



THE BRISTOL PORT COMPANY

TOWAGE GUIDELINES

AMENDMENTS

NUMBER	PAGE/SECTION	AMENDMENT	BY	DATE
1	p5 Intro para 5	Substitute "his authorised deputies" with "Deputy Haven Master (DHM)"	JLM	28/02/2012
2	Part 1 Sec 3.1 para 2	Substitute "deputy" with "DHM"	JLM	28/02/2012
3	Part 1 sec 3.2	Insert "3.2.1" before "Interpretation of tug table..."	JLM	28/02/2012
4	Part 1 sec 3.2.1 para 4	Replace "Bristol-based" with "locally-based".	JLM	28/02/2012
5	Annex 2	Remove "All information below has been extracted from BPC Marine Procedures (Document MOM01) and replace with "Escort towage is a requirement - not an option (unless sanctioned by the HM/DHM)"	JLM	28/02/2012
6	Annex 3	In graph title replace "requirement" with "recommendation".	JLM	28/02/2012
7	Part 1 sec 2	Replace "DWT" with "displacement".	JLM	28/02/2012
8	Part 1 sec 4	Insert "escorting and " before "rendezvous". Remove "and operational procedures" and replace "Annex 1" with "Annex 2".	JLM	28/02/2012
9	Part 1 sec 1.1	Remove "(Hull)" and "Machinery". Remove "b.Certificate of Class". Re-letter section. Remove "Loadline certificate". Insert "(valid within previous 5 years" after "bollard-pull certificate"	JLM	28/02/2012
10	Part 1 sec 1	Reword first line to read "will need to have their tugs licensed by the Harbour Authority"		

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INTRODUCTION

The Statutory Harbour Authority (SHA) complying with the requirements of the Port Marine Safety Code (PMSC) has identified towage as a mitigating factor to reduce the risk of certain shipping operations. As such the SHA requires an adequate number of licensed tugs to be available to safely support ship operations within the harbour area. These tugs must be 'fit for purpose', with the crews adequately trained and qualified for the tasks they are likely to perform. Additionally, the pilots and PEC holders who use these tugs should be competent to do so, having been trained to known standards.

Accordingly, the information in this document lays down the criteria that towage operations, their management and towage users should meet.

There are two main parts to the guidelines, the first deals with the administrative process and the second addresses the physical aspects of towage.

It must be stressed that this is a guide to good practice, having drawn upon local and national guidance.

There will be circumstances and conditions that may require operating outside of these guidelines. Deviation from the guidelines must only occur after consultation with all relevant parties, and with the sanction of the Haven Master or Deputy Haven Master (DHM).

These guidelines have been produced after consultation with all operational stakeholders.

These Towage Guidelines will be reviewed annually in order to ensure that they remain current.

PART ONE – ADMINISTRATION

Introduction

Tugs and their crews must be licensed and fit for purpose, and satisfy the requirements of the SHA/PMSC.

The licensed tugs must be allocated to vessels such that the ship movement is carried out in line with the SHA's processes.

The SHA re-assesses frequently towage requirements in consultation with pilots and the tug company, and in conjunction with the examination of reports received through the Marine Reporting System.

A vital tool in the process of analysing ships' requirements is the ability to access historical data, and most of this data is recorded in the port's Operations Database. For this reason it is important that the action of entering information into the database is correct, and that the data itself is accurate.

1 LICENSING

Towage companies wishing to operate at Bristol will need to have their tugs licensed by the Harbour Authority. To gain a licence they must demonstrate that their tugs and crews meet the required national standards and also that the towage company can demonstrate a robust management system. Tug Licenses are renewed annually.

1.1 Licensing

Each tug will require proof of the following prior to licensing:

- a. Certificate of Class (Hull)
- b. Certificate of Class (Machinery)
- c. Maritime and Coastguard Agency Equipment Certificate
- d. Load Line Certificate, if applicable
- e. Proof of Bollard Pull

In the case of a company wishing to licence more than 7 tugs then they may apply for a fleet licence and must comply with

- a) the requirements above for issuance of individual licences or
- b) if the company is certified to ISO 9001 it may apply for a generic fleet licence to cover any tug owned by it. However before the tug is deployed for use at Bristol the company must provide a data sheet with all industry standard information.

The cost of an individual tug licence is £75 and the cost for a fleet licence is £500.

Appropriate stability data should also be available for those tugs used for active escort towage that will demonstrate fitness for purpose. Tugs must only be used in operations for

which they have the capacity and are licensed.

1.2 Tug Crews

National certification standards of tugs crews are set by the Maritime and Coastguard Agency. All crew members must meet these requirements and the tugs must be safely and adequately manned.

In addition Tug Masters and key crew are required to meet local knowledge standards but it is expected that the tug company should manage this aspect under the guidance of the Harbour Authority.

1.3 Operating Company Standards

Towage companies operating at Bristol should operate to ISO 9001 standards and/or national/international legislation. Additionally, audits may be carried out by The Bristol Port Company as part of the licensing process.

2 AVAILABILITY OF TUGS

Current shipping levels and vessel/cargo type at Bristol indicate a maximum requirement of 6 Tugs providing a minimum combined bollard pull in the order of 260 t based on a fully loaded 140,00 DWT post-Panamax bulk carrier. A graph indicating bollard requirement against displacement is reproduced at Annex 3. These tugs may not necessarily be based in Avonmouth or Portbury.

2.1 Notice for Operations

The ability to plan and execute tidal plans depends on accurate information regarding tug availability. Early reporting of tug defects that may affect operational capability, or tug absences from the port or area, is essential. This information should be shown on the Operations Database in the Marine Information section as a Notice Type 'Tug Status'.

3 TUG ALLOCATION

3.1 Overview

The purpose of this document is to provide a planning guide for tug allocation. The Port's Operations Database assists this process in conjunction with dialogue between the Bristol Pilots Partnership, Bristol Port Company and the relevant tug company.

Special Directions; there may be cases where the Master of a vessel does not wish to follow the towage guidelines, against the advice of the Pilot or VTS Centre. In such circumstances the HM or DHM should be consulted regarding the issue of a Special Direction. This Direction will instruct the vessel to either take the required number of tugs or wait for more favourable conditions.

The table TA1 has been compiled with the Bristol-based tugs in mind. When tugs from other areas, such as South Wales, are to be considered for Royal Portbury and Avonmouth, then these are only to be allocated with consultation with the CHA and Bristol Pilots' Partnership.

3.2 Procedure

- Tugs should normally be allocated, for the purpose of tide planning, in line with the recommendations in table TA1. Any deviation from the recommendations, including the use of non Bristol-based tugs, must be sanctioned by the pilot or master, and the CHA.
- The allocation of tugs should be displayed on the Operations Database by 1500 each day, Monday to Friday, by the Duty Tug Controller.
- The allocation should then be amended and finalised by 1630 after consultation with the nominated Pilot, Duty Marine Officer and Duty Tug Controller. This will include disposition of the tugs on the vessel i.e. whether on the bow, stern or pushing. Changing disposition at short notice may affect adversely later shipping movements.
- Out-of-hours orders and amendments should be communicated to the VTS Centre so

- that the Operations Database may be changed.
- After the allocation has been finalised a particular pilot may have reasons to demand changes in tug allocation due to weather, tide and/or vessel manoeuvring characteristics . These amendments, if they are possible, should be entered into the Operations Database by VTS.
 - The guidance is the output of a process that has considered the circumstances under which vessels navigating in the harbour area require tugs under normal conditions. This document is the output of considering many factors, vessel characteristics, weather, pilot's experience, tug masters' experience, tug company as well as Marine Department personnel.
 - Notwithstanding any of the above, the specific disposition of tugs is at the discretion of the pilot and he should endeavour to give as much notice as possible if any changes are required. The tug, tug company or VTS should not pressurise unduly the pilot to accept a less than ideal configuration

3.2.1 Interpretation of Tug Allocation Table TA1

The tug table TA1 has been developed by the CHA over a long period of time, in consultation with shipowners, tug companies and pilots. **Its contents are to be considered as a minimum requirement under normal conditions.** It is principally designed for vessels that are visiting the port for the first time.

Vessels that have visited the port previously will have confirmed requirements that are viewable in the 'history' section of the Operations Database, and this will give a more accurate requirement. When vessel particulars change due to modifications, or restrictions on machinery usage (such as bow thrusters) then the tug requirement will default to that stated in tug table TA1.

Where a need arises for a reduction or increase in the number of tugs then this will be after consultation with interested parties.

The table also considers locally-based tugs only, due to the specific experience gained by pilots and tugmasters.

As a guide, an increase in the tug allocation will need to be considered if the wind is, or is forecast to be, 15 knots or greater.

Where it has been determined that tug allocation may be reduced because of a fitted bowthruster, this is dependant on the rated power of the unit, and vessels with weak or non-functioning bowthrusters will default to the requirements for a vessel without a bowthruster.

3.3 Pilot Advice

When a pilot has been nominated for a vessel, the Pilotage Clerk is to advise the pilot which tugs his vessel has been allocated and what other tasks those tugs have been given for that tide.

Basic tug allocation information will be displayed on the '**Tide Tracker**' page of the Operations Database. It is also available in the Shipping Information section of the Bristol Port Company website at www.bristolport.co.uk

4 LOCAL CONVENTIONS

Specific requirements for escorting and rendezvous points are contained within planning documentation issued by the Bristol Port Company. These requirements are set out in Annex 2.

5 OPERATIONS DATABASE

5.1 Data Input

Authorised users, including the tug company, have the ability to input tug data into the Operations Database, indicating a tug order (restricted to the tugs name, number of tugs allocated and their disposition: Bow, Stern, Push).

This can be done via Tide Plan, Tide Tracker or Forward Movements screens.

All tug orders will be in the following format;

2 + 1 this indicates 2 tugs on the first movement and 1 tug on the subsequent movement.

(Applying the above example to an arrival would indicate 2 tugs in King Road and 1 tug in dock.)

There is a prefix letter that appears when orders have been confirmed or entered by the tug company e.g. **S3+2** indicates an order confirmed/entered by Svitzer Wijsmuller for 3 tugs for the first movement and two for the subsequent movement.

For ships moving from Portbury to Avonmouth, or vice versa, tug allocation will be in the following format;

2+1/3+2 The first group is for the departure port, the second group is for the arrival port.

If it is known from Table TA1 that no tugs are normally required for a vessel then the Operations database should be, in the tug column, blank or show **0**.

If the tug company are advised by the master or agent that no tugs are required for a vessel then the Operations database should show **S 0**.

PART TWO – TOWAGE OPERATIONS

INTRODUCTION

This section seeks to provide guidance on ship towage practices as used in the Bristol port area. The guidance draws upon nationally documented generic towage practice advice and additionally identifies those towage procedures specific to Bristol.

1 PREPARATION FOR TOWAGE OPERATIONS

1.1 Planning and Co-ordination

Before beginning towing operations, a comprehensive plan of action should be prepared by the pilot or master, taking account of all relevant factors, including tide, wind, visibility, the ship's size, type and characteristics, and the berth operator requirements.

A good knowledge of the type and capabilities of the tugs allocated to the job is important, in order that the pilot or master can ensure that tugs are suitable for the task ahead and positioned on the vessel so as to be most effective, and to facilitate a safe operation.

Any conflict or mismatch between the required manoeuvre and the tugs allocated must be resolved before the towage operation begins.

Responsibility for co-ordinating a towage operation lies with whoever has the conduct of the vessel being towed, be that the master or the pilot. When berthing and unberthing, it is the duty of the master and pilot to ensure that the vessel is handled in a safe and controlled manner, having due regard to the safety of all those involved, whether it be on the ship, assisting tug(s), linehandlers or mooring gangs and other river users as appropriate.

The number of personnel employed in any towage operation should be determined having due regard for the size of the vessel and the prevailing operational and environmental circumstances. In all circumstances, sufficient manpower should be provided to ensure that individuals are not exposed to undue risk, and that the operation can be conducted safely and efficiently. Due regard should also be given to the size, weight and scope of the towing gear and lines to be handled.

All those with a responsibility for personnel or equipment involved in assisting the towage/mooring of vessels have a duty to ensure that safe working practices are followed, and that associated equipment is fit for purpose. They should also ensure that those involved are properly trained, adequately briefed in their duties, and issued with, and use, suitable and effective personal protective equipment.

1.2 Pilot / Vessel Master Exchange

In addition to the standard information passed to the Pilot, it is recommended that the master provide the Pilot with a deck General Arrangement showing the layout and safe working load (SWL) of the mooring fittings, where known, and inform him:

- which fairleads, chocks, bollards and strong points can be used for towing;
- the SWL of this equipment;
- areas of hull strengthened or suitable for pushing and relevant identification marks employed. (This information is needed due to variations in ship construction and the appropriate area frequently being out of line with the chock);
- using ships' mooring lines as towlines is not recommended (except in an emergency) as the strength may not be in accordance with tug towing force and may therefore limit the tug's performance; and
- any special features (i.e. controllable pitch propellers, thrusters etc).

The Pilot should advise the Master:

- the tug rendezvous times and positions;
- the number of tugs and the mode of towage;
- the type of tugs to be used and their bollard pull(s);
- if escorting, the maximum towline forces that the tug may generate at escort speeds;
- maximum planned speed for the passage;
- the method by which the ship's crew should take on board and release the tug's tow line;
- the prohibition on the use of weighted heaving lines;
- that on release, the tug's gear should be lowered back always under control;
- areas of the transit posing particular risks with respect to the possible use of the tug;
- intentions with regard to use and positioning of the tug(s) for berthing manoeuvres;
- intentions with regard to use of the tug(s) in an emergency;
- primary and secondary VHF channels for use in the operation.

1.3 Pilot / Tugmaster Exchange

The Pilot and Tugmaster should, as a minimum, discuss the following issues:

- the SWL of the vessel's equipment used for towing;
- the tug hook up point, taking into account the prevailing weather and sea conditions, for escorting operation (if appropriate) and berthing;
- if active escorting, the start point of the escorted passage;
- the maximum speed of the tug;
- passage details in their entirety while accompanied by the tug(s), particularly details of any swing manoeuvre, release position and sequence of release;
- berthing details in their entirety, including tug positioning around the vessel's hull and the vessels required position on the berth;
- emergency use of ships anchors;
- any unusual items regarding the particular vessel as gleaned from the Master/Pilot exchange;
- any failure or reduction in the tug's ability to manoeuvre or deliver full bollard pull.

1.4 Pilot / Boatmen & Linesmen Exchange

Mooring operations using a boat should be conducted in line with the BPC Line Handling and Mooring Operations Manual. All personnel involved in the mooring operation should be aware of the special considerations required namely;

- awareness of the mooring boat's position;
- tugs and vessels should not manoeuvre unexpectedly;

1.5 Preparations and Considerations

1.5.1 Tug and Vessel Procedures

Operations such as mooring and towing impose very great loads upon ropes or warps, gear and equipment. The Code of Safe Working Practices for Merchant Seamen sets out certain precautions which should be taken.

Sudden failure in any part of the system may cause death or serious injury to personnel. Masters should avoid men being stationed or necessarily working in the bight formed by the lead from the bitts/winch/hook, through the fairleads and over-side. In any case, the consequences of failure in any part of the system must be carefully considered and effective precautions taken.

All fixed and running gear including tow-lines and ropes should be carefully maintained, tested, certified and regularly inspected against wear, damage and corrosion. Particular attention is drawn to the need to ensure that pedestal roller fairleads, lead bollards, mooring bitts and posts etc are:

- Used appropriately within their design capabilities;
- Correctly sited;
- Effectively secured to a part of the ship's structure which is suitably strengthened.

1.5.2 Watertight Integrity

The watertight integrity of the tug should be maintained at all times. When a tug is engaged on any towage operation all watertight openings should be securely fastened. All watertight openings should be marked with a sign stating that they are to remain closed during towage operations.

Any such openings used whilst moving about the tug during a towage operation should be re-secured immediately after use.

Testing and inspection of towing equipment.

Towing hooks and alarm bells, if fitted, should be inspected daily. The emergency release mechanisms on towing hooks and winches should be tested, both locally and where fitted remotely, at frequent intervals to ensure correct operation. All towing equipment in use should be inspected for damage before undertaking and after completing a towage operation.

1.5.3 Tug Personnel

Tug crews involved in towage operations should always:

- Wear approved and in-date self-inflating lifejackets and other appropriate PPE (e.g. hard hat, safety footwear, etc) throughout the operation;
- Ensure that the working area is safe and free from trip or slip hazards;
- Remain alert to what the ship's crew is doing;

Engines and other equipment should be maintained to the manufacturers' specifications and be properly serviced. Equipment such as heaving lines and messengers should be of appropriate length and strength. All equipment should be checked before the start of each operation. Life saving equipment should be available for immediate use.

1.5.4 Communications

VHF communications are a vital component of safe towage operations. It is essential that those onboard the ship, the tug(s), and where appropriate the mooring boats, and those on the berth, are able to communicate promptly throughout the towage operation, should the need arise.

Prior to departure from the lock inwards or outwards a tug is to advise Bristol VTS of initial track/ manoeuvre and intended waiting area if one is required. Tugs should report to VTS at the chartered reporting points, and, in addition Portishead Point and Nelson Point. When yachts are in the area tugs should be advised to give greater clearance to reduce the risk of swamping.

Once VHF communications have been established, tested and pilot/tugmaster/linesmen information has been exchanged, personnel should keep transmissions to a minimum and should normally only call when in doubt, to confirm actions, or in an emergency. Mooring personnel should monitor the tug/ship VHF working channel in order to have a proper appreciation of progress in the mooring operation.

During operations, it is important that effective communications should be maintained between;

- the towing vessel and both the bridge team, and the mooring decks of the vessel under tow,
- the ship's tow party and the bridge team.

In all communications clear identification of the parties communicating must be used to prevent misunderstanding. The Tugmaster should be kept informed of engine movements, helm orders, proposed use of thrusters and anchors on the towed vessel.

1.5.5 Bristol VTS

The VTS Centre will normally monitor ship/tug working channels so that they may be fully aware of the towage operation(s) in progress.

1.5.6 Pilot Instructions to the Tug

Instructions should be clear, concise and follow convention. Instructions should be acknowledged by the tug.

2 TOWAGE OPERATIONS

2.1 Connecting and Disconnecting Towing Gear

2.1.1 Connecting

Before arrival at the tug connecting position, the pilot or master should establish effective communications with the tug(s) and agree working channels. Likewise, effective communications must be established between the bridge and the vessels crew at 'stations' and they should confirm that they are ready to receive the tug (as appropriate).

The vessel's speed should be reduced to that which allows a safe rendezvous and connection with the tug(s). The required speed should be agreed in advance with the tugmaster involved. At all times during the connecting process, the pilot should be aware of the position and intention of all relevant shipping movements in the area. He should keep Bristol VTS apprised of his intentions at all times, requesting advice on shipping as necessary.

The pilot or master should ensure that his planning takes full account of the time taken to connect the tow(s), especially if adverse conditions are likely to extend this process. Vessel mooring parties should be fully briefed and the pilot should check when in doubt and be confident that his instructions are being followed.

Before commencing a tow the tugmaster should determine which towing gear is suitable for the operation and instruct the crew accordingly. When receiving heaving lines, the tug crew should be aware of the risk of injury through being struck by a 'monkey's fist' or other weighted object attached to the line. The ship's crew should, wherever possible, agree with the tug crew the area where the heaving line is to be thrown, to allow the recipients to move clear. When connecting to a tow, the tug crew should ensure that the towing gear is clear of any obstructions, able to run freely and is released from the tug in a controlled manner.

The ship should not test the bow or stern thrust controls prior to berthing at the time when the tug is under the bow or stern passing up a line.

The pilot or master should maintain radio contact with the tugmaster/vessel crew throughout the process. He should be ready to revise the intended tug position if the tugmaster reports any restrictions at the chosen position, e.g. large flare, overhanging anchor or unsuitable push up point. The pilot or master must keep all those involved up to date and apprised of any changes to the agreed plan.

Tug Positioning and Speed

The Pilot should always advise the tugmaster before making headway on the vessel, allowing the tug to move to a suitable position for towing while making way.

The positioning of tugs on a vessel is a matter for discussion between the pilot/master and the tugmaster(s), having full regard for the areas of the hull, which should be avoided, e.g. watertight doors, between frames etc.

In strong tidal conditions a high percentage of the tug's power may be utilised in maintaining position on the vessel BEFORE applying thrust to the vessel. If the tugs are made fast alongside they are at their most effective with a minimal ship speed through the water.

2.1.2 Disconnecting

During disconnection, both the vessel's and tug's crew on deck should be aware of the risk of injury if the towing gear is released from the tow in an uncontrolled manner and avoid standing directly below.

They should also be aware that any towing gear which has been released and is still outboard may 'foul' on the tug's propeller(s), steelworks or fendering, causing it to come tight unexpectedly. The towline should always be lowered onto the tug deck, never just 'cast off' and left to run.

2.2 Precautions during Towage Operations

2.2.1 Crew Safety during Towing Operations

Once the towing gear is connected, the crew should indicate this to the tugmaster and then clear the area and, if required to remain on deck, stand in a safe position. If the crew are required to attend the towing gear during a towing operation, the length of time exposed should be kept to a minimum.

During towage operations the towing gear equipment and personnel should be continuously monitored and any change in circumstances immediately relayed to the tugmaster. This is particularly important on tugs where the tugmaster has a restricted view of the towing area/ personnel. Crew should be aware that the tow may have to be released in an emergency situation, and that this may occur without warning.

Having verified the towline is fast to the tug, then this must be confirmed with the vessel's bridge. The pilot should then confirm 'all fast' to the tug, thus completing the loop. Sometimes it is not possible for the tugmaster to see the crew on deck due to structural design or at night when they may be obscured by deck lighting on the ship.

2.2.2 Safety of Boatmen and Mooring Boats

Tugmasters, pilots and masters should be aware, at all times, of the position and intentions of mooring boats, especially in strong tidal or adverse weather conditions. This is particularly important in circumstances where visibility is limited from the tug wheelhouse and ship's bridge. Remember that bow and stern thrusters, and the wash from tugs and the vessel being assisted, can all cause significant problems for mooring boats, especially when they are in close to the vessel and/or tug(s) picking up and running with lines. Controllable pitch propellers are a separate, but equally dangerous hazard.

When running aft breast or stern lines, the Pilot/Master should never use the vessel's engines without confirming with the Linesmen as to the position of the mooring boat.

Sound signals can be used as a warning on occasions when vessel noise compromises VHF monitoring.

2.2.3 Use of bridal/gob rope during towing operations

A suitable bridle/gob rope or wire should be used where it is identified, through the position of the tug in assisting the tow or the nature of the operation, that the tow line is likely to reach such an angle to the fore and aft line of the tug that a 'girting' situation may arise.

2.2.4 Maintain Communications

The Pilot and Tugmaster should ensure that effective communication is maintained through out the operation. The Pilot should ensure that the vessel Master is kept apprised of the use/intended use of the tugs, especially should circumstances dictate a change from the intended plan. The towage operation should be maintained at a safe speed, commensurate with the conditions and circumstances. The vessel's crew should be warned that the tug may be used at full power at any time.

2.2.5 Exceeding SWL

It is common for tugs to have a bollard pull capability in excess of the ship's bollards' rated SWL.

3 SAFE SPEED

3.1 Speed Kills

This concept applies equally well to ship towage operations as it does to road transport. Most ship towage manoeuvres should be carried out with the minimum of way on the ship.

Exercise caution when using the engines while the tugs are working. The after tug will be affected by the wash and every tug will be affected by the change of speed either up or down, and a rapid change in speed is all the worse. If the situation dictates the use of the engines, the minimum that the situation allows should be used and the tugs should be informed of what the ship is about to do as it will affect their own actions.

3.2 Some speed is required at times

When taking up the tow line, the tugs generally like to have less than 6 knots through the water (but the particular circumstances of the operation will dictate the speed required). This normally gives them the necessary way to assist them to manoeuvre close to the ship while it gives them plenty of power in reserve should they have to break away. As the tugs are trying to balance themselves in a position to pass the towline they are looking for a steady speed. If the Pilot requires to change the speed, e.g. to maintain steerage way, he must tell the tugs of his intentions before ordering a change to the engine speed.

The forward tug is especially vulnerable when passing up the tow line. This tug has to position itself very close under the bow, sometimes less than a metre from the ship's waterplane. The Tugmaster will be concerned about any bulbous bow or other underwater protrusion, the proximity of the flare of the bow and other odd bits sticking out, and at the same time he is fighting the hydraulic pressure wave that exists around the bow. The forward tug would be most concerned with a change of speed while passing up the tow. Alterations of course should also be avoided whilst connecting the tow.

4 ESCORT TOWAGE

4.1 Introduction

At Bristol, escorting has been practised routinely on deep draught vessels entering and sailing from the port. In addition, both active and passive escorting has been conducted on ships that have suffered a reduction in their ability to manoeuvre. The objective of escorting is to provide a tug that can, at all times, assist a vessel in sufficient time to prevent a navigational incident.

4.2 Active or Passive?

The decision as to whether active or passive escorting should be conducted on a particular occasion must be made with the above objective in mind. For example, in King Road and in the passage to the east of Black Nore Point, it is unlikely that a passive escort could react sufficiently quickly in a number of ship failure scenarios to prevent an incident occurring. Hence in these areas, when escorting is either directed or requested, tugs should always be connected i.e. active.

Further to the west the active/ passive decision should be made in light of the size of the vessel, nature of the cargo, manoeuvring characteristics and whether any defects are affecting the vessels capability or safety in any way.

From the above, it will be clear that an order for a 'tug to standby' is meaningless in many circumstances. In the context of escorting, the phrase should not therefore be used. Where a tug is ordered in these terms by an agent or master this point must be made clear.

Subject to the above, the master or pilot of a vessel will decide what result he needs in terms of steering or speed reductions when using an escort tug. Conversely, the tug master will decide, given the type and capability of his tug, together with the weather and sea conditions and vessel speed, how he can safely deliver the required effects on a vessel on a particular occasion.

Accordingly, the master/pilot and the tug master should discuss and agree the type and mode of escort towage before, or at, the beginning of a passage.

Any tug capable of running with a ship can act as a passive escort. However, given that

apart from the lesser towage acts (e.g. pushing), the passive tugs will have to connect to either slow, stop, turn, or oppose the turn of a vessel if the latter encounters a navigational problem. Thus in nearly all cases a passive escort tug must also be capable of active escort towage.

Towage duties in the River Avon present unique difficulties such as speed limits and a requirement to keep wash to a minimum. Close liaison is therefore required between the pilot and tugmaster, so that the escort tug is positioned in the most advantageous place should anything untoward occur.

5 USE OF SHIPS' MOORING LINES FOR TOWAGE

Ships mooring lines should not normally be used for towing operations except in an emergency, or where a proper risk assessment has been carried out. Where such use is authorised, extreme caution should be taken to ensure that the size and condition of the line is suitable and that it is kept slack and under control when lowering to the tug and making fast.

6 TOWAGE IN RESTRICTED VISIBILITY

The procedure for assessment and operations in restricted visibility will be in line with the published instructions issued by the CHA as Marine Procedure Section.

7 THE USE OF TUGS IN SHIPHANDLING

This publication does not intend to reproduce some or all of the references that are available concerning tug types, characteristics and capabilities. It is expected that all personnel that are directly involved in towage operations familiarise themselves with current publications. Where there is a specific need to train personnel in the use and conduct of tugs then the CHA will specify their requirements in the relevant training module. Specific attention is drawn to the issue of interaction between vessels and tugs.

ANNEX 1

Tug table TA1(1)

TOWAGE MIMIMUM REQUIREMENTS

AVONMOUTH & RP DOCK

ALL PURE CAR CARRIERS

Size	Sea to lock	Lock berth to	Berth to lock	Lock to sea
Up to 100m	0	0	0	0
100 – 140m Without bowthruster	2	2	2	1
100 – 140m With bowthruster	1	1	1	0
100 – 140m With bowthruster and high-lift rudder	0	0	0	0
140 – 175m Without bowthruster and with conventional rudder	3	2	3	2
140 – 175m With bowthruster and/or high-lift rudder	2	2	2	2
140 – 175m With bowthruster & high lift rudder or stern thruster	2	1	2	1
Over 175m	3	3	3	2
Over 175m With bowthruster and conventional rudder	3	2	2	2
Over 175m With bowthruster and highlift rudder or sternthruster	2	1	2	1

Tug table TA1(2)

TOWAGE MIMIMUM REQUIREMENTS

ROYAL PORTBURY DOCK ALL OTHER VESSELS UP TO 220m LOA

Size	Sea to lock	Lock berth to	Berth to lock	Lock to sea
Up to 100m	0	0	0	0
100 – 130m Without bowthruster and with conventional rudder	1	1	1	1
100 – 130m With bowthruster and/or high-lift rudder	0	0	0	0
130 – 160m Without bowthruster and with conventional rudder	2	2	3	2
130 – 160m With bowthruster and/or high-lift rudder or stern thruster	2	2	2	2
160 – 220m <12m draught No bowthruster	3	2	3	2
160 – 220m <12m draught With bowthruster	3	2	2	1
160 – 220m >12m draught No bowthruster	3	3	3	2
160 – 220m >12m draught With bowthruster	3	2	2	1

Tug table TA1(3)

TOWAGE MINIMUM REQUIREMENTS

ROYAL PORTBURY DOCK ALL OTHER VESSELS LOA 220m AND OVER

	Size	Particulars	Sea to lock (arrival) or berth to lock (departure)	Lock to berth (arrival) or lock to sea (departure)
ARRIVAL	≥220m & Panamax bulk carriers	<80,000 or <13m	4	3
		≥80,000 or ≥13m	5	3
DEPARTURE	≥220m & Panamax bulk carriers	<70,000 or <12m	3	2
		≥70,000 or ≥12m	4	2
ARRIVAL	≥230m & post-Panamax bulk carriers	<12m	5	3
		≥12m	6	3
DEPARTURE	≥230m & post-Panamax bulk carriers	<80,000 or <13m	4	2
		≥80,000 or ≥13m	5	2

Tug table TA1(4)

TOWAGE MIMIMUM REQUIREMENTS

AVONMOUTH DOCK ALL OTHER VESSELS

Size	Sea to lock	Lock berth to	Berth lock to	Lock to sea	Additional comments
Up to 85m	0	0	0	0	
85 -100m Conventional vessel	0	0	0	0	
85 -100m With bowthruster and/or high-lift rudder	0	0	0	0	
100 – 125m Conventional vessel	1	1	1	0	
100 – 125m With bowthruster and/or high-lift rudder	1	0	0	0	
125 – 160m Conventional vessel	2	2	2	1	Conventional vessel
125 – 160m	1	0	0	0	With bowthruster & conventional rudder
125 – 160m	1	0	0	0	With bowthruster & high lift rudder or stern thrusters
Over 160m	3	3	3	1	Conventional vessel
Over 160m	3	2	2	1	With bowthruster & conventional rudder
Over 160m	2	1	1	0	With bowthruster & high lift rudder or stern thrusters

ANNEX 2

ESCORT TOWAGE IS A REQUIREMENT - NOT AN OPTION (UNLESS SANCTIONED BY THE HM/DHM)

1 Definitions

Post-Panamax Vessel over 34m beam
LKV Vessel over 160m length and displacement of 45,000 tonnes carrying kerosene to/from the Bristol Aviation Fuel Terminal.

2 Tug escorting and rendezvous points

INWARDS

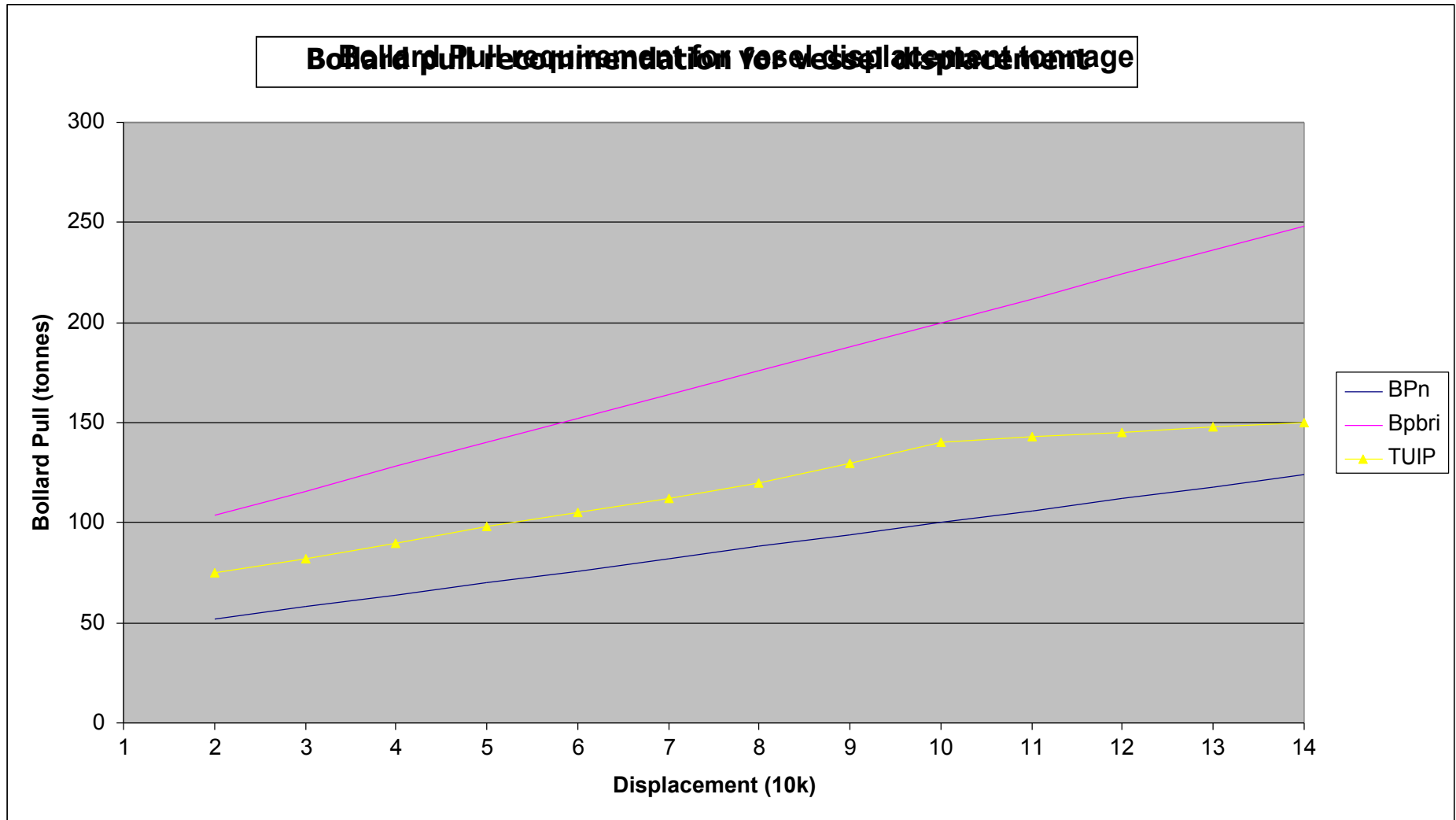
Vessel type	English Welsh	and	Welsh Hook	Portishead Point
Post-Panamax	1		Bow tug and 1 pusher	Remaining tugs
Vessels over 13m draught	1		Bow tug and 1 pusher	Remaining tugs
Large Kerosene Vessels (LKV) 12.5m draught and over docking from the west	1		Bow tug and 1 pusher	Remaining tugs
LKV less than 12.5m draught	0		Stern tug	Remaining tugs

Tugs for all other vessels should rendezvous at Portishead Point or as required by the pilot.

OUTWARDS

Vessel type	Portishead Point	Welsh Hook	English and Welsh
Post-Panamax	All lock-to-sea tugs	0	1
All vessels over 13m draught	All lock-to-sea tugs	0	1
Large Kerosene Vessels (LKV) 12.5m draught and over	1	0	0
LKV less than 12.5m draught	0	0	0

ANNEX 3



Based on formulii $BPn = ((Disp \times 100,000) \times 60) + 40$ $BPBri = ((Disp \times 100,000) \times 120) + 80$

BPn = Bollard pull for most ports **BPBris** = Bollard pull for Bristol **TUIP** = Bollard pull extracted from publication "Tug Use in Ports".