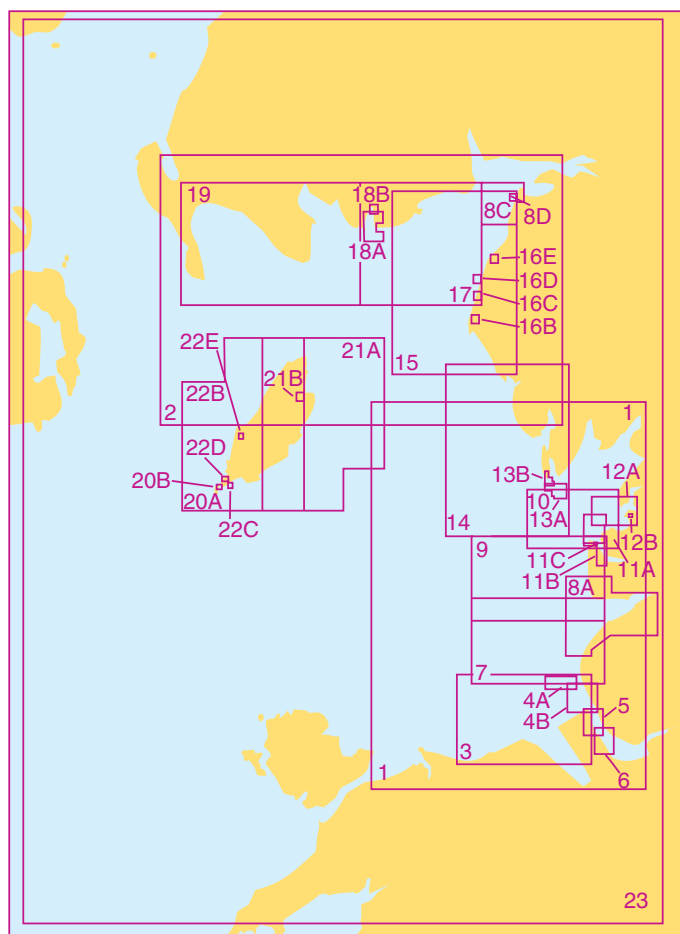




Irish Sea - Eastern Part

Coverage Diagram



5613	Chart Title	Natural Scale 1:
1	Great Ormes Head to Haverigg Point	200,000
2	Saint Bees Head to Mull of Galloway	200,000
3	Liverpool Bay	75,000
4A	Approach to Liverpool	25,000
4B	Crosby Channel to River Mersey	25,000
5	Gladstone Dock to Brunswick Dock	15,000
6	Brunswick Dock to Queen Elizabeth II Dock	15,000
7	Formby to Lytham Saint Anne's including Hamilton North Gas Field	75,000
8	River Ribble and Silloth	
8A	River Ribble	75,000


5613	Chart Title	Natural Scale 1:
8B	Preston Riversway Docklands	10,000
8C	Approaches to Silloth	50,000
8D	Silloth Docks and Approaches	10,000
9	Lytham Saint Anne's to Fleetwood including South Morecambe Gas Field	75,000
10	Rossall Point to Hilpsford Point	50,000
11A	Approaches to Fleetwood	25,000
11B	Fleetwood to Skippool	25,000
11C	Fleetwood	10,000
12A	Approaches to Glasson and Heysham	25,000
12B	Glasson	12,500
13A	South East Point to Long Rein Point	12,500
13B	Long Rein Point to Barrow-in-Furness	12,500
14	Barrow-in-Furness to Seascale	100,000
15	Saint Bees Head to Abbey Head	100,000
16	Harbours on the Cumbrian Coast	
16A	Ravenglass	15,000
16B	Whitehaven Harbour	10,000
16C	Harrington Harbour	10,000
16D	Workington Harbour	7,500
16E	Maryport Harbour	10,000
17	Workington to Isle of Whithorn	100,000
18A	Kirkcudbright Bay	15,000
18B	Continuation to Kirkcudbright	15,000
19	Wigtown Bay to Luce Bay	100,000
20A	Isle of Man West Coast	100,000
20B	Calf Sound	10,000
21A	Isle of Man East Coast	100,000
21B	Ramsey	10,000
22A	Douglas	7,500
22B	Castletown Bay	20,000
22C	Port Saint Mary	20,000
22D	Port Erin	10,000
22E	Peel	10,000
23	Anglesey to Ailsa Craig	500,000

Notes

DATUM

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

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.

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.

TRAFFIC AND DOCKING SIGNALS

For details of Traffic and Docking Signals, see ADMIRALTY Sailing Directions

OVERHEAD CABLES

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

MARINE FARMS

Marine farms may exist within the area of these charts. They may not all be shown individually and their positions may change frequently. Marine farms may be marked by lit or unlit buoys or beacons. Mariners are advised to avoid these structures and their associated moorings.

LIVERPOOL CONTAINER TERMINAL 2 (53°27'·15N 3°01'·45W)

The target depth alongside the terminal is 16·5m. Consult the Mersey Docks and Harbour Company for the latest information.

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. Depths in upright figures are from smaller scale or older surveys. All other heights are above Mean High Water Springs.

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

WRECKS, OBSTRUCTIONS AND FOULS

Charted wrecks, obstructions and fouls may be affected by the constant movement of silt in the River Mersey. At any time they may become partially covered, completely covered, uncovered, moved or broken up and may not be as charted.

RIVER MERSEY – CHANGING DEPTHS

Depths in the River Mersey frequently change and the buoys are moved as necessary. Consult local pilots or the Mersey Docks and Harbour Company for the latest information. See ADMIRALTY List of Radio Signals for communication details.

LOCAL NOTICE TO MARINERS (Barrow)

For the latest navigational information in this area including local Aids to Navigation, mariners should also consult Notice to Mariners issued by Associated British Ports (ABP) Barrow. These are available at the ABP website: <http://www.abports.co.uk/locations/barrow/>

OIL AND GAS FIELD DECOMMISSIONING

Production platforms and associated structures in the areas indicated are currently being decommissioned. During the works, aids to navigation may be unreliable and certain features may not be as shown. Consult local notices to mariners issued by the oil/gas field operator for details of decommissioning progress.

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.

CHAINS AND ANCHORS

Within the area indicated, chains, attached to anchors, radiate from the structures to positions outside the 500 metres safety zone.

HIGH SPEED CRAFT

High speed craft operate in the area of these charts. Mariners are advised to maintain a good lookout.

HISTORIC WRECKS

The sites of historic wrecks are protected from unauthorised interference.

FIRING PRACTICE AREAS

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

VESSELS REPORTING

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

- Barrow-in-Furness Local Port Service
- Douglas Harbour Control
- Liverpool VTS

AREA TO BE AVOIDED (53°32'·20N 3°34'·70W)

The IMO-adopted Area to be Avoided should only be entered by authorised vessels to access the Douglas Oil Field. For exceptions see ADMIRALTY Sailing Directions.

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 a working channel or Ch 16.

HM COASTGUARD

HOLYHEAD (MRCC)

Tel: +44 (0) 1407 762051

MMSI: 002320018

e-mail: zone31@hmcg.gov.uk (FAO Holyhead Coastguard)

BELFAST COASTGUARD (MRCC)

Tel: +44 (0) 2891 463933

MMSI: 002320021

e-mail: zone34@hmcg.gov.uk (FAO Belfast Coastguard)

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.

TIDAL STREAMS

Full details of the tidal streams in the area covered by this folio are given in the following ADMIRALTY Tidal Stream Atlas: NP 256 Irish Sea and Bristol Channel.

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

5613_1

Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	A	54°16'0N 3 30-1W	B	53°59'5N 3 29-1W	C	53°54'0N 3 44-6W	D	53°54'0N 3 14-1W	E	53°42'8N 4 01-0W	F	53°36'1N 3 19-1W	G	53°31'5N 3 30-1W	H	53°29'0N 3 49-9W	J	53°21'2N 4 00-2W	
Before High Water	Directions of streams (degrees)	153	0 9 0 5	102	0 0 0 0	024	0 4 0 2	232	0 6 0 4	243	0 4 0 2	251	0 3 0 1	290	0 2 0 1	343	0 2 0 1	115	0 2 0 1	-6
Before High Water	Rates at spring tides (knots)	144	0 9 0 5	102	0 4 0 3	067	0 7 0 4	127	0 3 0 2	105	0 7 0 4	108	0 5 0 3	072	0 6 0 4	083	0 7 0 4	101	0 8 0 4	-5
Before High Water	Rates at neap tides (knots)	137	0 8 0 5	104	0 8 0 5	078	1 1 0 6	089	1 0 0 5	084	1 8 1 1	087	1 1 0 6	097	1 5 0 8	101	1 5 0 8	100	1 4 0 8	-4
Before High Water		123	0 5 0 3	102	1 2 0 7	082	1 4 0 7	081	1 7 0 9	083	2 5 1 5	096	1 4 0 8	100	1 7 1 0	105	1 7 1 0	109	1 4 0 8	-3
Before High Water		056	0 2 0 1	094	1 1 0 6	086	1 3 0 7	072	1 8 1 0	086	1 9 1 1	096	1 0 0 5	101	1 3 0 7	105	1 4 0 7	119	1 0 0 5	-2
Before High Water		350	0 5 0 3	083	0 8 0 4	101	0 9 0 4	059	1 5 0 8	091	1 2 0 7	088	0 5 0 2	104	0 7 0 4	099	0 7 0 4	127	0 4 0 2	-1
After High Water	Directions of streams (degrees)	330	0 8 0 5	063	0 2 0 1	174	0 5 0 2	048	0 8 0 5	162	0 3 0 2	234	0 1 0 1	215	0 2 0 1			244	0 3 0 2	0
After High Water	Rates at spring tides (knots)	320	1 0 0 6	304	0 6 0 3	231	0 9 0 5	278	0 4 0 2	247	0 9 0 5	271	0 3 0 2	266	0 6 0 4	280	0 5 0 3	284	0 8 0 5	+1
After High Water	Rates at neap tides (knots)	314	0 9 0 5	275	0 9 0 5	251	1 4 0 8	258	0 9 0 5	265	1 5 0 9	274	0 7 0 4	277	1 0 0 7	277	1 0 0 6	290	1 3 0 8	+2
After High Water		311	0 6 0 3	271	1 1 0 6	263	1 5 0 8	257	1 5 0 9	269	2 0 1 2	277	1 1 0 6	281	1 3 0 8	280	1 4 0 8	295	1 3 0 7	+3
After High Water		295	0 2 0 0	274	1 0 0 5	277	1 2 0 6	254	1 7 1 0	271	1 8 1 0	275	1 1 0 6	283	1 2 0 7	286	1 4 0 8	298	1 0 0 5	+4
After High Water		180	0 4 0 2	275	0 7 0 4	297	0 8 0 4	244	1 4 0 7	266	1 3 0 7	273	0 9 0 5	284	0 9 0 4	283	1 0 0 5	295	0 4 0 2	+5
After High Water		157	0 7 0 4	280	0 4 0 1	347	0 4 0 2	236	0 8 0 4	255	0 9 0 4	263	0 5 0 2	285	0 4 0 2	308	0 4 0 2	087	0 2 0 1	+6

5613_2

Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	A	54°39'0N 3 41-1W	B	54°37'5N 4 19-8W	C	54°35'6N 4 50-2W	D	54°35'4N 4 00-7W	E	54°31'6N 4 36-9W	F	54°31'5N 3 44-4W	G	54°26'9N 4 24-2W	H	54°19'8N 4 13-1W	J	54°16'0N 3 30-1W	
Before High Water	Directions of streams (degrees)	207	1 0 0 5	156	0 3 0 2	226	0 7 0 4	207	0 3 0 2	197	0 4 0 3	168	0 7 0 4	122	0 5 0 4	136	0 4 0 2	153	0 9 0 5	
Before High Water	Rates at spring tides (knots)	135	0 4 0 2	090	1 3 0 8	108	1 4 0 8	123	0 7 0 4	112	1 2 0 7	139	0 9 0 5	087	2 1 1 4	139	0 8 0 5	144	0 9 0 5	
Before High Water	Rates at neap tides (knots)	069	1 3 0 7	078	2 3 1 4	085	3 5 1 9	100	1 4 0 7	094	2 6 1 5	121	1 0 0 6	085	3 2 2 0	140	0 7 0 4	137	0 8 0 5	
Before High Water		057	2 0 1 1	076	2 7 1 7	085	4 4 2 4	091	1 6 0 9	091	3 3 1 9	099	0 9 0 5	082	3 2 2 0	140	0 4 0 2	123	0 5 0 3	
Before High Water		051	2 0 1 1	076	2 3 1 4	087	4 2 2 3	086	1 4 0 8	091	3 0 1 6	069	0 6 0 3	078	2 6 1 7	238	0 1 0 1	056	0 2 0 1	
Before High Water		038	1 7 1 0	070	1 3 0 8	090	2 9 1 6	074	1 0 0 5	093	1 7 1 0	030	0 4 0 2	072	1 5 0 9	298	0 4 0 3	350	0 5 0 3	
After High Water	Directions of streams (degrees)	014	0 7 0 4	324	0 4 0 3	111	1 3 0 7	011	0 4 0 2	172	0 6 0 3	342	0 4 0 2	300	1 0 0 6	311	0 7 0 4	330	0 8 0 5	
After High Water	Rates at spring tides (knots)	269	0 5 0 3	267	1 5 0 9	217	1 4 0 8	300	0 8 0 5	234	1 6 0 9	309	0 7 0 4	267	2 7 1 7	316	0 9 0 6	320	1 0 0 6	
After High Water	Rates at neap tides (knots)	250	1 0 0 6	258	2 1 1 3	245	2 9 1 7	279	1 2 0 7	247	2 9 1 6	305	1 0 0 6	262	3 2 2 0	319	1 0 0 6	314	0 9 0 5	
After High Water		240	1 5 0 9	255	2 3 1 4	247	3 6 2 1	271	1 5 0 8	251	3 4 1 9	299	0 9 0 5	259	2 9 1 8	319	0 7 0 4	311	0 6 0 3	
After High Water		231	1 7 1 0	255	2 0 1 2	244	3 2 1 8	270	1 3 0 8	252	3 1 1 7	277	0 6 0 3	259	2 1 1 4	320	0 4 0 2	295	0 2 0 0	
After High Water		225	1 6 0 9	257	1 3 0 9	248	2 7 1 5	262	1 0 0 5	250	2 1 1 2	227	0 5 0 3	259	1 1 0 7	320	0 2 0 1	180	0 4 0 2	
After High Water		213	1 2 0 6	248	0 4 0 2	241	1 2 0 7	240	0 5 0 2	225	0 9 0 5	186	0 6 0 4	192	0 2 0 2	109	0 1 0 1	157	0 7 0 4	

5613_3

Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	A	53°31'5N 3 30-1W	B	53°25'7N 3 26-5W	C	53°32'1N 3 23-4W	D	53°27'2N 3 21-4W	E	53°32'0N 3 19-4W	F	53°31'4N 3 15-2W	G	53°28'0N 3 11-1W	
Before High Water	Directions of streams (degrees)	290	0 2 0 1	057	0 3 0 2	352	0 2 0 1	027	0 2 0 1	320	0 9 0 5	299	0 5 0 3	291	0 5 0 3	-6
Before High Water	Rates at spring tides (knots)	072	0 6 0 4	088	0 7 0 4	097	0 5 0 3	089	0 9 0 5	055	0 8 0 4	065	0 7 0 4	057	0 7 0 4	-5
Before High Water	Rates at neap tides (knots)	097	1 5 0 8	100	1 2 0 7	108	1 3 0 7	098	1 6 0 9	091	1 1 0 6	092	1 6 0 8	101	1 5 0 8	-4
Before High Water		100	1 7 1 0	104	1 4 0 8	104	1 6 0 9	102	1 8 1 0	100	1 8 0 9	110	1 9 1 0	111	2 1 1 2	-3
Before High Water		101	1 3 0 7	092	0 9 0 5	101	1 3 0 7	109	1 5 0 8	106	1 7 1 0	117	1 6 0 9	115	1 7 0 9	-2
Before High Water		104	0 7 0 4	079	0 4 0 1	094	0 7 0 4	127	0 7 0 4	104	0 9 0 5	120	1 1 0 6	113	1 0 0 6	-1
After High Water	Directions of streams (degrees)	215	0 2 0 1	289	0 2 0 1		0 0 0 0	215	0 3 0 1	127	0 3 0 1	155	0 3 0 2	174	0 3 0 2	0
After High Water	Rates at spring tides (knots)	266	0 6 0 4	268	1 1 0 6	270	0 5 0 3	270	0 9 0 4	230	0 4 0 2	256	0 8 0 4	262	0 7 0 4	+1
After High Water	Rates at neap tides (knots)	277	1 0 0 7	270	1 4 0 8	275	1 0 0 6	280	1 3 0 8	257	0 9 0 5	282	1 4 0 8	284	1 3 0 7	+2
After High Water		281	1 3 0 8	271	1 1 0 6	279	1 4 0 8	282	1 7 0 9	264	1 3 0 7	287	1 6 0 9	289	1 5 0 8	+3
After High Water		283	1 2 0 7	275	0 7 0 3	285	1 4 0 7	286	1 5 0 8	275	1 6 0 9	292	1 4 0 8	293	1 3 0 7	+4
After High Water		284	0 9 0 4	313	0 4 0 2	296	1 0 0 5	293	1 0 0 5	289	1 7 0 9	294	1 1 0 5	292	1 1 0 6	+5
After High Water		285	0 4 0 2	020	0 2 0 1	310	0 4 0 2	327	0 3 0 2	307	1 2 0 6	296	0 7 0 4	289	0 8 0 4	+6

5613_4B

Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)



Hours	Geographical Position	A	53°26'8N 3 01-8W	
Before High Water	Directions of streams (degrees)	321	1 0 0 5	
Before High Water	Rates at spring tides (knots)		0 0 0 0	
Before High Water	Rates at neap tides (knots)	146	1 6 0 9	
Before High Water		146	4 0 2 2	
Before High Water		145	3 9 2 1	
Before High Water		145	3 3 1 8	
After High Water	Directions of streams (degrees)	137	1 3 0 7	
After High Water	Rates at spring tides (knots)	350	2 2 1 2	
After High Water	Rates at neap tides (knots)	327	3 9 2 2	
After High Water		330	3 4 1 9	
After High Water		329	2 7 1 5	
After High Water		328	2 0 1 1	
After High Water		325	1 3 0 7	

5613_5







Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	A	53°26'82N 3 01-78W	B	53°25'52N 3 00-98W	C	53°23'02N 2 59-78W	
Before High Water	Directions of streams (degrees)	321	1 0 0 5	337	0 9 0 5	317	0 7 0 4	
Before High Water	Rates at spring tides (knots)		0 0 0 0	191	0 4 0 2		0 0 0 0	
Before High Water	Rates at neap tides (knots)	146	1 6 0 9	171	2 2 1 2	159	1 4 0 8	
Before High Water		146	4 0 2 2	172	3 9 2 2	166	4 3 2 3	
Before High Water		145	3 9 2 1	175	4 0 2 2	164	5 1 2 8	
Before High Water		145	3 3 1 8	172	2 8 1 5	164	4 3 2 3	
After High Water	Directions of streams (degrees)	137	1 3 0 7	166	1 2 0 6	161	1 6 0 8	
After High Water	Rates at spring tides (knots)	350	2 2 1 2	015	2 3 1 3	304	2 3 1 3	
After High Water	Rates at neap tides (knots)	327	3 9 2 2	348	4 9 2 7	326	4 1 2 3	
After High Water		330	3 4 1 9	346	4 6 2 5	328	3 9 2 1	
After High Water		329	2 7 1 5	344	3 7 2 1	331	3 1 1 2	
After High Water		328	2 0 1 1	342	2 6 1 4	328	2 2 1 2	
After High Water		325	1 3 0 7	341	1 4 0 7	325	1 2 0 6	



5613_6 Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	 53°23'·02 N 2 59 ·78W	 53°22'·12 N 2 58 ·48W
Before High Water	Directions of streams (degrees)	317 0·7 0·4 0·0 0·0 159 1·4 0·8 166 4·3 2·3 164 5·1 2·8 164 4·3 2·3 161 1·6 0·8	302 0·9 0·5 0·0 0·0 142 0·8 0·4 144 3·0 1·7 147 4·5 2·4 147 3·3 1·8 147 1·3 0·7
After High Water	Rates at spring tides (knots) Rates at neap tides (knots)	304 2·3 1·3 326 4·1 2·3 328 3·9 2·1 331 3·1 1·2 328 2·2 1·2 325 1·2 0·6	287 1·9 1·0 311 3·7 2·0 313 3·5 1·9 318 2·6 1·4 323 1·8 1·0 309 1·2 0·6









5613_7 Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	 53°31'·52 N 3 30 ·08 W	 53°33'·41 N 3 28 ·58 W	 53°32'·11 N 3 23 ·38 W	 53°32'·01 N 3 19 ·38 W	 53°36'·11 N 3 19 ·08 W	 53°31'·41 N 3 15 ·18 W	
Before High Water	Directions of streams (degrees)	290 0·2 0·1 072 0·6 0·4 097 1·5 0·8 100 1·7 1·0 101 1·3 0·7 104 0·7 0·4	291 0·3 0·2 081 0·3 0·2 099 1·0 0·5 098 1·4 0·8 099 1·2 0·6 089 0·4 0·3	352 0·2 0·1 097 0·5 0·3 108 1·3 0·7 104 1·6 0·9 101 1·3 0·7 094 0·7 0·4	320 0·9 0·5 055 0·8 0·4 091 1·1 0·6 100 1·8 0·9 106 1·7 1·0 104 0·9 0·5	251 0·3 0·1 108 0·5 0·3 087 1·1 0·6 096 1·4 0·8 096 1·0 0·5 088 0·5 0·2	299 0·5 0·3 065 0·7 0·4 092 1·6 0·8 110 1·9 1·0 117 1·6 0·9 120 1·1 0·6	-6 -5 -4 -3 -2 -1
After High Water	Rates at spring tides (knots) Rates at neap tides (knots)	215 0·2 0·1 266 0·6 0·4 277 1·0 0·7 281 1·3 0·8 283 1·2 0·7 284 0·9 0·4 285 0·4 0·2	240 0·1 0·0 269 0·5 0·3 273 1·1 0·6 276 1·5 0·8 278 1·5 0·8 282 1·2 0·6 287 0·6 0·3	270 0·5 0·3 275 1·0 0·6 279 1·4 0·8 285 1·4 0·7 296 1·0 0·5 310 0·4 0·2	127 0·3 0·1 230 0·4 0·2 257 0·9 0·5 264 1·3 0·7 275 1·6 0·9 289 1·7 0·9 307 1·2 0·6	234 0·1 0·1 271 0·3 0·2 274 0·7 0·4 277 1·1 0·6 275 1·1 0·6 273 0·9 0·5 296 0·5 0·2	155 0·3 0·2 256 0·8 0·4 282 1·4 0·8 287 1·6 0·9 292 1·4 0·8 294 1·1 0·5 296 0·7 0·4	0 +1 +2 +3 +4 +5 +6

5613_9 Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	 53°54'·01 N 3 31 ·08 W	 53°54'·01 N 3 14 ·08 W
Before High Water	Directions of streams (degrees)	207 0·2 0·1 108 0·8 0·4 091 1·5 0·8 090 1·9 1·1 090 1·6 0·9 088 0·9 0·6	232 0·6 0·4 127 0·3 0·2 089 1·0 0·5 081 1·7 0·9 072 1·8 1·0 059 1·5 0·8
After High Water	Rates at spring tides (knots) Rates at neap tides (knots)	339 0·2 0·2 283 0·8 0·4 274 1·6 0·9 273 2·0 1·1 273 1·7 0·9 270 1·0 0·6 256 0·4 0·2	048 0·8 0·5 278 0·4 0·2 258 0·9 0·5 257 1·5 0·9 254 1·7 1·0 244 1·4 0·7 236 0·8 0·4

5613_10 Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	 53°54'·0N 3 14 ·1W	 53°58'·0N 3 13 ·6W	 53°59'·8 N 3 13 ·2W	 54°02'·5 N 3 10 ·3W	 53°59'·4 N 3 09 ·8W	 53°58'·1 N 3 01 ·7W	 54°01'·2 N 2 56 ·5W	 54°02'·0 N 2 56 ·0W	
Before High Water	Directions of streams (degrees)	232 0·6 0·4 127 0·3 0·2 089 1·0 0·5 081 1·7 0·9 072 1·8 1·0 059 1·5 0·8	175 0·4 0·2 131 0·8 0·5 109 1·3 0·7 096 1·7 0·9 086 1·5 0·8 066 0·8 0·5	149 0·6 0·3 113 1·1 0·6 100 1·5 0·9 109 1·9 1·1 089 1·8 1·0 069 1·4 0·7	057 0·7 0·4 053 1·6 0·9 053 2·0 1·1 078 1·6 1·0 055 1·8 1·0 055 1·3 0·7	136 0·4 0·2 100 0·7 0·4 083 1·1 0·7 058 1·8 1·0 071 1·9 1·0 066 1·6 0·8	251 0·3 0·2 166 0·3 0·2 069 0·8 0·5 032 1·5 0·7 059 2·3 1·4 061 1·8 1·1	228 0·2 0·1 0·0 0·0 047 0·5 0·3 032 1·5 0·7 030 1·9 1·0 033 1·7 0·8	209 0·1 0·0 056 0·2 0·1 029 0·5 0·4 029 1·4 0·8 029 2·4 1·4 029 2·2 1·3	-6 -5 -4 -3 -2 -1
After High Water	Rates at spring tides (knots) Rates at neap tides (knots)	048 0·8 0·5 278 0·4 0·2 258 0·9 0·5 257 1·5 0·9 254 1·7 1·0 244 1·4 0·7 236 0·8 0·4	333 0·4 0·2 286 1·1 0·5 277 1·6 0·9 279 1·5 0·8 274 1·0 0·5 253 0·5 0·2 206 0·4 0·2	008 0·6 0·4 296 1·4 0·8 277 2·3 1·2 267 2·1 1·2 254 1·4 0·8 231 0·8 0·4 211 0·5 0·3	265 0·9 0·5 236 1·9 1·1 237 1·9 1·1 233 1·4 0·8 231 1·0 0·5 230 0·6 0·3 223 0·2 0·1	031 0·7 0·4 287 0·9 0·6 263 2·0 1·1 258 2·4 1·3 247 1·6 0·9 227 0·8 0·5 165 0·4 0·2	064 0·8 0·4 218 0·9 0·6 237 1·9 0·9 240 1·9 1·1 235 1·5 0·8 247 0·8 0·5 253 0·4 0·2	047 0·5 0·3 189 0·6 0·3 211 1·8 0·9 213 1·6 0·8 212 1·2 0·6 215 0·6 0·3 224 0·3 0·1	029 0·8 0·5 182 1·0 0·7 209 2·0 1·2 209 2·2 1·3 209 1·3 0·9 209 0·5 0·4 209 0·1 0·1	0 +1 +2 +3 +4 +5 +6

5613_11A

Tidal Streams referred to HW at
LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	53°58'1N 3 01 7W
Before High Water	Directions of streams (degrees)	251 0.3 0.2 166 0.3 0.2 069 0.8 0.5 058 1.8 1.0 059 2.3 1.4 061 1.8 1.1
High Water	Rates at spring tides (knots)	064 0.8 0.4
After High Water	Rates at neap tides (knots)	218 0.9 0.6 237 1.9 0.9 240 1.9 1.1 235 1.5 0.8 247 0.8 0.5 253 0.4 0.2

5613_12A

Tidal Streams referred to HW at
LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	53°58'1N 3 01 7W	54°01'2N 2 56 5W	54°02'0N 2 56 0W
Before High Water	Directions of streams (degrees)	251 0.3 0.2 166 0.3 0.2 069 0.8 0.5 058 1.8 1.0 059 2.3 1.4 061 1.8 1.1	228 0.2 0.1 047 0.5 0.3 032 1.5 0.7 030 1.9 1.0 033 1.7 0.8	209 0.1 0.0 056 0.2 0.1 029 0.5 0.4 029 1.4 0.8 029 2.4 1.4 029 2.2 1.3
High Water	Rates at spring tides (knots)	064 0.8 0.4	047 0.5 0.3	029 0.8 0.5
After High Water	Rates at neap tides (knots)	218 0.9 0.6 237 1.9 0.9 240 1.9 1.1 235 1.5 0.8 247 0.8 0.5 253 0.4 0.2	189 0.6 0.3 211 1.8 0.9 213 1.6 0.8 212 1.2 0.6 215 0.6 0.3 225 0.3 0.1	182 1.0 0.7 209 2.0 1.2 209 2.2 1.3 209 1.3 0.9 209 0.5 0.4 209 0.1 0.1

5613_13A

Tidal Streams referred to HW at
LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	54°02'5N 3° 10'3W	54°04'1N 3° 10'2W
Before High Water	Directions of streams (degrees)	057 0.7 0.4 053 1.6 0.9 053 2.0 1.1 055 1.8 1.0 055 1.3 0.7	217 0.1 0.1 283 0.3 0.2 303 0.8 0.5 317 1.7 0.9 321 1.8 1.0 321 1.6 0.9
High Water	Rates at spring tides (knots)	265 0.9 0.5	316 0.9 0.5
After High Water	Rates at neap tides (knots)	236 1.9 1.1 237 1.9 1.1 233 1.4 0.8 231 1.0 0.5 230 0.6 0.3 223 0.2 0.1	091 0.4 0.2 127 1.8 1.1 137 2.1 1.2 141 1.8 0.9 147 0.9 0.6 173 0.3 0.2

5613_14

Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	A 54°23'2N 3 35 2W	B 54°16'0N 3 30 1W	C 53°59'5N 3 29 1W	D 53°58'0N 3 13 6W	E 53°59'8N 3 13 2W	F 54°02'5N 3 10 3W	G 53°59'4N 3 09 8W
Before High Water	Directions of streams (degrees)	153 0.8 0.5 151 1.0 0.6 145 1.1 0.7 134 0.8 0.4 073 0.3 0.1 352 0.5 0.3 332 0.9 0.6 328 0.9 0.6 322 0.8 0.5 316 0.5 0.3 286 0.2 0.1 183 0.3 0.2 158 0.6 0.4	153 0.9 0.5 144 0.9 0.5 137 0.8 0.5 123 0.5 0.3 056 0.2 0.1 350 0.5 0.3 330 0.8 0.5 320 1.0 0.6 314 0.9 0.5 271 0.6 0.3 295 0.2 0.0 180 0.4 0.2 157 0.7 0.4	102 0.0 0.0 104 0.8 0.5 102 1.2 0.7 094 1.1 0.6 083 0.8 0.4 063 0.2 0.1 304 0.6 0.3 275 0.9 0.5 271 1.1 0.6 274 1.0 0.5 275 0.7 0.4 280 0.4 0.1	175 0.4 0.2 131 0.8 0.5 109 1.3 0.7 096 1.7 0.9 086 1.5 0.8 066 0.8 0.5 333 0.4 0.2 286 1.1 0.5 277 1.6 0.9 267 1.5 0.8 274 1.0 0.5 253 0.5 0.2 206 0.4 0.2	149 0.6 0.3 113 1.1 0.6 100 1.5 0.9 089 1.9 1.1 079 1.8 1.0 069 1.4 0.7 008 0.6 0.4 296 1.4 0.8 277 2.3 1.2 267 2.1 1.2 254 1.4 0.8 231 0.8 0.4 174 0.5 0.3	057 0.0 0.0 053 0.7 0.4 053 1.6 0.9 053 2.0 1.1 055 1.8 1.0 055 1.3 0.7 265 0.9 0.5 236 1.9 1.1 237 1.9 1.1 233 1.4 0.8 231 1.0 0.5 227 0.6 0.3 223 0.2 0.1	136 0.4 0.2 100 0.7 0.4 083 1.1 0.7 078 1.6 1.0 071 1.9 1.0 066 1.6 0.8 031 0.7 0.4 287 0.9 0.6 263 2.0 1.1 258 2.4 1.3 247 1.6 0.9 227 0.8 0.5 165 0.4 0.2
High Water	Rates at spring tides (knots)							
After High Water	Rates at neap tides (knots)							

5613_15

Tidal Streams referred to HW at
LIVERPOOL (GLADSTONE DOCK)

Hours	A 54°47'6N 3 31 9W	B 54°39'0N 3 41 1W	C 54°31'5N 3 44 4W
-6	204 1.7 1.0	207 1.0 0.5	168 0.7 0.4
-5	052 0.6 0.3	135 0.4 0.2	139 0.9 0.5
-4	025 1.8 1.0	069 1.3 0.7	121 1.0 0.6
-3	025 2.9 1.6	057 2.0 1.1	099 0.9 0.5
-2	025 3.8 2.1	051 2.0 1.1	069 0.6 0.3
-1	025 3.6 2.0	038 1.7 1.0	030 0.4 0.2
0	027 2.2 1.2	014 0.7 0.4	342 0.4 0.2
+1	236 0.5 0.3	269 0.5 0.3	309 0.7 0.4
+2	206 1.7 1.0	250 1.0 0.6	305 1.0 0.6
+3	205 2.9 1.5	240 1.5 0.9	299 0.9 0.5
+4	205 3.4 1.9	231 1.7 1.0	277 0.6 0.3
+5	205 3.2 1.7	225 1.6 0.9	227 0.5 0.3
+6	205 2.1 1.2	213 1.2 0.6	186 0.6 0.4

5613_17

Tidal Streams referred to HW at
LIVERPOOL (GLADSTONE DOCK)

Hours	A 54°37'5N 4 19 8W	B 54°35'4N 4 00 7W	C 54°39'0N 3 41 1W
-6	156 0.3 0.2	207 0.3 0.2	207 1.0 0.5
-5	090 1.3 0.8	123 0.7 0.4	135 0.4 0.2
-4	078 2.3 1.4	100 1.4 0.7	069 1.3 0.7
-3	076 2.7 1.7	091 1.6 0.9	057 2.0 1.1
-2	076 2.3 1.4	086 1.4 0.8	051 2.0 1.1
-1	070 1.3 0.8	074 1.0 0.5	038 1.7 1.0
0	324 0.4 0.3	011 0.4 0.2	014 0.7 0.4
+1	267 1.5 0.9	300 0.8 0.5	269 0.5 0.3
+2	258 2.1 1.3	279 1.2 0.7	250 1.0 0.6
+3	255 2.3 1.4	271 1.5 0.8	240 1.5 0.9
+4	255 2.0 1.2	270 1.3 0.8	231 1.7 1.0
+5	257 1.3 0.9	262 1.0 0.5	225 1.6 0.9
+6	248 0.4 0.2	240 0.5 0.2	213 1.2 0.6

5613_19 Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	54°35'61 N 4 50·17W	54°44'01 N 4 45·87W	54°37'51 N 4 19·77W
Before High Water	Directions of streams (degrees)	226 0·7 0·4 108 1·4 0·8 085 3·5 1·9 085 4·4 2·4 087 4·2 2·3 090 2·9 1·6	099 0·3 0·2 054 0·6 0·4 038 1·0 0·6 025 1·3 0·7 012 1·0 0·5 345 0·6 0·3	156 0·3 0·2 090 1·3 0·8 078 2·3 1·4 076 2·7 1·7 076 2·3 1·4 070 1·3 0·8
High Water	Rates at spring tides (knots)	111 1·3 0·7 217 1·4 0·8 245 2·9 1·7 247 3·6 2·1 244 3·2 1·8 248 2·7 1·5 241 1·2 0·7	285 0·4 0·2 240 0·7 0·4 214 1·0 0·6 200 1·2 0·7 190 0·9 0·5 175 0·6 0·3 134 0·3 0·2	324 0·4 0·3 267 1·5 0·9 258 2·1 1·3 255 2·3 1·4 250 2·0 1·2 257 1·3 0·9 248 0·4 0·2
After High Water	Rates at neap tides (knots)			

5613_20A Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	54°26'91 N 4 24·17W	54°08'91 N 4° 27'38W
Before High Water	Directions of streams (degrees)	122 0·5 0·4 087 2·1 1·4 085 3·2 2·0 082 3·2 2·0 078 2·6 1·7 072 1·5 0·9	332 0·2 0·1 019 0·9 0·5 023 1·5 0·9 027 1·5 0·8 048 0·7 0·4 114 0·3 0·2
High Water	Rates at spring tides (knots)	300 1·0 0·6 267 2·7 1·7 262 3·2 2·0 259 2·9 1·8 259 2·1 1·4 259 1·1 0·7 192 0·2 0·2	168 0·6 0·4 187 0·8 0·5 193 1·1 0·6 202 1·3 0·7 208 1·0 0·5 212 0·6 0·3 261 0·2 0·0
After High Water	Rates at neap tides (knots)		































































































































5613_21A Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	54°08'9 N 4 27·4W	54°26'91 N 4 24·17W	54°25'5 N 4 16·6W	54°19'8 N 4 13·1W
Before High Water	Directions of streams (degrees)	332 0·2 0·1 019 0·9 0·5 023 1·5 0·9 027 1·5 0·8 048 0·7 0·4 114 0·3 0·2	122 0·5 0·4 087 2·1 1·4 085 3·2 2·0 082 3·2 2·0 078 2·6 1·7 072 1·5 0·9	132 1·1 0·6 127 2·2 1·2 128 2·8 1·6 127 2·4 1·3 128 1·3 0·7 004 0·3 0·2	136 0·4 0·2 139 0·8 0·5 140 0·7 0·4 140 0·4 0·2 238 0·1 0·1 238 0·4 0·3
High Water	Rates at spring tides (knots)	168 0·6 0·4 187 0·8 0·5 193 1·1 0·6 202 1·3 0·7 208 1·0 0·5 212 0·6 0·3 261 0·2 0·0	300 1·0 0·6 267 2·7 1·7 262 3·2 2·0 259 2·9 1·8 259 2·1 1·4 259 1·1 0·7 192 0·2 0·2	317 1·4 0·8 316 2·3 1·2 312 2·6 1·4 303 2·2 1·1 301 1·5 0·8 279 0·4 0·2 157 0·7 0·4	311 0·7 0·4 316 0·9 0·6 319 1·0 0·6 319 0·7 0·4 320 0·4 0·2 320 0·2 0·1 109 0·1 0·1
After High Water	Rates at neap tides (knots)				

5613_22A Tidal Streams referred to HW at LIVERPOOL (GLADSTONE DOCK)

Hours	Geographical Position	54°08'91 N 4°27'38W
Before High Water	Directions of streams (degrees)	-6 332 0·2 0·1 -5 019 0·9 0·5 -4 023 1·5 0·9 -3 027 1·5 0·8 -2 048 0·7 0·4 -1 114 0·3 0·2
High Water	Rates at spring tides (knots)	0 168 0·6 0·4 +1 187 0·8 0·5 +2 193 1·1 0·6 +3 202 1·3 0·7 +4 208 1·0 0·5 +5 212 0·6 0·3 +6 261 0·2 0·0
After High Water	Rates at neap tides (knots)	

5613_23 Tidal Streams referred to HW at DOVER

Hours	Geographical Position		 55°15' 1N 5 37·2W	 54°49' 1N 5 38·0W	 54°48' 0N 5 17·0W	 54°31' 6N 4 36·8W	 54°24' 4N 5 21·3W	 54°06' 5N 4 08·5W	 53°54' 0N 3 44·5W	 53°42' 8N 4 01·0W	 53°40' 2N 5 09·3W	
Before High Water	<div>Directions of streams (degrees)</div>	<div>Rates at spring tides (knots)</div>	<div>Rates at neap tides (knots)</div>	 201 0·3 0·2	 214 0·1 0·1	 077 0·2 0·1	 197 0·4 0·2	 174 0·4 0·2	 214 0·4 0·2	 022 0·3 0·2	 248 0·4 0·2	 231 1·0 0·5
				 096 2·0 1·2	 157 0·9 0·5	 138 1·0 0·6	 100 1·3 0·8	 175 0·9 0·5	 087 0·5 0·3	 068 0·7 0·4	 083 0·7 0·4	 275 0·5 0·3
				 093 3·3 2·0	 152 1·5 0·8	 146 1·9 1·1	 093 2·8 1·6	 176 1·3 0·7	 074 1·3 0·7	 078 1·1 0·6	 084 1·9 1·1	 350 0·6 0·3
				 091 3·4 2·1	 152 1·8 0·9	 140 2·2 1·2	 091 3·4 1·9	 180 1·4 0·8	 067 1·8 1·0	 082 1·4 0·7	 083 2·6 1·5	 025 1·3 0·7
				 089 3·0 1·8	 148 1·5 0·8	 140 1·8 1·0	 091 2·9 1·7	 182 1·1 0·6	 056 1·6 0·9	 085 1·3 0·7	 087 2·0 1·1	 033 1·9 1·0
				 085 1·3 0·8	 149 1·0 0·5	 143 1·4 0·8	 092 1·6 0·9	 185 0·4 0·2	 049 1·0 0·6	 096 0·9 0·5	 090 1·2 0·7	 039 1·7 0·9
High Water	<div>Directions of streams (degrees)</div>	<div>Rates at spring tides (knots)</div>	<div>Rates at neap tides (knots)</div>	 000 0·2 0·1	 099 0·1 0·1	 182 0·4 0·2	 177 0·4 0·2	 354 0·3 0·2	 353 0·3 0·2	 155 0·4 0·2	 147 0·3 0·2	 043 1·1 0·6
				 278 1·4 0·8	 339 0·8 0·4	 301 1·0 0·6	 243 1·7 1·0	 356 0·9 0·5	 264 0·6 0·4	 234 0·9 0·5	 258 0·9 0·5	 130 0·1 0·1
				 275 2·4 1·5	 335 1·4 0·7	 311 2·0 1·1	 247 3·0 1·7	 357 1·3 0·7	 250 0·9 0·5	 250 1·4 0·7	 266 1·6 0·9	 207 0·6 0·3
				 272 3·3 2·0	 336 1·8 0·9	 320 2·3 1·3	 251 3·4 1·9	 358 1·4 0·8	 241 1·2 0·7	 262 1·5 0·8	 270 2·1 1·2	 213 1·2 0·6
				 270 3·1 1·9	 333 1·6 0·8	 330 1·8 1·0	 252 3·0 1·7	 358 1·1 0·6	 238 1·4 0·8	 275 1·2 0·6	 272 1·8 1·0	 215 1·5 0·8
				 267 2·2 1·3	 334 1·2 0·6	 341 1·3 0·7	 251 2·0 1·1	 002 0·6 0·3	 234 1·2 0·7	 292 0·8 0·4	 267 1·2 0·7	 218 1·7 0·9
 255 0·8 0·5	 320 0·3 0·2	 356 0·5 0·3	 232 0·7 0·4	 171 0·1 0·0	 228 0·7 0·4	 335 0·4 0·2	 255 0·9 0·5	 223 1·4 0·7				

5613_23 continued

Hours	Geographical Position	53°28'5 N 4 45·1W	53°26'0 N 5 33·0W	53°05'5 N 4 44·5W	53°04'8 N 5 20·0W	
Before High Water	Directions of streams (degrees)	205 0·3 0·2 055 1·5 0·8 050 3·2 1·6 046 3·8 1·9 049 3·0 1·5 053 1·6 0·8	211 0·2 0·1 345 1·0 0·4 351 1·9 0·8 350 2·3 1·0 349 1·9 0·9 353 1·3 0·6	002 0·1 0·1 002 1·2 0·7 002 2·0 1·2 002 2·3 1·3 002 1·7 1·0 002 0·9 0·5	006 0·0 0·0 005 0·9 0·5 005 2·0 1·1 002 2·6 1·4 359 2·7 1·5 357 1·7 0·9	-6 -5 -4 -3 -2 -1
High Water	Rates at spring tides (knots)	125 0·1 0·1 226 1·5 0·8 231 2·9 1·5 231 3·7 1·8 230 2·9 1·5 228 1·9 0·9 223 0·8 0·4	011 0·3 0·1 160 0·7 0·3 169 1·6 0·7 170 2·2 1·0 170 2·3 1·0 174 1·6 0·7 183 0·5 0·2	182 0·1 0·1 182 1·1 0·6 182 1·9 1·1 182 2·1 1·2 182 1·9 1·1 182 1·1 0·6 182 0·2 0·1	344 0·3 0·1 195 1·0 0·5 185 2·0 1·1 180 2·8 1·5 175 2·4 1·3 176 1·4 0·8 180 0·4 0·2	0 +1 +2 +3 +4 +5 +6
After High Water	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 Zone UT(GMT)		Low Water		MHWS	MHWN	MLWN	MLWS
LIVERPOOL (GLADSTONE DOCK).....	53 27	3 01	0000 and 1200	0600 and 1800	0200 and 1400	0800 and 2000	9.4	7.6	3.2	1.3
SCOTLAND										
Portpatrick	54 51	5 07	+0038	+0032	+0009	-0008	-5.5	-4.5	-2.0	-0.8
<i>Luce Bay</i>										
Drummore	54 42	4 53	+0035	+0045	+0010	+0015	-3.5	-2.7	-1.2	-0.7
Luce Bay (Offshore Platform)	54 50	4 53	+0035	+0035	+0010	0000	-2.9	-2.5	-1.1	-0.5
Port William	54 46	4 35	+0035	+0035	+0020	-0005	-3.0	-2.4	-1.1	⊙
<i>Wigtown Bay</i>										
Isle of Whithorn	54 42	4 22	+0025	+0030	+0020	0000	-2.5	-2.2	-1.1	-0.6
Garlieston	54 47	4 22	+0030	+0040	+0025	0000	-2.4	-1.9	-0.8	⊙
<i>Solway Firth</i>										
Kirkcudbright Bay	54 48	4 04	+0020	+0020	+0005	-0005	-1.9	-1.7	-0.8	-0.5
Hestan Island	54 50	3 48	+0030	+0030	+0015	+0020	-1.1	-1.3	-0.8	-0.4
Southernness Point	54 52	3 36	+0035	+0035	+0025	+0005	-0.8	-0.9	⊙	⊙
Annan Waterfoot	54 58	3 16	+0055	+0110	+0215	+0305	-2.3	-2.8	-3.0	‡
Torduff Point	54 58	3 09	+0110	+0145	+0515	+0405	-4.2	-5.1	‡	‡
Redkirk	54 59	3 06	+0115	+0220	+0710	+0440	-5.6	-6.4	‡	‡
ENGLAND										
Silloth	54 52	3 24	+0035	+0045	+0040	+0050	-0.2	-0.5	-0.9	-0.5
Maryport	54 43	3 30	+0021	+0036	+0017	+0002	-0.8	-1.0	-0.7	-0.4
Workington	54 39	3 34	+0029	+0027	+0014	+0004	-1.1	-1.2	-0.5	-0.3
Whitehaven	54 33	3 36	+0010	+0020	+0005	0000	-1.4	-1.3	-0.8	-0.3
Tarn Point	54 17	3 25	+0010	+0010	+0005	-0005	-1.1	-1.2	-0.7	-0.4
Duddon Bar	54 09	3 20	+0007	+0007	+0005	-0001	-0.9	-1.0	-0.6	-0.4
BARROW (RAMSDEN DOCK)	54 06	3 12	0000 and 1200	0600 and 1800	0100 and 1300	0700 and 1900	9.3	7.1	3.0	1.1
<i>Morecambe Bay</i>										
Roa Island	54 04	3 10	-0007	-0005	-0005	-0003	-0.1	0.0	-0.1	0.0
Haws Point	54 03	3 10	-0007	-0004	-0002	-0005	+0.1	0.0	0.0	0.0
Halfway Shoal	54 01	3 12	-0014	-0012	-0012	-0010	-0.3	-0.2	-0.1	0.0
LIVERPOOL (GLADSTONE DOCK).....	53 27	3 01	0000 and 1200	0600 and 1800	0200 and 1400	0700 and 1900	9.4	7.6	3.2	1.3
Heysham	54 02	2 55	+0014	+0012	+0002	-0003	+0.2	-0.2	-0.1	-0.1
<i>River Lune</i>										
Glasson Dock	54 00	2 51	+0025	+0035	+0215	+0235	-2.8	-3.2	⊙	⊙
Lancaster	54 03	2 49	+0115	+0035	§	§	-5.1	-5.1	§	§
<i>River Wyre</i>										
Wyre Lighthouse	53 57	3 02	-0005	-0005	0000	-0005	-0.2	-0.3	⊙	⊙
Fleetwood	53 56	3 00	-0004	-0004	-0006	-0006	0.0	-0.3	-0.1	-0.1
Blackpool	53 49	3 04	-0010	0000	-0010	-0020	-0.5	-0.6	-0.4	-0.3
<i>River Ribble</i>										
Preston.....	53 45	2 45	+0015	+0015	+0330	+0305	-4.1	-4.3	-3.1	-1.2
<i>Liverpool Bay</i>										
Southport	53 39	3 01	-0015	-0005	⊙	⊙	-0.4	-0.5	⊙	⊙
Formby	53 32	3 07	-0010	-0005	-0025	-0025	-0.4	-0.3	-0.3	-0.3
<i>River Mersey</i>										
LIVERPOOL (GLADSTONE DOCK).....	57 27	3 01		STANDARD PORT						
Seacombe (Alfred Dock)	53 24	3 01	+0007	+0007	0000	0000	-0.1	-0.2	-0.3	-0.4
<i>River Dee</i>										
Hilbre Island	53 23	3 14	-0011	-0008	-0013	-0018	-0.4	-0.4	-0.1	0.0

⊙ No Data

§ Dries out except for river water

‡ The tide does not normally fall below Chart Datum

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
LIVERPOOL (GLADSTONE DOCK).....	53 27	3 01	0000 and 1200	0600 and 1800	0200 and 1400		0800 and 2000	9.4	7.6	3.2
WALES										
MOSTYN DOCKS	53 19	3 16	STANDARD PORT				See Table of NON-REFERENCE STANDARD PORTS			
ISLE OF MAN										
Peel	54 14	4 42	+0010	+0010	-0020	-0030	-4.2	-3.3	-1.7	-0.9
Ramsey	54 19	4 21	+0010	+0020	-0010	-0020	-2.0	-1.7	-0.9	-0.4
DOUGLAS	54 09	4 28	STANDARD PORT				See Table of NON-REFERENCE STANDARD PORTS			
Port St. Mary	54 04	4 44	+0010	+0020	-0015	-0035	-3.5	-2.8	-1.6	-0.8
Calf Sound	54 04	4 48	+0010	+0010	-0020	-0030	-3.3	-2.8	-1.2	-0.7
Port Erin	54 05	4 46	+0018	+0010	-0013	-0028	-4.1	-3.4	-1.6	-0.8
WALES										
Colwyn Bay	53 18	3 43	-0015	-0015	⊙	⊙	-1.6	-1.5	⊙	⊙
Llandudno	53 20	3 50	-0019	-0021	-0031	-0038	-1.7	-1.7	-0.9	-0.8

⊙ No Data

§ Dries out except for river water

‡ The tide does not normally fall below Chart Datum

NOTES

1. The time differences given for low water are for the beginning of the rise which is very sudden at springs.
2. Low water time differences at Glasson Dock give the end of a low water stand which lasts up to 2 hours at springs.
3. Low water time differences at Preston give the end of a low water stand which lasts about 3½ hours.

Non-Reference Standard Ports				
STANDARD PORT	MHWS	MHWN	MLWN	MLWS
DOUGLAS	6.9	5.4	2.4	0.8
MOSTYN DOCKS	8.9	7.0	2.9	1.1

Tidal Curve Diagrams

