



**Regulation of**  
**Rowing in the Upper Reaches**  
**of the Tidal Thames**  
**A Formal Risk Assessment**

22<sup>nd</sup> April 2005

For

The Port of London Authority

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for and on behalf of  
The Salvage Association



The Salvage Association is a trading style of BMT Salvage Limited

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## **1. INTRODUCTION**

- 1.1 The Port of London Authority (PLA) is the Statutory Harbour Authority for the tidal Thames – the Port of London. As such it is subject to the requirements of the Port Marine Safety Code (PMSC). The PLA is compliant with the PMSC and, as part of that compliance, maintains a navigational Safety Management System (SMS) based on formal risk assessment. The SMS relates to navigation within the whole of the Authority's area of jurisdiction, which includes the upper reaches between Putney and Teddington. A wide variety of leisure and some commercial vessels use this area. There are long standing navigational conflicts between rowers and power driven vessels (and with some river users in general) in the upper reaches above Putney, which have, for some time, been regulated by local Rules introduced by the PLA.
- 1.2 Each year there are a number of complaints and incidents involving rowing boats in the upper reaches of the tidal Thames.
- 1.3 In order to improve safety on the river, the Port of London Authority (PLA) has commissioned a comprehensive, independent risk assessment into rowing on the tidal Thames between Putney and Teddington, including its impact on other recreational and commercial river users.
- 1.4 The risk assessment has been undertaken, within the scope of both the requirements of the Port Marine Safety Code and the PLA's navigational Safety Management System, to:
- i. Establish the value and credibility of PLA Notice to Mariners U6 of 2002 (the Rowing Rules) and whether, as drafted and applied, they:
    - § constitute an effective regulatory framework; and
    - § as a risk control, contribute effectively to reducing the identified risk to As Low As Reasonably Practicable.
  - ii. Determine how well the present PLA Rowing Rules and ARA Safety Rules are understood and applied by:
    - Rowing Clubs, their Safety Representatives and Coaches;
    - Practicing rowers on the water;
    - Class V passenger vessel operators in the area;
    - Other leisure craft – both powered and non-powered;
    - PLA employees working in the area.

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- iii. Determine whether the overall safety of navigation for all river users between Putney and Teddington is better achieved by continuing with some form of Rowing Rules, including the modification to Rule 9 (a), or by withdrawing the Rules and reverting to the International Regulations for Preventing Collisions at Sea (1972).
- iv. If it is recommended that the Rowing Rules should remain part of the PLA's regulatory framework, identify any changes to the Rowing Rules, which could be made to improve the effectiveness of the Rules, whilst being acceptable to all river users.
- v. In any event, identify any changes to other established risk control measures, or any new risk control measures, which could be applied to reduce further, the identified risks to life and navigation.
- vi. Advise on how any revised Rules or new regulations could be more effectively promulgated to improve understanding and compliance from all parties.  
  
Suggest the most effective form the regulations should take.
- vii. If it is established that those parts of the ARA Safety Code relevant to navigating are not being heeded by a significant majority of rowers, make recommendations to the ARA, Thames Rowing Council and PLA as to how better compliance could be achieved.
- viii. Determine the effect the height of tide and tidal stream has on the application of the Rowing Rules (especially at busy periods at LW around Hammersmith).
- ix. Establish if the wash normally created by power driven vessels between Putney and Teddington is greater than one would normally expect in a tideway with a speed limit of 8 knots.
- x. Determine if rowers are adequately prepared for the prevailing conditions (tidal stream, wave height, wash and weather).

## **2. BACKGROUND**

- 2.1 Since time immemorial waterborne traffic has proceeded along the River Thames as a major arterial route from the sea to places far inland. Because of the strong tidal flows, heavy and unwieldy unpowered vessels were only able to move either with the flow of the river or against it by hugging the banks on the insides of bends where the flow was least. Thus over centuries the system of “working the slacks” became the norm over most of the tidal section of the Thames river. This was an unregulated and unwritten system that worked safely because of the expertise and knowledge handed down from father to son and by apprenticeship as a waterman or lighterman. Even when steam and subsequently motor powered vessels were initially developed the system continued, although higher powered vessels were then able to drive through against the strength of the stream, however, at some cost in fuel and time.
- 2.2 Historically all commercial and other river traffic would have been powered by either oars or sails. Whilst no records exist of when rowing as a sport commenced, in 1715 the Doggett’s Coat and Badge race was instituted for watermen who had completed their apprenticeship. This sculling race first took place and was rowed over a 5-mile course between two pubs situated along the Thames. In 1829 the first University Boat Race was run and Henley Regatta was initiated in 1839. By around 1850 a number of rowing clubs had been formed between Westminster and Putney. The individuals who developed the use of oars as a sport were often also involved on the river professionally as watermen or lightermen, whilst non-professional rowers would utilise the assistance of professionals to look after their boats and train them in the art of oarsmanship and navigation on the river. As a result historically all the clubs had a continuous training regime with expertise being passed on to new entrants and novices.
- 2.3 With the reduction in commercial river usage and other changes that have occurred over the last thirty or so years, watermen are no longer employed by clubs. Rowers tend to row competitively for a much more intensive but shorter span of years, an enormous growth in numbers of Clubs and individuals has occurred and the result is that the level of expertise has become considerably ‘watered down’.

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- 2.4 The maritime Regulations for Prevention of Collisions at Sea evolved over many years and were to become the norm in the estuary and lower stretches of the tidal River Thames and were vigorously enforced by the authorities. Although theoretically the Collision Rules were fully applicable to all seagoing vessels using all of the tidal sections of the river Thames, in practical terms “working the slacks” generally continued to prevail. In 1982 an agreed “Code of Conduct & Safety when rowing on the Thames Tideway” was introduced following talks between rowers and the PLA to formalise the traditional rowing pattern. However, some years later, after a court case relating to a particular incident between a cruiser and an eight and following the unfortunate and controversial collision between the “Bowbelle” and “Marchioness” in August 1989, the public spotlight firmly centred on the safety of navigation on the Thames.
- 2.5 As a result the Port of London Authority (PLA) decided during 1991 to enforce the requirements of The International Regulations for the Prevention of Collision at Sea, 1972 (as amended), (COLREGS) for all river users. The rowing clubs were mandated to abide by Rule 9 (a) of the COLREGS which requires a vessel proceeding along the course of a narrow channel or fairway to keep as near to the outer limit of the narrow channel or fairway which lies on her starboard side as is safe and practicable.
- 2.6 The rowing clubs on the Thames and the governing authorities including the Amateur Rowing Association and the Thames Regional Rowing Council (TRRC) concluded that the practice of adhering to Rule 9 (a) –The Right Hand Rule - was dangerous because they believed that it exposed the rowers to numerous additional physical hazards not met when “working the slacks”. From contemporary correspondence it appears that the rowing community probably never adjusted their rowing patterns to conform with the right hand rule. Instead, submissions were made by the ARA/TRRC to the PLA setting out the hazards of the right hand rule and suggesting a Byelaw encapsulating a formalised version of the system of “working the slacks”. In February 1992 this was incorporated into the PLA regulations by means of a Notice to Mariners, rather than being introduced as a Byelaw
- 2.7 In the spring of 2001 a collision took place on the Isleworth bend in Syon Reach involving a motor cruiser, (which was proceeding downriver and keeping well to the starboard side of the channel) and a coxless four, rowing against the stream according to the Rowing Rules on the port side of the river on the inside of the bend. Within the scope of the PLA’s navigational SMS, a Navigation Advisory Panel was convened and following an in-depth review of the incident and the circumstances surrounding it, submitted a number of recommendations for consideration by the PLA’s Navigational Management Team.

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- 2.8 In summary, the investigation revealed that the Rowing Rules in force at the time were the root cause of the accident. The recommendations were duly endorsed and the Rowing Rules were subsequently amended.
- 2.9 The changes included, inter alia, the introduction of two additional crossing points, to prevent a similar incident re-occurring; and a reduction in the area covered by the Rules, thereby removing the bend near Syon where the accident occurred from the scope of the rules.
- 2.10 The revised Rowing Rules came into force on 1 May 2002 and were promulgated as Notice to Mariners U6 of 2002. In March 2003 a Consultation Notice was issued to relevant river users requesting comments and feedback on the revised Rowing Rules after their first year in operation. By the end of the consultation period, the PLA had received very few comments and those only suggested minor amendments. Disappointingly, the only responders were rowers or their clubs.
- 2.11 In November 2003 the PLA received a letter from the Safety Representative of the Thames Regional Rowing Council, stating that it was the considered opinion of the local rowing clubs that the Rowing Rules in Syon Reach should revert back to those in place before 1 May 2002, i.e. those that had been found to be the root cause of the original collision in 2001.
- 2.12 Having received the above letter it was felt that further consultation was unlikely to resolve the issue and the decision was taken to commission a comprehensive independent risk assessment into the way that rowing is regulated in the upper reaches of the tidal Thames, within the scope of its current PLA safety management system.

**3. EXECUTIVE SUMMARY**

- 3.1 Rowing on the upper reaches of the tidal Thames between Putney and Teddington is a high profile sport involving large numbers of rowers of all abilities. Historic rowing patterns on the tidal river had been incorporated within the regulatory framework by means of Notices to Mariners published in 1992 and revised in 2002.
- 3.2 These previous changes to the regulatory framework were believed by the PLA to have been ineffective in successfully reducing risks to navigation following a number of incidents involving rowers and other river users. The PLA therefore decided on an independent risk assessment.
- 3.3 The objective of this project (undertaken between 1<sup>st</sup> October 2004 and 31<sup>st</sup> March 2005) was to identify and assess the risks of rowing on the upper tidal Thames, including its impact on other recreational and commercial river users and to establish the value and credibility of PLA Notice to Mariners U6 of 2002. Also to determine the understanding and application of N to M U6 by all river users and whether U6 should be retained, modified or withdrawn to improve safety of navigation. In addition, the project was required to identify other risk control measures to reduce the risks to life and navigation, improvements for the effective promulgation of regulations, the effects of tidal heights and streams, whether wash was greater than should be expected and whether rowers were adequately prepared for the prevailing conditions on the river.
- 3.4 Rowing and other activities on sections of the river were observed at different stages of the tide by various means. These included transits in a narrow boat, Class V passenger vessels, PLA Harbour Service launches, a rowing coach boat and also from various locations on the river bank and bridges. Visits to Clubs and submissions from and consultation with many river users and stakeholders provided a reasonably balanced knowledge base. BMT Reliability Consultants Limited held a formal hazard ID and risk assessment meeting with representatives from many of the river stakeholders.

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- 3.5 The period of the study over the winter months is one of the busiest for rowers with the greatest numbers on the river, however, it was not ideal as few recreational and commercial users were in evidence and for much of the time the rowers constituted nearly 100% of traffic on the river. Nevertheless, a good appreciation of the general situation and problems in summer was obtained by consultation with river users. The decision taken by the PLA to proceed with the study at the earliest opportunity was in the interests of safety, rather than deferring it for an additional six months.
- 3.6 The study has shown that many non-rowing river users were either unaware of separate navigation Rules for rowers or had little knowledge of their content. Generally most local rowers have an adequate working knowledge of the contents of the Rowing Rules set out in N to M U6, particularly with regards the tracks to follow and crossing points. This is not universal, with visiting rowers and those who normally row on different stretches of river being less aware of the particular requirements for that stretch of river. Rowers have apparently a lesser understanding of the COLREGS and their interaction with the Rowing Rules. There is also a significant problem because many rowers have been and are still taught that when rowing with the stream, they should be positioned on the centreline rather than on the starboard side of the channel as required under N to M U6.
- 3.7 Observation on the river showed that application was not always in line with knowledge of the Rules. For instance a significant number of rowers and coach boats travelling with the stream were seen positioned on the centreline or even well to the port side (left) of the river, rather than on the starboard (right) side. Avoiding action in a head on situation with a power driven vessel needing to maintain the centre of the channel at low water was frequently incorrect with rowers moving to port (instead of to starboard) resulting in confusions and passing starboard to starboard.
- 3.8 Promulgation to leisure users of the regulations variously contained in the Notice to Mariners, PLA Byelaws and COLREGS was considered to be generally ineffective.
- 3.9 The Risk Assessment shows there is increased risk of collision introduced by the Rowing Rules and a clear requirement to amend the current arrangements. The Rowing Rules, as set out in PLA Notice to Mariners U6 of 2002, are considered to increase the risk of collision above a level As Low As Reasonably Practicable (ALARP), particularly when the navigable channel converges at low water in way of bridges and pinch points. The risk from collision between rowers is mitigated in practice, only because the Rowing Rules as drafted are partially ignored. However, where other non-rower users such as powered leisure craft are involved, with little knowledge of these special rules, the risk remains.

- 3.10 The Rowing Rules do reduce risks to rowers by separating them from some physical hazards.
- 3.11 We have considered a number of options as follows:
1. Retain the status quo with Notice to Mariners U6
  2. Amend N to M U6 to mitigate risk of collision
  3. Withdraw N to M U6 and revert to Rule 9 of COLREGS
  4. Draft and implement a “Code of Practice” for rowers on the upper tidal Thames in consultation with the ARA, TRRC and other user groups and then withdraw N to M U6.
- 3.12 Option 1 - As noted above the current Rowing Rules are believed to increase the risk of collision above ALARP and this is therefore not considered to be a safe option.
- 3.13 Option 2 – Despite widespread consultation no meaningful and practical amendments that would significantly reduce the risk profile have been identified.
- 3.14 Option 3 - Reduces the risk of collision below ALARP but introduces various hazards and physical obstructions which are currently avoided when rowing under N to M U6. Whilst this is an option, rowers at all levels have expressed opinions that reverting to the right hand rule would significantly increase risks to both rowing craft and rowers.
- 3.15 Option 4 - A Code of Practice should be developed by the PLA in conjunction with, the rowing authorities and other river user groups and consideration given to enforcing it through PLA General Directions. It will be most important that such a Code is “owned” by all the river user groups, particularly the rowing community. Once implemented the Code will need to be suitably monitored on a regular basis and reviewed as necessary under the PLA Safety Management System to ensure that risk to navigation and personal safety remains as low as reasonably possible.
- 3.16 The Code will need to take in to account various aspects and risks highlighted by this study. These will include but not be limited to the following:
- the requirements of the PLA Byelaws and COLREGS relating to navigation and collision avoidance on the river
  - a simple definition of the narrow ‘channel’ or ‘fairway’ in the upper tidal reaches

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- the facility for rowing craft to proceed outside this channel when rowing against the stream
- the risks at low tide for rowing craft on the port side of the river to converge into the main channel at bridges counter to the flow of opposing traffic
- overtaking to be restricted for rowing craft proceeding outside this channel against the stream
- overtaking to be limited to only one other vessel at a time as required under PLA Byelaws
- overtaking to be restricted on approaches to and under bridges and other blind or constricted areas
- restrictions on rowers significantly slowing or resting on approaches to and under bridges
- standard fitted lights for navigation of rowing craft and coach boats at night and in poor visibility
- emphasis on the importance of maintaining an effective lookout and greater awareness of the developing river situation including other vessels, obstructions, wash and weather
- risk assessments prior to boating by individual rowers, steersmen, coaches and Club/Regatta officials
- The ARA Water Safety Code
- and etc

3.17 The Code would include suitable illustrations, diagrams and maps to assist with understanding and compliance. It would need to be extensively and actively promulgated to ensure the widest circulation amongst all stakeholders and possible river users. Simple details of the Code and its affect on other users should also be published with the Environment Agency in a joint "User Guide", and all users moving onto the upper tidal Thames should be provided with a copy. Enforcement of the Code by rowing clubs, and the rowing authorities would need to be more effective than at present and the PLA would need to take a greater role in enforcement.

#### **4. ROWING RULES: VALUE AND CREDIBILITY**

##### **4.1 The Regulatory Framework**

###### **4.1.1 *Basis and application***

- 4.1.1.1 Control of the activities on the Thames (between the limits specified in the Port of London Act 1968 (as amended), is achieved by the Port of London Authority (PLA) via the Act, a series of Byelaws, Directions and Notices to Mariners. Throughout the study process it has become clear that the fragmented nature of the Regulations, their presentation and visibility weakens the awareness and understanding of the various stakeholders. These issues are addressed in section 8 of this report. This section deals with the basis of the Rowing Rules and the effectiveness of their requirements as a risk control tool.
- 4.1.1.2 The International Regulations for the Prevention of Collision at Sea, 1972 (as amended), (COLREGS), are incorporated into the PLA River Byelaws 1978 (as amended). Rule 1 (a) of the COLREGS states that they apply to all vessels upon the high seas and in all waters connected therewith navigable by seagoing vessels. Whilst the term seagoing vessel is not defined within the COLREGS the stretch of the Thames River under consideration can be navigated by craft that put to sea). Rule 3 (a) of the COLREGS then defines the term “vessel” as including “every description of water craft,....., used or capable of being used as a means of transportation on the water”. From the above it is our understanding that the COLREGS apply to the stretch of river Thames under consideration and that they apply to the commercial and pleasure craft encountered there, including rowing vessels and canoes.
- 4.1.1.3 Rule 1 (b) of the COLREGS states that “nothing in these Rules shall interfere with the operation of any special rules made by an appropriate authority” (i.e. the PLA), “for roadsteads, harbours, rivers, lakes or inland waterways connected with the high seas and navigable by seagoing vessels”. It ends with the requirement that “Such special rules shall conform as closely as possible to these Rules”. It is thus open to the PLA to introduce special regulations to cover the River Thames, though the requirements of the special rules should conform to the requirements of the COLREGS as closely as possible.

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- 4.1.1.4 For the stretch of the River Thames between Syon Reach and Putney such special rules have latterly been introduced by Notice to Mariners No. U6 of 2002 (see Attachment A). Colloquially known as the “Rowing Rules” the requirements have been developed from the historical practice of “working the slacks”. This has been taken as the practice of boats to proceed along the sections of the tidal river with the weakest adverse current; generally, this course is along the inside of the bends.
- 4.1.1.5 It is our understanding that the COLREGS, as incorporated by the Port of London Byelaws, are not replaced by the Rowing Rules. Rather, the special rules under Notice U6 of 2002 provide an exception for the specified craft from following the starboard side of the fairway, otherwise required under Rule 9 (a) of the COLREGS. The basis for this exception is that it was assumed that it is not safe and practicable for the specified craft to proceed on the starboard side of the fairway in certain sections of the tidal river. In all other respects the COLREGS, as incorporated into the Byelaws, apply.
- 4.1.1.6 The study has highlighted a lack of clarity within the documentation over the relationship between the two sets of Rules and a failure amongst the users to either fully understand the requirements of the combined Rowing Rules and wider COLREGS or a failure to apply all parts. This lack of understanding and/or application of all the requirements exacerbates the problems seen in particular with the interaction of motor and rowing vessels. Improved presentation, promulgation, education and application are required and discussed later.
- 4.1.1.7 Within the two sets of requirements there exists a fundamental conflict over positioning of vessels. This feature is illustrated by a specific case whereby in the prosecution by the PLA of a cruiser for excessive wash, the positioning of the affected rowing vessel on the river counter to the COLREGS was heavily criticised by the judge and judgement made against the PLA on this basis. The apparent total lack of knowledge by the rowers of the COLREGS and poor awareness of the Rowing Rules by both parties was also criticised.

## **4.1.2 *Contradictory Requirements***

- 4.1.2.1 Rule 9, Narrow Channels, requires a vessel proceeding along the course of a narrow channel or fairway to keep as near to the outer limit of the narrow channel or fairway which lies on her starboard side as is safe and practicable.

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- 4.1.2.2 As constituted by Notice U6 of 2002 (see Attachment 1) the present Rowing Rules apply different requirements dependant on whether the rowing vessel<sup>1</sup> is proceeding with the tidal stream or against the tidal stream<sup>2</sup>. Pertinent vessels proceeding with the tidal stream are required to keep to the starboard side of the fairway. Those proceeding against the tidal stream are permitted to proceed along the Surrey shore between Putney crossing and Chiswick Steps and between Chiswick Bridge crossing and Syon crossing. Between Chiswick Steps and Chiswick Bridge vessels rowing against the tide are to keep to the Middlesex shore. Whilst this practice stems from “working the slacks” to make progress the basis now must be on the assumption that it is not safe or practicable for the defined vessels to proceed on or near the other side of the fairway at these locations.
- 4.1.2.3 On the ebb tide, which has a longer duration than the flood, rowing vessels rowing on the Surrey shore will apparently be on the opposite side of the fairway to that specified under the COLREGS and will be in the proceeding in the opposite direction to other vessels operating under the wider COLREGS. On the flood tide, the situation is repeated on the Middlesex shore. This introduces direct regulatory conflict between the two categories of vessel.
- 4.1.2.4 A conflict between rowers in opposing traffic streams is also introduced by the drafted Rowing Rules; rowing vessels proceeding with the tidal stream should be on the starboard side of the fairway, which will for a majority of the time be the same side as rowers proceeding against the stream.
- 4.1.2.5 The tidal basis of the Rowing Rules introduces a third conflict at the change of tide. The direction of the stream alters progressively from downstream. (The change of direction also occurs first at the sides of the channel). This progressive change upstream introduces a period of around 20 minutes at the top and bottom of the tide where vessels following the Rowing Rules can encounter other rowing vessels on the same side of the fairway but in the opposite directions. Both sets of vessels are apparently complying with the positioning required under the Rowing Rules, however, one vessel is proceeding up river on the new tide whilst the other is rowing down river on the last of the previous tide, so that the streams are initially in the opposite direction to one another or at least the direction is ambiguous. There are two incidents within the PLA records where this has been a primary cause of collision. The Rowing Rules thus introduce a period of increased risk at the turn of the tide amongst craft following them.

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<sup>1</sup> Or escorting vessel actively escorting, or canoe.

<sup>2</sup> Notice to Mariners U6 uses the word “tide” rather than stream.

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4.1.2.6 Having said this we should also consider the detail of the COLREGS and the relationship with the Rowing Rules regarding other required actions and behaviour:

## COLREGS & Vessels under oars

4.1.2.7 The COLREGS identify vessels under oars for particular mention only when detailing lights to be exhibited (Rule 25). There is no conflict between the COLREGS and Rowing Rules with regards lights.

4.1.2.8 Vessels under oars do not receive particular mention under Rule 18, detailing general responsibilities, nor under Rule 9 (Narrow Channels). Under the COLREGS where the term “vessel” is the sole descriptor, it is taken to include vessels under oars.

4.1.2.9 The keeping of a proper lookout is common to both sets of regulations; observance is the problem here and is discussed in the following section.

## Impeding of Passage

4.1.2.10 Under Rule 9, narrow channels, vessels under oars would by nature of their length<sup>3</sup> be required not to impede the passage of a vessel which could safely navigate only within the narrow channel or fairway. Notice to Mariners U6 is consistent with this.

## Crossing

4.1.2.11 The Rowing Rules and COLREGS agree on crossing with rowing vessels (not specifically mentioned) required not to cross the narrow channel or fairway if such crossing impedes the passage of a vessel, which could safely navigate within the narrow channel or fairway

## Overtaking

4.1.2.12 Overtaking is addressed, but only insofar as actions are required by both vessels to permit safe passing. Otherwise, should a risk of collision develop the actions required fall under the other Rules.

4.1.2.13 Elsewhere, overtaking is addressed in the Byelaws, which proscribe more than one vessel overtaking at a time i.e. no more than two abreast.

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<sup>3</sup> Rowing 8s are approaching the 20m limit of the Rules; ARA web site gives a length of 19.9m.

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## Actions to avoid risk of collision developing

- 4.1.2.14 It should be noted that the Rowing Rules do not address actions to be taken where risk of collision exists. There appears a level of confusion as to the general requirement to keep to the side of the fairway or close to the shore and the prescription of actions required where a risk of collision develops. These latter actions still fall under the COLREGS as incorporated into the Byelaws.
- 4.1.2.15 Similarly, the COLREGS in Rule 9 (Narrow Channels) address only the actions of the vessels with regards avoiding impeding the passage of respective craft and overtaking where action is required by the vessel being overtaken, i.e. prior to a risk of collision developing.
- 4.1.2.16 Whilst the Rowing Rules and COLREGS conflict on the positioning of certain vessels relative to the fairway they do not conflict on action taken when a risk of collision exists, for the simple reason that the Rowing Rules do not specify the actions.
- 4.1.2.17 We believe that a fundamental misunderstanding is widespread throughout the stakeholder communities, particularly amongst rowers. This failure to comprehend this aspect of the requirements – that where risk of collision exists the action required is dictated under the COLREGS - has increased the level of risk and gives the perception of greater conflict and weakness in the regulatory framework than may be the case. Where risk of collision develops the steering rules within the COLREGS should be used to avoid the immediate danger.
- 4.1.2.18 For a head on situation, (where risk of collisions exists), the COLREGS directly specify action to be taken only in the case of two Power Driven Vessels meeting (Rule 14). In this situation both Power Driven Vessels should alter their course to starboard so as to avoid collision. We believe that rowing vessels fall under the remit of this Rule and are required to take action in accordance with Rule 14 and alter to starboard. Amongst the rowing community widespread confusion, ignorance and/or failure to apply this response in particular increases the appearance of conflict in the regulations and the level of risk.
- 4.1.2.19 The two aspects of the location of the rowing vessels in the fairway and the actions taken to avoid collision, whilst interlinked, can be addressed separately. Actions taken to avoid a collision are independent from the special rules, falling directly under the COLREGS and outside of the Rowing Rules, as specified in Notice to Mariners U6 of 2002.

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## Byelaws

- 4.1.2.20 Other problems encountered on the river including overtaking situations, vessels proceeding abreast of one another, speed, boat identification and marking and responsibilities between vessels are addressed within the Byelaws. Where covered they agree with the COLREGS.
- 4.1.2.21 Speed is limited to 8 knots under PLA Byelaws though certain craft, including rowing vessels by inference, are permitted to exceed this. Whilst not directly contradictory to the COLREGS this must be linked with the keeping of a proper lookout. It also introduces an anomaly from a collision avoidance perspective that amongst the fastest craft on the river are those with probably the worst ability to maintain an effective proper lookout. This partly reflects the fact that the speed limit controls wash as well as collision avoidance, with rowing vessels producing little.
- 4.1.2.22 From our perspective the fragmented nature of the Rules appears to weaken the Regulatory basis as well as reducing the effectiveness in presentation and promulgation. (See section 9).

### **4.1.3 Summary – Regulatory Basis**

1. The regulatory basis of the Rowing Rules appears weakened on the following counts:
  - The positioning of rowing vessels runs apparently counter to the requirements for other vessels under Rule 9 (a) of the COLREGS to keep to the side of the fairway on their starboard side. The location(s) of the conflict alternates with the state of the tide.
  - The Rowing Rules introduce conflict amongst the vessels covered by placing opposing traffic flows on the same side of the fairway.
  - The Rowing Rules introduce ambiguity or direct conflict amongst the rowing vessels at the turn of the tide.
2. In relation to the wider COLREGS, the prima facie reading is that the Rowing Rules run contrary to Rule 9 (a) of the COLREGS and do not, as required, “conform as closely as possible to these Regulations”. This partly reflects an ambiguity over the limits of the narrow channel. Vessels proceeding outside a defined narrow channel would be required to act in accordance with the wider COLREGS, including actions taken to avoid collision, but would not fall directly under Rule 9.

3. In other aspects both regulations are in agreement, including keeping a lookout, crossing and overtaking. Actions taken to avoid collision are not covered by the Rowing Rules; ambiguity and failure to appreciate this increases the apparent conflict with COLREGS.
4. The understanding and value of the various rules is decreased by their fragmented nature within the Rowing Rules, Byelaws and other guidance. Their value and effectiveness, would be increased by simplification and increased visibility.

## **4.2 Value as a Risk Control Measure**

### **4.2.1 General**

4.2.1.1 The study found some differences between the Rowing Rules as drafted and as applied which affect their value as a risk control. Additionally, factors outside the Rowing Rules affect their implementation and effectiveness and these are also discussed for completeness. The assessment is broken into the following sections:

- Methodology (see Attachment D).
- Validity and Effectiveness of the current Rowing Rules
- Other Factors which impact on their effectiveness
- Summary

#### 4.2.1.2 Validity and Effectiveness of the current Rowing Rules

We have assessed as part of the risk control the following areas:

- Collision Risk
- Use of the Centreline
- Physical Hazards
- Tidal Stream
- Speed
- Lookout
- Change of Tide
- Overtaking
- Crossing
- Collision Avoidance
- Promulgation

- Data Capture
- Summary

#### **4.2.2 Collision Risk**

4.2.2.1 The process involving the Risk Assessment Identification Meeting found a major category of risk as that of collision, with the Rowing Rules increasing the risk on the river. This was held especially at the pinch points, but could occur anywhere where the positions of rowing vessels and powered craft coincide whilst going in opposite directions.

4.2.2.2 A Risk Factor of 8<sup>4</sup> at certain locations made risk of collision a significant risk, outside the ALARP region, and additional risk control should be considered. The present Rowing Rules are thus counter productive for controlling risk of collision.

4.2.2.3 Collision risks to be considered were assessed as:

- a) Conflict between rowers and other users on reciprocal courses along stretches of the general fairway, location varying as described previously with direction of the tidal stream. This includes conflict between rowers when placed on the same side of the river by the Rules. Risk of collision is exacerbated by uncertainty or conflicting actions taken to avoid collision. The risk is exacerbated by failure to hold the positions required by the Rules, i.e. drifting away from shore, inappropriate overtaking and resting;
- b) Uncertainty of state of tide causing confusion as to which track to follow – collision risk rower on rower;
- c) Crossing points and crossing in general
- d) Pinch points including Bridges and narrowed channel where traffic is obliged to interact
- e) Blind spots near bridges and narrow arches and bends.

4.2.2.4 Problems are particularly obvious at pinch points such as Bridges and narrowed fairway and at the turn of the tide as described previously.

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<sup>4</sup> See Attachment - Methodology

4.2.2.5 It was found that the following areas remain pinch points irrespective of tidal state:

- Hammersmith Bridge
- Kew Bridge
- Syon Crossing (Isleworth Ferry Gate) to Richmond Lock, includes Isleworth Bend and narrow channel next to Isleworth Ait

4.2.2.6 In other areas the greatest risks occur near low tide when the channel is at its narrowest:

- Fulham Flats
- Channel next to Chiswick Eyot
- PLA Driftwood moorings & Chiswick Pier
- Flats opposite the Bandstand
- Barnes Bridge
- Reach between Barnes Bridge and Chiswick Bridge
- Chiswick Bridge
- Kew Railway Bridge
- Oliver's Ait and Reach to Kew Bridge
- Brentford Ait
- Channel above Isleworth Ferry Gate

4.2.2.7 A rower proceeding against the tidal stream on a left hand bend is required to be on the port side of the river as near to the shore as possible. Where the rower strays into the main navigable channel this then brings him into potential conflict with vessels coming in the other direction obeying the standard COLREGS positioning and thereby proceeding on the starboard side of the channel. It appears that much of this conflict can be associated with rowers not holding position relative to the shore as required. This is then exacerbated by confusion as to which way the two vessels turn to avoid a collision or by taking directly contradictory actions.

4.2.2.8 The situation can be further exacerbated if there are more than two vessels involved, due to a stream of traffic, overtaking, multiple vessels proceeding abreast in contradiction to the Byelaws or by vessels resting inappropriately and impeding traffic flow, particularly in vicinity of Bridges and pinch points. Bridges are often used as the end point by rowers resting following "set pieces".

**4.2.3 Use of the Centre Line**

4.2.3.1 The applied Rowing Rules differ in at least one point from the Rules as drafted. When proceeding with the stream the Rowing Rules require the pertinent boats to keep to the starboard side of the fairway. It has been seen that generally rowers apply this rule and have been observed on this side of the fairway. There are many, however, who do not.

4.2.3.2 We have noted rowing vessels simultaneously spread across the breadth of the navigable channel and also rowers simply proceeding on the wrong side. Accident records<sup>5</sup> cite a number of rower on rower incidents as caused primarily by one of the rowing vessels being on the wrong side of the channel<sup>6</sup>. Whilst there may be some ambiguity in the delineation of the fairway, there appears a fairly common practice for rowers proceeding with the stream to actively follow the centre line (often termed the 'rowing line') of the fairway. This has been shown on a number of submitted documents, heard described in some interviews and in presentations given by leading figures within the rowing community. Whilst it is not universal the practice and understanding appears relatively widespread and differs from the drafted Rowing Rules.

4.2.3.3 By following the centreline the rowers mitigate the internal conflict inherent within the Rowing Rules which would otherwise force rowers in opposing directions to be on the same side of the fairway. The increased number of craft using the centre of the fairway tempers this risk reduction.

4.2.3.4 It is the conclusion that the Rowing Rules as drafted significantly contribute to the overall risk of collision. This risk is reduced by non-application of certain parts. Repealing the rowing rules in favour of uniform application of the COLREGS across the river would reduce all the above Collision risks. With this conclusion it is difficult to justify retaining the Rowing Rules in their present form without further risk mitigation.

**4.2.4 Physical Hazards**

4.2.4.1 The process centred on the Risk Assessment meeting also identified risks of grounding, swamping and contact. It was accepted from that process and wider consultation that the rowing community has strong feelings concerning the effects on their safety of additional physical hazards that would be faced with in the event of the rowing rules being revoked.

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<sup>5</sup> ARA accident records 1994 to 2004.

<sup>6</sup> Wrong side in respect to the Rowing Rules

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- 4.2.4.2 Predominantly the hazards were either risks of grounding on exposed flats (tidally dependent) and increased risk of contact with piers and moored craft and objects; also increased risk of wash along the built up Middlesex bank (tidally dependent) and associated with a lack of egress points along that bank (this point is not strictly in the consideration of navigational safety). Tidal stream is discussed below, but was raised by rowers as a hazard in particular associated with interaction with physical hazards on the Middlesex side (the islands and piers), due to the direction of flow to the outside of the bend. The alternative, argued by the rowers, was that they would be forced to row further away from the shore, into the stronger stream and deeper water of the main channel and interacting with other power driven vessels more, increasing risks.
- 4.2.4.3 It was felt from the hazard identification meeting output that further study was required to assess the validity of the physical hazards and the level of associated risks. We have assessed that several physical obstructions predominantly on the Middlesex shore present hazards, with risks increased if rowing vessels are required to navigate in their vicinity; see Attachment E. which provides a précis of the comparison of the risks that are assessed to change under Rowing Rules and positioning on the starboard side of the river.
- 4.2.4.4 The risk is inversely proportional to distance from the hazard until, under the Rowing Rules, it is kept low by rowers keeping to the opposite side of the river. There were found to be widely differing assessments of the level of risk between the rowers and authorities. The rowers perceive that under COLREGS, if required to proceed on the right hand side of the river they will be forced either too close to the physical hazards presently missed or into unsuitable water<sup>7</sup> and presence of powered craft.
- 4.2.4.5 There are widely differing assessments as to the risks posed by the physical hazards. These differing risk assessments appear partly to stem from different interpretation of how far to starboard the rowers would be required to be if placed on the starboard side of the channel by the regulations. It was accepted that particularly without additional alternative clarification and mitigation the present Rowing Rules do mitigate the hazards imposed and reduce the risk to rowers from levels that can be unacceptable under the right hand rule.

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<sup>7</sup> see section on Tidal Stream below.

**4.2.5 Tidal Stream**

4.2.5.1 The rowing rules allow vessels under oars to “work the slacks” when proceeding against the stream. The rules were historically intended for vessels that could not proceed fast enough to make way over the tide. With the speeds of many modern recreational and competition rowing craft this would not be the case. Particularly for the single scull and for the novice it was assessed that they could be prevented from making headway if placed against the stronger tidal stream as found on the side presently avoided under the Rowing Rules.

4.2.5.2 Speed of progress, whilst detrimental to the sporting aspect, would not be sufficient safety reason for the rules. Safety of some users would be reduced if placed in the stronger stream, particularly novices who at present are able to be coached in rowing a tideway from the Surrey banks in particular. The balance between navigational safety and personal risk assessment can be debated.

4.2.5.3 It is understood though that there are various hazards involved in being on the alternative side of the river in certain areas, and this is the reason given by the rowers for requiring the continuation of the rules. The tidal stream tends to set towards the islands on the northern shore, towards the bend at Syon making steering of rowing boats difficult to counter this. Downstream of Oliver’s Island the stream, coming from the northern side of the island sets at an angle to Kew Rail Bridge and the channel, with effect decreasing with proximity to the Surrey shore; rowing boats, it is argued, have difficulty to regain direction and counter a stream which catches the bow, increasing risk of collision. This is argued as likely with the stream on the starboard side in proximity to the island.

**4.2.6 Speed**

4.2.6.1 The risks from wash, of which speed is a causative factor, (and which is felt by many rowers to be on par or of greater concern than risk of collision), are discussed in section 12. Whilst it may be that wash is a main reason for the speed limit, speed itself has a direct influence on the levels of risk to and between river users. Whilst this study has not been tasked with directly addressing the speed limit it is briefly considered from the aspect of a risk control measure and as an example of the varying requirements spread throughout the present regulatory system.

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- 4.2.6.2 Speed is not directly addressed by the Rowing Rules. They do not therefore provide an effective means of controlling it. Speed is instead limited under the PLA Byelaw 48 to that of eight knots through or over the water, other than for named exceptions. The exceptions include power driven vessels approved by the Harbourmaster and engaged in escorting a rowing boat in training (e.g. coach boats) or a boat race or regatta. By inference the rowing boats are thus permitted to exceed the speed limit, and will at times travel in excess of 12 knots.
- 4.2.6.3 A small number of examples have been seen during the study period of escort boats apparently breaking the speed limit whilst not actively escorting. The situation is not always apparent, by practice of some escorting coaches to monitor progress from the other side of the fairway. It appears that on occasion, though, the requirement to be actively escorting is not always adhered to.
- 4.2.6.4 Many rowing vessels will exceed the 8-knot speed limit, reducing the time available to all parties for assessment of the situation and reaction and has featured in a number of incident reports<sup>8</sup> as a contributory factor with rower on rower incidents – a well presented paper on the ARA website itself claims that in over 80% of head on collisions neither boat saw the other in time. Accident records also include speed as causative in rower and powered vessel incidents, with power driven vessel's cited as going too fast (though this often relates to wash levels and failure to reduce speed either at all or in time to prevent the trailing wash affecting the boat. Wash is discussed in section 12.).
- 4.2.6.5 Under the COLREGS all vessels are required to proceed at a safe speed, appropriate to the prevailing circumstances and conditions. It is notable that a number of ARA incident reports apparently combine excess speed in vicinity of bridges as causative or contributory factors. Rowing craft proceeding at racing speed are also noted to have hit moored and fixed objects. It is perhaps the combination of excess speed and the failure to keep a proper lookout that creates the greatest risk and perhaps anomalous given the limited forward lookout, nature of the river and interaction with other craft. These are not sufficiently controlled in practice and the rules prove to be not effective.

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<sup>8</sup> ARA Incident Records 1994 - 2004

**4.2.7      *Lookout***

- 4.2.7.1      By the nature of the craft, persons engaged in rowing are hampered in maintaining an effective lookout. Anecdotal evidence is supported by a number of incident records<sup>9</sup> where rowing craft have hit stationary objects, and where no other factor is cited as well as apparently contributing to other incidents. Amongst the rowers of coxless craft, recommended guidance varies from well defined criteria requiring quick views over alternating shoulders every three, five or ten strokes, interspersed with longer sweeps at set number of strokes, down to an occasional look around. The variance partly reflects differences between the experience and speeds of the rowers and in the stretches of river being negotiated. However, there is no fixed consensus amongst the community as to what constitutes a proper lookout. As speed increases so a rowing craft will travel further during each stroke and at full speed (say 11 knots) a coxless four might cover around 110 metres during the period of 10 strokes. This would give a closing distance of around 220 metres for two similar craft approaching head on during this 10 stroke period.
- 4.2.7.2      For coxed boats there is frequently a difficulty often with a relatively small cox crouched low in the boat having to look around rather wider and taller colleagues rowing in front of him or her. However, we have been assured that in clear water an effective lookout can be kept due to the bends in the river and by not rowing a completely straight course.
- 4.2.7.3      Keeping a lookout in the broader sense of overall situational awareness is also felt to be weak and in need of improvement. This may well be more in education and application than further regulation. It is probable that keeping of a better lookout would prevent several of the incidents and near misses recorded, incidents involving wash and serve to reduce the level of conflict between vessels of all types. The design of rowing boats combined with the nature of the sport and a tendency of some rowers to become solely focussed on technical execution, particularly during “set pieces” all combine at times to the keeping of an inadequate lookout. The river does not provide a sanitised waterway with clear water and controlled access. The level of lookout should reflect the dynamic environment, but often does not.

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<sup>9</sup> ARA Incident Records 1994 – 2004

4.2.7.4 The Rowing Rules repeat the requirement of the COLREGS to keep a proper lookout. Greater emphasis within the Rules may assist, but education and better application of existing guidance is necessary. Elsewhere, the importance of keeping an effective lookout receives limited visibility and emphasis. For instance, in the ARA Water Safety Code, despite being one of the prime causes of accidents in the ARA incident database, keeping an efficient lookout does not feature in the main Code but gets minor paragraphs within the Guidance Notes on Steersmen and Coaches. The ARA website does address the topic more fully but only within a paper on coaching. Given the prominent role poor lookout and/or lookout and speed play in incidents, not only on the Thames, it appears that the effectiveness of both the present regulations, education and enforcement should be improved.

#### **4.2.8 *Change of Tide***

4.2.8.1 The requirements of the Rowing Rules are tidally based. Recorded incidents of rowing vessels encountering one another in counter directions along the centre line and <sup>10</sup> colliding have been attributed to the change of tide and related ambiguity of tidal stream direction and supporting the theoretical weakness of the Rowing Rules. Similar incidents have occurred involving rowing craft following the Rowing Rules against the tide near the Surrey bank around the bends at Hammersmith and Kew. In this sense the Rowing Rules contribute to the risk of collision as mentioned previously.

#### **4.2.9 *Overtaking***

4.2.9.1 Overtaking features as an aspect in a number of incident records, often combined with inappropriate times/locations such as approaching or passing bridges. This aspect needs to be addressed further, either by enhancing the prominence in the rules or better education, application and enforcement.

4.2.9.2 The International Regulations for Preventing Collisions at Sea (1972) in Rule 13 (a) states “any vessel overtaking any other shall keep out of the way of the vessel being overtaken”. PLA Byelaw No 15 provides a modification to the COLREGS so that no vessel should overtake another vessel which is herself overtaking another vessel - to allow for narrow channels and prevent vessels being three abreast. This appears a suitable restriction. Again, though, it is an example of the fragmented presentation of all rules covering navigation on this section of the Thames as it is not mentioned in the Rowing Rules.

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<sup>10</sup> Centre line as practiced, not starboard side of the fairway as per the Rules.

- 4.2.9.3 The ARA document “Tideway Navigation & Steering” provides suitable guidance as to the correct procedure with the overtaking boat keeping clear at all times whilst the overtaken boat holds a normal course. Generally in the shallows the overtaking boat will overtake towards the middle of the river but allow the overtaken boat sufficient space to steer around any shallows or obstructions.
- 4.2.9.4 The ARA paper also notes that the overtaking vessel should not row two abreast for longer than necessary to overtake, and that the overtaken vessel should never assume that the vessel coming up from astern has seen them.
- 4.2.9.5 We note that for many races including some Tideway Head races a different convention, contrary to the COLREGS, will apply with the slower boat moving over to allow the faster boat to stay in the stream.
- 4.2.9.6 The paper also comments that the rights of way when overtaking are one of the least understood areas of Tideway navigation.
- 4.2.9.7 Observation – In view of the potential and actual number of accidents that occur around bridges, due the narrowing of the main fairway and physical obstruction of the piers, the narrow channel and lack of a clear view ahead the ARA paper should also recommend the restriction of overtaking immediately prior to bridges, blind bends and pinch points. In view of the above Byelaw, and for reasons of safety, overtaking should be restricted to only one vessel at a time.
- 4.2.10 Crossing**
- 4.2.10.1 Several recorded incidents have included at least one vessel crossing. The Rowing Rules specify crossing points whilst also permitting crossing elsewhere. In both instances the Rules remind those crossing of the requirement to expedite the manoeuvre and not to impede the passage of others following the narrow channel; as specified in the Byelaws and under the wider COLREGS. As with other sections, the drafting and presentation could be enhanced. Notwithstanding this we believe it is the practice, in particular keeping a good lookout, situational awareness and expediting the manoeuvre that is the greater weakness and where effectiveness can best be improved.

**4.2.11 Collision Avoidance**

4.2.11.1 Where rowers can operate outside the main fairway but then find themselves inside it, a common reaction will be to regain position outside the fairway by altering back towards the bank. When this is a reaction to encountering another vessel head on, whether power driven or another rower, the actions will probably be contradictory to the COLREGS and exacerbate the situation. Similarly, where a rower is forced to use the main fairway (at pinch points, particularly at Low Water) and encounters a head on situation the same reaction is often found – altering to the shallower water of the bank. . Both instances arise through non-application of the current Rules (COLREGS). The Rowing Rules do not address this action, but it is apparent that ambiguity has lead to some of the confusion. In this aspect their effectiveness as a risk control could be improved.

**4.2.12 Promulgation**

4.2.12.1 One problem with the effectiveness of the Rowing Rules is promoting understanding both amongst rowers and other users, especially visiting pleasure craft. The consensus is that the promulgation of the rules is not very effective and more should be done to extend awareness; see section 9.

**4.2.13 Data Capture**

4.2.13.1 Of note here are the differences between the ARA and PLA incident databases. Whilst the PLA has received very few reports, decreased over recent years, the ARA database has increased. It appears that the ARA drive in the capture of data is producing results but that relevant information is not being transmitted to the PLA. Better communication between the various parties is recommended. A further observation is that whilst the data has been captured by the ARA is use appears still to be at an early stage. A number of initiatives are currently under review by the ARA (see Attachment H), but prior to this there has been a limited visible response to some of the trends seen in the records.

**4.2.14 Summary**

4.2.14.1 The conclusion from this part of the process was that the present Rowing Rules significantly contribute to the overall risk of collision on this section of the Thames, rather than reducing this identified risk to ALARP. Their value as a risk control measure is thus downgraded and justification on this basis weakened. Simultaneously it has been assessed that the Rowing Rules do have value in reducing the risk to rowers from physical hazards.

- 4.2.14.2 The sole reason for not implementing the COLREGS would be to mitigate the risks from the physical hazards i.e. to separate rowers from physical hazards on the sides of the river not presently rowed.
- 4.2.14.3 There is much confusion about the interpretation of the rules both amongst rowers (where the common interpretation is that they proceed in the centre of the channel when going with the stream, and then go on the inside of the bends in the shallows when proceeding against the stream) and amongst other users, who are either unaware of the rules or find the lack of consistency difficult to apply.
- 4.2.14.4 The question is one of balance between the identified risks to all users.

### **4.3 Other Factors which Impact on Effectiveness**

#### **4.3.1 Enforcement**

- 4.3.1.1 The PLA Harbour Services personnel do not religiously enforce the requirements for rowing vessels proceeding with the stream to keep to the starboard side of the channel as they believe that this would increase the risk of collision between rowing vessels travelling in opposite directions, particularly at low tide and pinch points. The regulatory value of the Rules as drafted is thus downgraded. The decision not to enforce this aspect is borne out by records where a number of rower on rower incidents cite one vessel (presumably going with the stream) as being too near the bank and thus the vessel proceeding the other way.
- 4.3.1.2 There also appears to be a reluctance on the part of the PLA to use their powers to enforce the Rowing Rules in conjunction with the COLREGS. Stemming apparently from the lack of belief in the regulatory strength of the Rowing Rules, (supported it would appear by case history), the reduced enforcement on the river and lack of disciplinary enforcement through their other powers are contributory to an apparent sense of relative impunity amongst some river users.
- 4.3.1.3 Within the various user groups the powers of control over the membership rely to an extent on the willingness of the members to be controlled. i.e. the river remains a free waterway and, whilst it may be more difficult, the river can be accessed and used irrespective of club membership. The ultimate sanctions are thus limited. Reduced enforcement on the river combined with limited powers or unwillingness to use the powers held appear to be detrimental to the overall levels of compliance on the river and thus the effectiveness of the Rules and regulations as risk reduction measures.

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- 4.3.1.4 There are other aspects of what is seen as a reduced level of enforcement by the PLA with regards rowers. Although Byelaw 48 specifically allows coaching boats and boats escorting races and regattas to exceed the eight knot speed limit there is a requirement for them to have been approved by the PLA. However, inspections and approvals, which used to be at the invitation of the Rowing Club, are apparently no longer taking place. Anecdotal evidence suggests this has been a factor in less appropriate craft being used by some rowing coaches, introducing hazards such as increased wash. Perhaps as importantly, it reduces the interaction of the rowers and PLA personnel, and the visible presence of the PLA amongst the rowing community.
- 4.3.1.5 In 1991 it was the published intention (of the PLA and Police) to apply the right hand rule and prosecute those found in non-compliance. We have not become aware of any such prosecutions. It is also difficult to ascertain whether the rowing community actually reverted to the right hand rule during the relatively short period of its apparent enforcement, although contemporaneous correspondence indicates that rowers continued as before whilst arguing their case. . In January 2001 with the taking over by the RNLI of search and rescue on the Thames, the routine police presence on the river was itself largely withdrawn (with the closing of the police station and routine patrols in the area). To users external enforcement appears to be lacking.
- 4.3.1.6 Lack of compliance and enforcement relates to other aspects of navigation including overtaking at inappropriate times or proceeding abreast where required not to under the Byelaws, examples of which have been seen in the study period and supported by anecdotal evidence. The baulking of larger powered vessels has also been acknowledged within the rowing community as a problem, with progress of other vessels impeded (counter to the Rowing rules, Byelaws and COLREGS), particularly at low tide by rowing vessels in the main fairway using the centre line and the centre arches of Bridges. The causes appear to be a mix of lack of situational awareness or awareness of other user requirements, combined with the nature of rowing (use of set pieces, ending and resting at Bridges etc), but also on occasion wilful non-compliance. The failure of some powered vessels, principally privately owned pleasure craft, to respond to the presence of rowers is also recorded and of concern
- 4.3.1.7 N to M form part of the PLA regulatory framework but without the force of a Byelaw, however, prosecutions could be made under the PLA Act using the N to M as evidence. A Code of Practice fits well for enforcement purposes as it could be given the force of law under the PLA General Directions

4.3.1.8 The effectiveness of whatever rules are in place will be affected by enforcement. There is a widespread reluctance amongst the rowing community to revert to the right hand of the fairway only. As seen below Tower Bridge, in areas not covered by the Rowing Rules, the “slacks” are apparently still worked by rowers. Gaining “buy-in” from the rowing community would be difficult to achieve but crucial to the success of the rules governing navigation, particularly if the special rules were repealed in entirety.

#### **4.3.2 Abuse**

4.3.2.1 Another unfortunate element is the level of verbal abuse encountered from elements of the rowing community. Whilst also not being a one-sided phenomenon complaints of abuse by rowers have been a common theme throughout the survey process and an acknowledged problem within the rowing community. This has affected the relationship between the various river users. This may be symptomatic of a change in attitudes and polarisation amongst communities, but is also at least a part cause of reluctance on the part of the PLA harbour service to rigidly enforce all the rules.

#### **4.3.3 Style of Enforcement**

4.3.3.1 The detrimental effect on enforcement caused by the regulatory status and drafting of the Rowing Rules has been discussed above and is a probable factor in transgressions from the rowing and wider rules. In addition to this, the actual enforcement style has a probable impact on compliance.

4.3.3.2 Day to day enforcement by the PLA is based around routine patrols by a Harbour Services launch crewed by uniformed personnel, onboard relatively large deep draft vessels. The professionalism of the harbour service personnel was apparent during the study. In relation to commercial craft within the area the profile of the service, type of vessels and noted working relationship appears not inappropriate. A mix of the official profile is combined with the ability to approach the operators about known transgressions; the presence of the service launch does not deter all transgressors, but the ability to approach them informally on the first instance appears to generate a good working relationship.

4.3.3.3 The practice of approving escorting coach boats has apparently lapsed within the PLA. It is understood the requirement was aimed principally at safety and control of wash through assessing the hull form and observing the wash with the boat in operation. The practice would be relatively easy to re- introduce and is recommended. It would serve, as well as its primary aim, as a means of re-engaging the rowing community and raising the PLA overall enforcement profile.

4.3.3.4 Between the rowers and the PLA Harbour Services patrols there is a less effective relationship. There are several factors:

- High profile patrol boats with uniformed personnel
- Nature of the rowing community – a core of strong-minded, independent persons. Hostile reactions when transgressions are raised.
- Lack of enforcement of the present Rules and regulations leads give impression of either a lack of interest or toothlessness.
- Despite the high profile style, the large number of boats and sweeps past any one area leads to a reduced overall visibility. Combined with the disproportionate relative numbers of rowers and few other craft on certain stretches (particularly when out of the summer season) this leads to an apparent feeling of ‘ownership’ by some rowers. This appears particularly so during winter periods when other craft are largely absent from many stretches. This apparent ‘ownership’ and the seasonal lack of other types of craft, may be part of the reason for subsequent conflict when larger numbers of these other craft are encountered in summer periods.

4.3.3.5 The hull form, maximum speed and associated wash generated by the patrol launches is also felt not the most appropriate for the stretch where areas potentially frequented by rowers are inaccessible to the PLA during low tidal states. The amount of wash generated when required to proceed at speed could also affect rower safety and was held to be relatively high.

#### **4.3.4 *Fragmented Nature of the overall Regulatory Package***

4.3.4.1 The fragmented nature and presentation of the present regulatory package reduces its ease of understanding, coverage and its effectiveness. In this context, though, the present Rowing Rules work to the extent that they do amongst the Rowers partly because they are not actually fully followed or enforced. Full application of the Rowing rules would reduce their effectiveness, particularly rower on rower situations. With regards other problems of overtaking, proceeding abreast and impeding the passage of other users, understanding may be improved by better presentation and education and effectiveness improved through increased compliance. In other collision avoidance aspects, the conflict between the Rowing Rules and wider regulation is inherent.

**4.3.5 Control Within the Rowing Community – Changes since 1992**

- 4.3.5.1 Alongside external enforcement is internal control within the rowing community. Throughout the study period a momentum has been detected to address what are recognised shortfalls in the practices of rowers, relating both to the Rowing Rules and wider regulation and guidance. Whilst this is of merit it must also be noted that a similar momentum has been seen previously when the situation has been reviewed. Ultimately, the river remains free access to all and the sanctions available to the rowing community cannot prevent misuse / abuse of the systems and rules by unwilling parties. Within the rowing community, including personnel from the governing bodies, it is acknowledged that greater external enforcement would be beneficial and a mix of internal and external control is required, with at least initially sanctions of fines and prosecution for the most severe cases.
- 4.3.5.2 However, a similar recognition of failings and need to address them has been seen previously within the rowing community but the momentum has died and changes have not taken place.
- 4.3.5.3 We believe that the rowing authorities still have much to do to generate sufficient attention amongst rank and file rowers to safety, knowledge of navigation rules, discipline and appreciation of other river users. Despite safety having been on the agenda for many years various initiatives have been slow to be finalised, accepted and implemented by the rowing community. In response to similar concerns in 1992 over navigational safety and the Rowing Rules members of the rowing community outlined their concerns over the removal of the Rowing Rules, whilst identifying failings in application on the water and proposing remedies. Many issues considered to be urgently in need of implementation, which were the subject of submissions or were discussed with river users in interviews for this Risk Assessment had previously been recommended to all Rowing Clubs in January 1992.
- 4.3.5.4 A memorandum “Safety, Discipline and Rules of the River on the Tideway” (see attachment J (i)) written by Peter Coni was circulated by the ARA on 9 January 1992 to all interested Rowing Clubs and Regattas. In summary this dealt with the following matters:
- *Boat Identification - The requirement for boat identification including the suggestion that the TRRC or even the ARA should lay down a standard system for identification, including the use of a code sequence such as “LRC27”*

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- *Speed Limits - Coach boats must actually be coaching to enjoy the concession of exceeding 8 knots and must be approved and certificated by the PLA as acceptable for wash.*
- *Navigation Lights - Boats are still going out without lights, despite the requirement for a white light fore and a white light aft. He suggested that someone design and patent a dedicated light and an attachment that would be fitted to all future new boats.*
- *Reflective Clothing - Use of day-glo and reflective strips on the tops of single scullers, and at least the bowman and coxswain in larger boats.*
- *As a comment on the then campaign to obtain a variation in the bye-laws to allow rowing to follow the traditional routes on the inside of bends he states "It is critical that our house should be seen to be in order in every department – no idiot coxes running eights into one other to the danger of life and limb; no conceited crews from the national Squad swearing at other river users who happen to hold up their outings in some way or another; no incidents where rowers and scullers are seen out at night without lights, or out in unmarked boats; and all the rest."*

4.3.5.5 We have heard the same or similar comments from a number of people during the last few months so arguably it appears that not much has changed in the last thirteen years.

4.3.5.6 The main arguments used by Peter Coni as "The Consequences of the Starboard Hand Rule upon Tideway Rowing" (see attachment J (ii)) are summarised by us as follows:

Access to the bank from the river - If a rower falls into the water, one highly relevant safety factor is whether he is able to get out of the river. Whilst the Surrey Bank has a sloping bank to reach the towpath at almost every point, on Middlesex between Putney and the Bandstand there are vertical walls with only occasional gaps such as at Crabtree, the rafts at Hammersmith and the gardens at Chiswick Mall. Therefore under the traditional rowing route rowers going against the stream are always close to the Surrey shore whilst those going with the stream are more centrally in the main channel and therefore closer to the greater safety of the Surrey bank.

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*Under the Starboard hand rule rowers working upriver against the stream would be obliged to stay close to the Middlesex shore, from which there is no escape all the way from Putney to above Chiswick Steps. Rowers would therefore be obliged to follow a much more dangerous route with very real risks of drowning that do not exist with the traditional route.*

*Coaching Safety from the tow path - The major base for rowing is Putney. When coaching beginners and particularly novice scullers, the safest means is to put the sculler or crew out on a falling tide close in to the Surrey bank with the coach in close visible and audible contact on the tow path. Rowing against the stream allows a slow speed in comparison with someone on the bank. In the event of capsize and positive danger, the coach is in a position to quickly assist.*

*Under the Starboard hand rule this safe facility for absolute beginners would be lost. For the beginner to be on the Surrey shore he would have to be going with the stream at far greater speed relative to the bank. From Putney the novice would proceed downstream below Putney Pier to be faced with vertical walls and no access for the coach on the bank. For a complete novice to work his way across the main channel of the river to learn upstream under the Middlesex shore is ludicrous. Similar problems would be experienced by rowers from ULBC although beginners from Emanuel and Hounslow boathouses would not be similarly affected.*

*Danger of going aground - When boats are required to follow routes across extensive and dangerous shallows a series of problems occur:*

*Boats are more likely to run aground and be damaged*

*Possibility of capsize and sinking particularly for scullers who may catch one blade on an underwater obstruction*

*Rowers working against the tide, instead of keeping as close to the shore as possible, will be forced into deeper water to avoid the risk of damaging their boats. Thus slower boats moving against the tide would be brought out into the main channel and into the path of power driven vessels with greater draft and speed.*

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*Under traditional rowing routes, rowing boats completely avoided the areas where the extensive and dangerous shallows exist. Between Putney and Richmond there was virtually no point where rowers were unable to remain close to the waters edge. Even with lower river levels of 1992, the only shallows met were upstream of Beverley Brook at Putney, under the Surrey arch at Hammersmith and immediately below the St Paul's slipway. Rowers had always been warned not to risk their craft over stretches of the river where danger of running aground existed when the tide had fallen below three-quarters full. These included Fulham Flats to Hammersmith, behind Chiswick Eyot, close to Middlesex immediately downstream of the Eyot, the Surrey shore from opposite Valor Wharf to Barnes Bridge, and the stretch between Barnes Bridge and Chiswick Bridges.*

*Under the Starboard hand rule rowers moving up-river would be required to hold the Middlesex shore on a falling tide, but because of the risk of grounding would feel obliged to be out in the main channel of the river along the Fulham Flats, through the narrow point in the river at Hammersmith Bridge, past various piers and moorings, the shallows at Chiswick Eyot, the moorings upriver from Chiswick Steps along to Valor Wharf where the traditional rowers route is rejoined.*

*Similarly rowers moving down river would be required to hold the Surrey bank, but would move into the main channel off the Brewery and more particularly once through Barnes Bridge off the flats opposite the Bandstand.*

*In summary, applying the Starboard hand rule would add very greatly to the risk of boats going aground, of crew members being in the water - but placing them in areas where egress would be much more difficult – and inevitably lead to crews moving against the tide being out in the navigation channel used by deeper draft vessels with greater risk of collision.*

*Generally with the traditional rowing route it was possible to spell out clear and concise instructions, particularly for visiting crew. Whilst the starboard hand rule is easy to explain, its practical application would be hideously difficult to spell out. How would one explain to a visiting crew paddling towards Hammersmith the distance out to avoid grounding on Fulham Flats on a falling tide, or the course to steer on a rising tide from Barnes Bridge back to Putney.*

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*It was the view of the ARA, TRRC and the Officials of the Tideway Clubs that implementation of the Starboard hand Rule must lead to a higher probability of fatalities, to an undoubted rise in the incidence of boats running aground and to a far greater level of risk of collision occurring between rowers and other vessels on the river.*

## **4.4 SUMMARY: Value and Credibility of the Rowing Rules**

### 4.4.1 In summary:

- Risk of collision was identified as amongst the main risks. There is an apparent inherent incompatibility between the requirement of the Rowing Rules and the COLREGS with regards positioning and direction followed by rowing vessels and other vessels within the fairway. As a result the Rowing rules increase the risk of collision on the River.
- This weakens their position as a Risk Control measure and would appear to weaken their basis as a regulatory tool.
- The Rowing Rules can only be justified on a safety case basis, which would have to show that it was not safe or practicable for the rowing vessels to proceed on the starboard side of the fairway.
- The risk of collision is exacerbated and at some points introduced at periods of Low Water, which forces rowing vessels and others to interact. The positioning permitted by the Rowing Rules increases risks of collision at these “pinch points”.
- Several physical hazards are common to all river users. The Hazard Identification process recorded a number of other physical hazards that, by position outside the main channel or combined with the nature of rowing boats, would present a hazard predominantly to rowing boats. The risks associated with these hazards are reduced by present positioning under the Rowing Rules which provides separation. The risk to rowers from some physical hazards is held to increase if the starboard side of the fairway is used throughout. (See attachment E).
- The risk benefit of the Rowing Rules and wider set of regulations is reduced through non-application by rowers. Examples include rowing abreast, baulking and otherwise impeding the passage of other users, some occasions of crossing and proceeding down the wrong side of the fairway.
- Poor lookout is a fundamental problem that recurs within accident statistics and reduces the benefit of any rules. With the present regime of counter streams of traffic this is compounded.

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- The risk benefit of the Rowing Rules amongst rowers is enhanced by non-application of the Rowing rules, by proceeding down the centre line rather than the starboard hand side of the fairway as stipulated.
- The rowing community has a strong, independent membership. Control, both internal and external has apparently decreased. Inter-user group relations need to be improved
- Lack of effective enforcement has contributed to the present low level of compliance.
- Enforcement style and visibility can be improved. It is felt to contribute to the present level of compliance. To support this the regulatory framework needs addressing. Gaining acceptance of whichever rules are settled upon will be crucial.
- The fragmented nature of the regulatory package and its presentation appears contributory to both the levels of understanding and compliance. The “pick and mix” approach seen, where some rules are followed and others are not, is partly symptomatic of this. The effect on risk is mixed, as described above.

**5. ROWING RULES: EXTENT OF KNOWLEDGE AND APPLICATION**

**5.1 Rowing Community**

**5.1.1 *Knowledge Base, training and instruction***

5.1.1.1 The knowledge base within the Rowing Community has altered over the recent to medium past. Historically, many Rowing Clubs employed a professional, qualified Waterman. With years of experience and inherited knowledge the Watermen provided the Clubs and wider rowing community with detailed information on the characteristics of the Thames in their area, to provide advice to and control over the rowers in their care. From our observation, received submissions and anecdotal evidence, a decrease in overall levels of general watermanship and rivercraft is apparent.

5.1.1.2 With the demise of this system it is apparent that good deal of knowledge was lost, not just of the detail of the Rules but of their application, river craft and interaction with other river users. Combined with the changing commercial/leisure/sport balance on the river and changes in enforcement and control the changes in knowledge and attitude have had a detrimental effect on the interaction of the various communities. These issues need addressing alongside application of the Rules.

5.1.1.3 This study has found a generally consistent acknowledgement amongst the rowing community of the dip in standards over the recent past. A recent drive towards improved knowledge and awareness has also been found and a number of safety initiatives have either been commenced or proposed by the ARA (see Attachment H), and amongst individual Clubs and the wider rowing Community.

5.1.1.4 Amongst the visited Rowing Clubs the knowledge of the overall Rules was found to be relatively high, at least amongst the senior members. Training programmes including tests for junior members were in place in a number of Clubs. Other Clubs exhibited lists of approved coxes and steers persons. However, there was a noted variation in the understanding in particular of the Rule with regards craft following the tidal stream. In several cases it has been found that use of the centre line, as opposed to the starboard side of the fairway, is either the understood requirement or the promulgated practice.

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- 5.1.1.5 Safety Representatives interviewed were found to have a generally high level of knowledge of the Rowing Rules and an appreciation of the overall problems. There has been widespread recognition of shortcomings in the rowing community, relating to safety and interaction with other stakeholders. A move was apparent over the last three or four years to introduce a risk-based approach to the sport, better knowledge of the requirements and regulations, and enforcement.
- 5.1.1.6 Coaches, particularly the senior coaches interviewed, likewise held a good level of awareness of the requirements. Even within the rowing community there were reservations as to the application on the river, consideration and interaction between other users (including rowers). A shift in attitude was recognised along with a need to address the shortcomings.
- 5.1.1.7 During one witnessed regional presentation, aimed at members of various Clubs, particularly coxes and steersmen, the rule with regards rowers going with the stream was incorrectly described as to follow the centre, rather than the starboard side of the channel. Similarly the diagrams showing the track to be followed when proceeding with the stream used in this presentation and shown on the TRRC website indicate that the track is along the centre of the river rather than the starboard side of the channel. By observation we found that this practice was widespread in application, though not universal.
- 5.1.1.8 The rowing community has a broad range of membership including juniors, novice pleasure users, competitive rowers, full time professional sportspersons and veterans. Similarly the level of safety culture and systematic approach varies from Club to Club and some variation has been noted within the governing bodies. Some organisations visited exhibited extremely high and systematic approaches to all aspects of the sport. These included the physical and technical development of the athlete, as well as river and safety issues, taking complete novices through to experienced rowers and veterans. The format and level of training schemes and assessment varied amongst the Clubs from some rudimentary system through to a highly developed SMS type organisation. Assessment of rowing ability, river craft and understanding of the Rules similarly varied; predominantly made on a practical level employing the expertise of senior Club members, rather than a formalised assessment and certification scheme.

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- 5.1.1.9 There remain significant areas of weakness, but a general groundswell appeared to be present that had at least recognised in part the failure and lapses in standards. Endeavours were underway to address recognised failings (as a TRRC responsibility initially, but also being monitored at ARA level) though the process is at the early stages in some areas. It is noted that other previous initiatives have been undertaken in this regard and the momentum has died. It will be necessary for such momentum to continue. Apparent isolation of the various user groups combined with lack of enforcement permit the momentum to dissipate – more active cross user groups and enforcement should assist.
- 5.1.1.10 Principally, and fundamentally, the knowledge is centred around positioning on the river (with the discrepancy concerning the use of the centre line), knowledge of the characteristics of the river and physical safety in the event of getting into trouble. Together with refinement of technique etc this forms the main body of knowledge. The main concern highlighted by this study is the failure by many rowers to fully comprehend the interaction between the Rowing Rules and the COLREGS. In particular a lack of understanding that when risk of collision exists, the actions taken to avoid that collision should always be in accordance with the COLREGS. Also there is a lack of awareness that the Rowing Rules do not stand alone but are special rules under the COLREGS, and that the latter should be reverted to except as specifically covered under the Rowing Rules.
- 5.1.1.11 Whilst a majority of rowers were seen on the River to be applying the Rowing Rules to a greater or lesser extent, it is evident that application is to a lower standard than awareness of the Rules. Transgression from the Rules varied from minor infringements, to dangerous violations by rowers proceeding on the “wrong” side of the fairway. Many rowers follow concentrated training programmes which often incorporate the use of “set pieces” rowed between convenient locations (often bridges). These “pieces” are rowed particularly when proceeding with the tide and following “the racing line”, possibly not keeping an adequate lookout and unaware of other craft ahead.

**5.1.2 Application amongst Rowers**

- 5.1.2.1 Observation during river trips and walks along the tow or river path and on bridges provided practical assessment of the actual day-to-day application of the Rowing Rules and Collision Regulations. Generally, during these Autumn and Winter periods of observation, rowers were either the sole users of the river or virtually so, and as a result little risk of collision with anything but another rower existed, apart from the PLA Harbour Services launch or occasional Class V passenger vessel.
- 5.1.2.2 The main observed variation from the Rowing & Collision Rules was the positioning of rowers proceeding with the stream. Instead of keeping to the starboard side of the channel, many were generally in the centre of the deep water fairway. When overtaking or when more than one craft were rowing abreast, they were often spread across much of the river, including over towards the port side.
- 5.1.2.3 Another variation was that whilst many rowers proceeding against the ebb tide and taking advantage of the Rowing Rules kept close in to the bank, others had a more liberal interpretation of the requirements and were in effect well within the port side of the fairway. Sometimes this was during overtaking but not always. The main violation of the Collision Regulations was that many rowers whilst proceeding with the stream and positioned on the centreline or to port of the main channel, altered course further to port when in an end on situation so as to pass starboard on starboard.
- 5.1.2.4 Actions taken in a head on situation have already been identified as the main cause for concern with regards the assessed risk factor for navigation on this stretch of the Thames. A significant number of rowers travelling with the ebb tidal stream and positioned in the centre of the river, when meeting head on to a power driven vessel constrained to the centre of the channel, chose to alter course to port so as to pass starboard to starboard. A number of users described the example of a rowing craft on the Surrey shore working the inside of the bend on the ebb stream, which on meeting a powered vessel head on altered course to port towards the bank at the same time as the powered vessel altered to starboard. Such a scenario had caused at least one accident and other near misses.
- 5.1.2.5 Other witnessed and anecdotal transgressions from the Rules and lack of consideration for other river users included:

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- Poor lookout and awareness of other vessels and physical obstructions.
- Proceeding along the “wrong” side of the fairway, particularly when rowing with the stream
- Rowing three abreast and blocking the channel for other users
- Overtaking at inappropriate locations (approaches to Bridges)
- Holding and slowing at inappropriate places (approaching and under Bridges)
- Collision with and close approaches to stationary fixed and floating objects
- Excessive speed of coach boats whilst not actively escorting
- Excessive wash of coach boats
- Lack of appreciation of the needs of other craft, particularly with respect to deep draught requirements.
- Failure to recognise or respond to sound signals
- Failure to take any action to avoid risk of collision
- Rowing at night or in poor visibility without adequate lights
- Baulking of vessels in the main channel
- Offensive language to other river users, including Class V passenger vessels crowded with passengers, motor cruisers and PLA Harbour Services launches

## Crossing

- 5.1.2.6 Notice U6 of 2002 identifies the approved crossing points. Crossing does take place at other locations along the river, such as above Hammersmith Bridge and above Chiswick Bridge. Crossing at other locations was found by the hazard identification process to be a significant hazard.
- 5.1.2.7 At some locations, such as Chiswick Bridge the observed practice separated vessels crossing whilst in transit from those departing from / arriving at the adjacent Clubhouse, who predominantly remained clear of the crossing point when manoeuvring in the water at the start / end of their river time.
- 5.1.2.8 Evidence was that, combined with “loitering” at inappropriate places such as bridge approaches and arches, the main problem associated with crossing would be any tendency to cross at inappropriate times e.g. ahead of oncoming vessels, at an oblique angle, or without due dispatch. This is addressed in the Rowing Rules and the wider COLREGS. Education and a continuation of efforts now commenced or proposed amongst the rowers appear to be key.

5.1.2.9 Identification of the crossing points on the bank side is also recommended; coloured post markers would suffice and be most practicable. Signage in advance of crossing points would also assist to warn other users, particularly visitors. Signage elsewhere e.g. on bridges would also alert visitors to the special rowing rules in place.

5.1.2.10 Whilst opinions amongst the rowers were divide as to the relative merits of other crossing points the consistent argument was against that introduced at Syon.

## **5.2 Operators of Class V vessels**

5.2.1 Levels of knowledge and application amongst operators of Class V vessels were found to be uniformly high.

5.2.2 Whilst there were undoubted instances of problems between rowers and Class V vessels, and varying degrees of mutual respect, interaction of these two types of craft was not found to be the major concern amongst either the rowing community or the commercial operators.

5.2.3 There was a view amongst some Class V operators that over the last few years the attitude of rowers in general had become more insular and less aware of other users. To some extent this was upheld within the rowing community, with efforts now proposed to counter the decline.

## **5.3 Powered Leisure Craft**

5.3.1 Other than rower on rower situations the interaction of powered leisure users and rowing vessels is the main area of concern. This is twofold e.g. risk of collision through incorrect avoiding action and excessive wash.

5.3.2 Some operators of power driven vessels based on the Thames appeared aware that rowing vessels would be operating in ways outside the COLREGS, although many were unaware of the detail of the Rowing Rules and the differences with the COLREGS.

5.3.3 As previously stated, the main concern was interaction between the two classes where risk of collision exists. There was expressed confusion as to the probable actions of rowing vessels, particularly in head on situations. Knowledge of the Rowing Rules themselves does not address this issue.

5.3.4 Observation of a relatively small number of powered leisure craft seen during our study showed that some users don't strictly apply the Collision Regulations, either by maintaining a position to port of the centre of the channel or by failing to alter course to starboard in an end on situation.

#### **5.4 Visiting Craft**

5.4.1 Visiting or infrequent users, both rowers and other leisure users were felt to introduce an increased risk because of non-familiarity with the geography, tidal conditions and rowing rules.

5.4.2 A degree of control is available among the rowing community, particularly when visitors are hosted and launching facilities provided by a Tideway Club. The host Club must ensure that all visitors are provided with suitable and sufficient information to ensure awareness of the tidal river and its navigation. Rowers based outside the tidal Thames were felt to have a lower level of understanding and application of the Rules and other Tideway safety issues. A significant number of the casualties on the ARA database involved visiting crews attending prior to or during races, particularly Heads. Also, interviews during visits to Clubs showed that even some experienced coxes based on the Thames, whilst familiar with the sections of the river that they rowed regularly, were unaware of issues elsewhere on the Tideway, e.g. not aware of the change to the regulations around Syon reach and the reversion to right hand navigation introduced in 2002.

5.4.3 Control of other visiting leisure users is more problematic. Levels of knowledge were difficult to assess, by nature of the infrequent, unidentifiable nature of the visitor. We were hosted by a narrow boat owner on a trip from Limehouse to Brentford who had made similar transits over several years and yet despite being a safety conscious Master Mariner he was unaware of the existence of the Rowing Rules. Also exiting Limehouse Lock at the same time were four other narrow boats, including two hired vessels, none of whom had previously been on the tideway. A British Waterways leaflet giving advice on the Tideway was handed to each boat, however, although a warning was given about rowers it was unspecific and could be improved to give additional information about rowing patterns.

5.4.4 Measures to improve and control this class of stakeholder would be improved by better signage, promulgation of the rules at all entry points, etc. Most effectively, a certification / registration scheme as found on other inland waterways would appear a most valuable tool.

5.4.5 The submissions and discussions identified the need for training and education to increase awareness of other river users and their characteristics and problems. Also there is a need for all to accept that the river is a complex and dangerous common highway rather than a boating lake or a racing circuit. All river users need to have a desire to compromise on all sides. Whilst captive audience of rowers (mainly identifiable) and club based PDV users can be reached and educated through their member organisations, the question of the casual, non-affiliated user remains.

## **5.5 Sound Signals**

5.5.1 Observance and knowledge of sound signals made by other vessels appeared lower amongst the rowers than overall knowledge of the Rowing Rules.

5.5.2 Several PDV operators, particularly the Class V operators witnessed during the study, used sound signals. In some instances the sound signals produced a suitable response by the rowers, whilst in others no response or an incorrect response was achieved. This is an area that could be improved. Again, education appears key.

**6. ROWING RULES: APPLICATION, MODIFICATION OR REPEAL**

- 6.1 To provide an effective assessment the entire raft of regulation, observance and enforcement has to be considered as well as the specifics of the Rowing Rules.
- 6.2 Increased application of the present drafted Rowing Rules would increase risks of collision amongst rowers and this cannot be justified. The ambiguity at the change of tidal stream, whilst mitigated to some degree in practice is still a regulatory weakness and has contributed to or been the main cause of recorded incidents. This should be further mitigated.
- 6.3 The conflicts inherent in the drafted rules between rowers and other users due to positioning apparently required on the river has been shown to lead to regulatory weaknesses and increased in risks of collision.
- 6.4 The conclusion from the risk assessment is that the present situation cannot be justified for all river users nor for regulatory enforcement purposes. Options are discussed in the next section, including modification through to repeal and reversion to the Collision Regulations.
- 6.5 A summarized version of the hazard identification and risk assessment tables, highlighting the assessed differences between risks under the COLREGS (drive only on the right) and present Rowing Rules regimes are included in attachment E.

**7. ROWING RULES: RECOMMENDED CHANGES**

**7.1 Options**

**7.1.1 *Four options considered***

7.1.1.1 Four main options are considered. Within each main option are discussed varying alternatives for consideration:

1. Retain Notice to Mariners U6 of 2002:
2. Retain Notice to Mariners U6 in modified form;
3. Withdraw Notice to Mariners U6 of 2002 and revert to and enforce Rule 9 of the COLREGS across the width of the river; i.e. the river is assessed as the fairway and all vessels proceed on the starboard side of the river. Mitigation of physical hazards would be required;
4. Withdraw Notice to Mariners U6 of 2002 and replace with some other control:
  - a. Revert to Rule 9 of the COLREGS within a narrow channel, less than the width of the river.
  - b. Define the narrow channel with areas of water outside this available for navigation by some craft. These areas are tidally dependent. Better designation may assist river users to reduce conflict / assess risks better.
  - c. Have control of rowers through a subsidiary Code of Safe Practice designed by and enforced by the ARA/TRRC/Clubs/PLA as best from a regulatory perspective.

**7.1.2 *Option 1***

7.1.2.1 This was not held as justifiable from regulatory view nor enforceable in full as drafted. The present Rowing Rules cannot continue without amendment. Nor should the overall package continue un-modified, as effectiveness of control of navigation has been seen to be deteriorating. The regulatory and risk control weaknesses should be addressed. Irrespective of the option chosen the additional issues of promulgation, communication across user groups and enforcement can be improved, with assessed beneficial effect to navigational safety. Doing nothing is not recommended.

**7.1.3 Option 2**

7.1.3.1 Following widespread consultation no meaningful and practical amendments were identified that would significantly reduce the risks and make the Notice to Mariners a suitable regulatory tool.

**7.1.4 Options 3 & 4**

7.1.4.1 One option is simply to remove the Rowing Rules (Notice to Mariners U6) and require all vessels to proceed on the starboard side of the river under the COLREGS and Rule 9 in particular. This would mitigate the previously identified increased risk of head-on collision and some crossing situations under the present regime. This definition introduces simplicity and benefits for collision risk, but potentially not for other risks.

7.1.4.2 Obstructions, particularly on the Middlesex shore present hazards, with risks increased if rowing vessels are required to navigate in their vicinity. Part of the difference in resultant risk assessment of these hazards may be due to differing interpretations as to how close to the shore the rowers would have to be under Rule 9 of the COLREGS. The risk at present is kept low by rowers keeping to the opposite side of the river. Without identifying and marking the limits of the channel it is difficult to see how rowers would be kept away from some of the hazards; particularly when interpreted by the rowers as having to remain close to the un-marked shore, as presently described in the Rowing Rules. This interpretation appeared common throughout the study. It is felt and reported that rowers will tend to do this to keep out of the path of power driven vessels, though we have seen only limited examples of this during the winter assessment period with relatively little traffic other than rowers.

7.1.4.3 If the limits of the channel are defined other than the river edge, dependent on the charted depth chosen, the channel remains clear of most of the introduced physical hazards. The contact risks could be reduced by remaining within this channel (whilst still to the starboard side), but risk of collision due to congestion would probably increase.

7.1.4.4 Separately it is assessed that this would have a detrimental effect on the sport of rowing. Whilst this is outside the consideration of navigational safety it should be taken into account in any navigational study of this section of the Thames, due to the numbers and majority of rowers.

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- 7.1.4.5 Without marking the channel on the river, it will be difficult for rowers to identify the edge, particularly when away from physical references such as the bridges. Rowers tend to use the edge of the river more whilst seeking the weaker current and calmer water, particularly as they require less depth, whilst deeper draft power driven vessels will be constrained to the deeper sections near the centre of the channel. The rowers are thus more susceptible to moving close to the physical hazards outside / on the edge of the unmarked main channel.
- 7.1.4.6 In practical terms the application of the rules would be crucial. As seen in other areas not covered by the Rowing Rules the rowers will tend to “work the slacks”. There will be considerable resistance to a change to rowing only on the starboard side of the river, whether this entails rowing near to the physical hazards or alternatively in the main stream and traffic flow. Without greatly increased policing and enforcement it is difficult to see the option working in practice.
- 7.1.4.7 Alternatively should the rowers under this regime congregate into the main stream, away from the introduced physical hazards, this would increase congestion in the main channel. It is probable that either the benefit to the risk of collision would be reduced through overtaking risks, or that congestion would increase, or both. Whilst not a direct safety consideration the probable detrimental effect to the passage of both powered craft and to the sport of rowing should be considered.
- 7.1.4.8 Mitigation of physical hazards would be potentially possible under this option (the right hand rule).
- Drying banks and shallows. Place fixed marks (piles / withies) at the ends and possibly periodically along the length. This would probably incur some increased risk to traffic of contact, particularly rowers (from observation and record).
    - Fulham Flats and the Flats opposite the Bandstand: these are fairly uniform in width but do have protrusions that extend a considerable distance into the river. Marking would further constrain the available channel width and place rowers towards the centre.

- Removal of debris and obstructions – stuck tree limbs and shopping trolleys have been noted – increased reporting by rowers and/or detection by PLA harbour service personnel of obstructions at the edge of the fairway. Also tree limbs formed a potential hazard along banks, particularly on the islands; control and removal of low overhanging limbs is recommended.
- Piers- these are outside the main channel and so only a hazard to those passing close by – e.g. rowers potentially. Should be obviously apparent but possibly will still be hit. Additional marking not felt to be of benefit.
- Tidal Stream: one suggestion has been the use of “tape / streamer” type markers fixed at bridges to better indicate tidal stream direction; this could present a hazard to some craft, dependent on length / type of marker.

**7.1.4.9 Other aspects:**

- At Putney, the present rowing route against the tide follows the track close to the Surrey bank and inside the moored boats upstream of the pier, separating rowers from craft in the main channel. This benefit would be lost for the majority of the time.
- See below – mitigation at pinch points

7.1.4.10 Some of the apparent regulatory conflict and the difference between options 3 and 4 is the definition and understanding of the limits of the narrow channel.

7.1.4.11 The Rowing Rules require rowing vessels to keep “to the starboard side of the fairway” when proceeding with the tide and “as close as practicable” to the appropriate shore when proceeding against the tide. The fairway or channel is not physically marked on the river, nor is the limit specified in any publication we have encountered. The lack of physical marking is at least in part a response to rowers needs for a ‘clear’ waterway.

7.1.4.12 If another limit to the channel is specified, dependent on the charted depth, the derived channel width gradually reduces from Putney to Richmond. If a smoothed 1m depth contour is chosen (as shown on PLA reference charts / maps) the channel is 45m wide at Putney, 35m wide at Chiswick, reducing to around 30m for much of its length upriver and then to 20m and less past Syon crossing. This channel runs through the main or centre arch of all bridges, often not extending to the buttresses/ piers. Of greater variation is the width outside this channel, altering by location and tidal state.

- 7.1.4.13 Allowing 10m width for a 'sweep' type rowing vessel (8m width + clearance) the 1m depth channel along much of its length is 2 to 3 boats wide. Given that other users in this stretch tend to be no wider this appears a valid interpretation. This is a constraint but also indicates a possible source both of confusion and possible options for improvement.
- 7.1.4.14 If the above definition of the channel is accepted there would appear a reduced regulatory conflict for vessels navigating outside it, provide they adhered to the wider COLREGS. Whilst navigating outside the channel they would fall under COLREGS with regard actions to avoid collision etc., but not, it appears with regards Rule 9 and their position within the channel. It is possible for the rowers to proceed outside the channel in several locations under review and thus generally follow tracks used at present, but with better discipline to remain out of the channel and not impede other craft within it. This would have to be tied in with improved lookout, general situational awareness and correct reaction where risk of collision did exist.
- 7.1.4.15 The tracks followed would be at user convenience so long as they did not impede on the traffic proceeding along the channel. On this basis the best format would appear to be for a local Code of Practice. This would have to ensure that such vessels did not impede vessels within the main channel and that if encountered any action, particularly action to avoid collision, should be in compliance with the COLREGS.
- 7.1.4.16 Mitigation would be required at pinch points:

Under bridges where the main channel has to be used there are a number of options:

- Define and mark the channel limit on the bridge; i.e. similar to road bridges with height restrictions;
- Where there is sufficient width for multiple passage including outside the channel passage remains as above;
- Rowing vessels are made to use the starboard side – this would increase crossing and re-crossing of the channel, with increased risk of collision during such crossings;
- Rowing vessels proceed with caution (area indicated on the bank) and avoid impeding the passage of any vessel following the channel – i.e. wait until clear;
- Reduce the channel width to one vessel (10m) and have single passage through; control would be required e.g. give way to oncoming craft from one side. Problems with congestion and waiting near bridges / hazards would arise;

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- No overtaking within a set distance from bridges, e.g. 200m. Area marked on the bank side;
- Depth gauges to be placed on or immediately prior to all bridges for assessment of when / where safe to use side and main arches.
- At blind bends restrict or prohibit overtaking within a set distance.

7.1.4.17 Up-river of Isleworth Ferry Gate the 1m depth channel is approximately 20m wide and 18m off the Ait and similar off the Surrey shore. Theoretically at High Water it is possible for several craft to be abreast, though this reduced to two streams only at Low Water. However, navigation on the Ait side is hampered by hazards including sewage outfalls and other physical hazards. The available channel is actually narrower than apparent. Due to the narrowness it is recommended to retain the right hand rule. If a suitable contour is chosen for the channel limits it can be shown that the outfalls from the sewage works are outside the channel and therefore not necessary to go over them if required to proceed on the right. Marking of the channel may be possible by simple signage alongside the bank, rather than physical marks in the river, or possibly by specialised buoyage with limited radius of movement.

7.1.4.18 At Kew Bridge navigation becomes more problematic and tidally dependent. At High Water rowers can use the Surrey side arch, but the Middlesex arch is not normally used as under the Rowing Rules all traffic is either on the Surrey bank or in the main channel. At Low Water all traffic is constrained to the main channel. The local characteristics on the Surrey side at Kew Bridge would make waiting for clear passage, so as not to impede traffic in the channel, more problematic than at Hammersmith and other bridges. One option for consideration is to introduce a tidal constraint such that the right hand rule would apply below a certain height of tide to be determined and marked on the bridge. However, the benefit of traffic keeping to the right would be tempered by the increased requirement for crossing.

7.1.4.19 Up-river of Kew Bridge the width of the 1m depth channel reduces to approximately 30m, however, we still believe that there is sufficient width of additional river for rowing outside of this channel at most stages of the tide. Consideration may be necessary for other options at the lowest tidal state. Any tidally based constraint would need to be indicated visually on the river by suitable means such as a depth mark.

7.1.4.20 Overhanging trees have been seen to be a problem alongside some islands – previously floating debris caught on low branches. Removal of debris and obstructing branches is recommended. Ongoing this would need better communication between the PLA and user groups, particularly rowers, for the reporting of obstructions.

## **7.2 Summary & Recommendations**

7.2.1 Without further defining the extent of the narrow channel it would appear that should Rowing Rules simply be revoked all rowing vessels would have to follow the positioning specified under Rule 9. This would increase risk to rowers from physical obstructions and hazards. These may be mitigated to some extent by physical marking, but would still leave some hazards. It is felt that the requirement to maintain the starboard side of the river under Rule 9 would be difficult to enforce.

7.2.2 Defining and physically marking a channel could reduce the risks from contact with physical obstructions. The most appropriate marker would be solid wooden piles or withies, however, they would probably frequently be hit by rowers. The markers would in any case potentially constrain the rowers to within the main channel for much of the time, with detrimental impact on congestion and other users. Outside of the safety issues it would probably be detrimental to the sport.

7.2.3 Rowing vessels can safely navigate outside a defined main channel and be separate from traffic using that channel, this can be permitted and it is not necessary to regulate for in itself. We believe this can be done, up to Syon, though up river of Isleworth Ferry Gate Crossing it can be problematic. Several other initiatives are required including a promotional drive, increased internal and external enforcement, and application of the requirements under COLREGS where vessels do interact.

7.2.4 Should the rowers be permitted to follow routes outside a defined main channel, alternatives may be considered to the routes followed under the present Rowing Rules:

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- Removal of crossing points at Chiswick Steps and the “Ship” below Chiswick Bridge. This would place the tracks in line with general COLREGS within the channel. This would introduce some hazards from flats on the Surrey shore, particularly opposite the Bandstand. They have characteristics of sudden protruding sand banks between pools of apparent safe water. Overflow outfalls from Beverley Brook situated up-river of Barnes rail bridge have not been seen operating but are reported to send water to mid-stream following heavy rain. There are few reported conflicts between rowers and power driven vessels at this location under the present regime, with traffic direction in line with COLREGS for the majority of the time. Crossing hazards may be reduced, though this is uncertain. Crossing would still take place around Chiswick Bridge for access to clubs / slipways but may be less well defined.
- Reversion to previous Chiswick crossing up-river of the bridge – balanced views amongst the rowers and assessed equal risking.
- Syon onwards. The majority of rowers advocate reversion to previous system and removal of the crossing. This is not seen as justified from a risk control view.

## 7.2.5 Our main recommendations are:

- Define the fairway limits e.g. 1m smoothed contour
- Repeal the Rowing Rules under N to M U6 from PLA documentation
- Clarify the requirements of Rule 9, applying to all vessels when within the defined narrow channel.
- Clarify action taken to avoid collision is to be in accordance with the COLREGS e.g. head on situation in particular.
- ARA/TRRC/PLA to produce improved and consistent guidance (Code of Practice) on routes recommended for rowers. Outside the defined narrow channel this can be as best aids rowing.
- When navigating within the narrow channel rowing vessels should:
  - (i) Avoid impeding vessels which can safely navigate only within the narrow channel (Rule 9 COLREGS)
  - (ii) With the stream – proceed on the starboard side of the channel but note this does not have to be up to the edge of the river and proximity of hazards.
  - (iii) Against the stream, if rowers have to enter the channel at Bridges or Pinch Points, they should approach with caution and if necessary wait until it is clear of approaching traffic i.e. to avoid impeding passage for vessels on the starboard side of the fairway starboard side.

**8. OTHER RISK CONTROL MEASURES: RECOMMENDED CHANGES.**

Other changes that are recommended for the PLA to introduce and to discuss with the other river users:

**8.1 Recommendations to the PLA**

- Increase simplification and promulgation of whichever rules are in place; discussed below in section 9.
- Reinvigorate the Teddington/Tower River User Group with a more effective fixed agenda to concentrate on matters of safety as a high priority. Encourage greater interaction between users and with the PLA.
- Communication and transfer of information between PLA and ARA can be improved; variance in accident statistics highlights gaps in knowledge transfer. This may be partly attributed to possible use of data:
  - Clarification of the use may be required – safety improvement or enforcement purpose?
  - Consider measures to improve formal and informal data transfer:
    - § Anonymous reports / identity masking for safety improvement use from TRRC/ARA to PLA.
    - § Better communication at un-minuted meetings
    - § Arrange Regular Quarterly or Four-monthly meetings with TRRC safety adviser.
- Identification of all boats used on the Tideway as required under Byelaws with standard sized and formatted name plus alpha/numeric code recommended.
- Enforcement of ID can be placed to rowing authorities / Clubs – require periodic reports of boats held, compliance with applicable rowing Code for construction and marking / identification. In parallel, enforce this and wider requirement at present under Byelaws for clear identification:
  - A level of control is possible by noting boats at entry points from enclosed waterways e.g. upper Thames, canals, marinas.
  - Maintain a log of transgressors from rules as noted on the river by PLA launch service personnel & promulgate list at these entry points. Waterway remains open but higher level of control within PLA powers.
- Inspection and licensing of all coach boats to be implemented as per Byelaws
- Marking limits on the banks of any agreed crossing points

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- Marking of channel is possible but would introduce hazards; consider signage along the bank at strategic locations such as entry points, approaching bridges with diagram of channel and river width.
- Other signage to be considered:
  - Speed limit
  - Simple notice of areas where rowing is anticipated
  - Depth gauges at all bridges
- Lighting for boats to be better applied. Guidance required on acceptability/standards as well as use.
- Observation cameras on bridges for trial period with regular scheduled meetings between PLA and ARA / TRRC to review evidence
- Speed limit – greater enforcement with speed guns and/or speed boards on bridges
- Markers/ colouring at some physical hazards to increase visibility
- No overtaking approaching bridges (within a distance to be further assessed, e.g. 200m)
- Consider monitoring wash levels particularly during any required certification but also in general use – more difficult on a tideway but Environment Agency prosecute (if they do at all) under wash and damage caused rather than speed. (They monitor using simple stick gauge at bank).
- Increased enforcement. At least for a period of introduction of any new Rules or Code. To be tied in with promulgation, enforce the rules with regards positioning, overtaking and manoeuvring. (This should have support from the rowing governing bodies; representatives expressed a degree of toothlessness internally and would welcome examples be made of the worse offenders.).
- Input to the PLA navigation Safety Management System to be improved. Include specific problems of:
  - Collision risks at Kew Bridge and Chiswick Bridge
  - Collision risk due to confusion and conflict when the stream is changing direction

## **8.2 Recommendations for ARA/TRRC consideration**

- Identification of novice cox / steers person; day-glo vests for a probationary period (particularly if tied in with certification)
- Alternately or by differing colours all coxes / bow / steer persons to have day glo vests – seen used to good effect on the river. Improves visibility and conspicuousness.

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- Certification of cox / steersperson should be compulsory: syllabus recommended to include a minimum time on the water in training capacity.
- Certification of coach boat drivers should become compulsory e.g. RYA Level II with ARA specific modules
- Increased education and effective training amongst the rowing community – discussed as Attachment.
- Personal Buoyancy Aids – ARA to continue investigation/research/design for a suitable aid for rowers
- Increased internal enforcement. At least for a period of introduction of any new Rules or Code. To be tied in with promulgation, enforce the rules with regards positioning, overtaking and manoeuvring.
- Review of accident statistics and action on trends to be visibly improved. Include in discussions with PLA at periodic meetings. e.g. the ARA statistics contain several comments querying the use of 4's on the tideway, particularly for inexperienced crews. Incidents with rowers caught out by stream on bridges and fixed marks continue, including 2005 during heads meetings.

The ARA has also introduced a number of initiatives in this area see Attachment H.

- 8.2.1 By ensuring rowers proceeding against the stream remain adjacent to the bank, they will be outside the position of PDVS for a substantial section of the area reviewed. Elsewhere, at pinch points say, the other measures above should further reduce the incident rate. Where risk of collision does exist action of both vessels in accordance with the COLREGS (and specified in the amended Rowing Rules) would resolve the head on issue in most cases. Better education amongst all parties is the key to this issue, supported by enforcement. Risks of crossing points may be mitigated by better promulgation regarding the location of these areas and advanced warning notices, including marking the actual crossing points on the adjacent banks.
- 8.2.2 Some issues relating to buoyancy are considered in the sections Wash and Rowing Craft relating to the possibility of swamping as a result of too much wash and as a result of excessive wave height due to adverse weather. Swamping also carries the additional risk of hypothermia during most of the main rowing season. In view of the relative frequency with which incidences of swamping or capsize and resultant sinking occur, we believe that it is imperative that all boats are sufficiently buoyant.

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- 8.2.3 Lights - Current guidelines published by the ARA are for two lights to be displayed giving 360° coverage to conform with COLREGS requirements. Two lights normally achieve this, one aft of the cockpit and shining towards the stern and one forward of the cockpit and shining towards the bow. Although custom designed lights are available and cost around £20 per pair, often various types of cycle lights are used which generally focus directly in one direction only with little sideways spill. The advantage of the custom lights is that they are fitted with rubber suction cups to enable adherence to the flat surface of the deck, but also the light is visible from both the sides. This has the added advantage of showing when a boat is turning around in the river as both lights can then be seen when the boat is sideways on. Generally boats are constructed without any means of attaching lights so, unless a suction light is used, various “Heath Robinson” methods of attachment are utilised such as sticky tape, duck tape etc. Suction lights are not entirely ideal as they can be lost overboard due to being knocked or as a result of loss of suction. We believe that all boats that may be used at night should have a standardised bracket fitted fore and aft to take an approved type of standard light. Such a recommendation was made by Peter Coni in 1992 but has not yet come to fruition.
- 8.2.4 One excellent suggestion received during interviews was for the forward light to be a fixed light with pulsating white light to indicate that a boat was approaching rather than receding. The pulsating light would also be visible and more noticeable at a greater distance. The light showing towards the stern should continue to be a fixed white light. We would certainly endorse that the practicalities of such a forward light should be fully investigated. We would also endorse the recommendation that coach boats accompanying rowers at night time or in restricted visibility should display red / green side lights in addition to the white light. We also recommend that rowers, particularly single scull craft, operating at night or poor visibility should always be accompanied by a coach boat or safety number.

**9. PROMULGATION**

9.1 Better promulgation of the Rowing Rules and Byelaws, including the fact that Rowers may not be navigating fully in compliance with the COLREGS, was a recurrent theme amongst some submissions and many of those interviewed. Review of the present methods shows that promulgation can be improved and that benefit should be gained.

9.2 Recommended methods are:

- Revision of the PLA website to become more user friendly and less impenetrable:
  - Greater visibility of any navigational rules.
  - Improved search facility or drop down indexing for leisure users – drawing attention to navigational rules.
  - Reproduction in screen viewing format and printable format of any Code decided upon.
  - Production and greater visibility of a summarised version of the navigation rules for leisure use; i.e. more “glossy” than bland Byelaw reproduction
  - Linking the web site with other sites including main user bodies (ARA / TRRC etc) and official bodies particularly from adjacent regions e.g. the Environment Agency
- Streamlining all regulations for navigation into one publication: ideally one set of rules consecutively numbered including COLREGS, BYLAWS requirements all combined and addressed under each topic.
- Streamlining of the actual legislation may be considered to address fragmented presentation and ease maintenance and update as well as promulgation.
- Publication of a joint River Thames User Guide with Environmental Agency or
- Publish a PLA Tideway User Guide or “Water Safety Code” including description of any rowing special rules
- Whichever option incorporate a schematic / map of the river highlighting risks, special requirements such as at pinch points and other points of note.

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- A series of introductory presentations and meetings at main Clubs. Work alongside the ARA / TRRC in presenting a joint front in respect of agreed rowing procedures.
- Use the Tourist Information network and associated leisure interests to gain wider publication; link to their web sites.
- Work with TRRC / ARA to widely publicise the requirements. Link selected sections of websites. Ensure they pick up the changes as a theme and use internally.
- Similarly tie in with other user groups and raise awareness.
- Re-invigorate and re-focus the River User Amenity Group to raise awareness of rowing procedures
- Provide leaflets at Thames Tideway entry points e.g. Limehouse, Teddington, Brentford Locks, etc. Use of map / schematic diagrams alongside written advice
- Signs at entry points to the river system; simple clear examples using schematics and/or plain language.
- Signs at intervals (diagrammatic) showing that rowers may be following a track different from right hand rule.
- Signs along the bank highlighting the position of the channel (if so designated); e.g. passing through centre arches of bridges, clear of sewage outfalls etc.
- Warning signs indicating approach to crossing area. Actual crossing points to be marked.
- Increased informal contact with user groups including TRRC. Periodic (3 or 4 monthly) meetings with TRRC safety advisor.

**10. THE ARA WATER SAFETY CODE**

- 10.1 A revised and updated Water Safety Code was published by The Amateur Rowing Association (ARA) during 2003. The Code and integral Guidance Notes set out many parameters relating to the safety of rowing and emphasise that all rowing activities should be governed by risk assessments performed by individual Club members, Clubs, Regatta and Event Organisers and Regional Rowing Councils.
- 10.2 The Water Safety Code provides little direct input relating to navigation. It requires Clubs to display a plan of the local waterway and draw attention to the applicable navigation rules and any local interpretation, as well as procedures to combat tidal currents, stream, wind etc particular to the local area. It sets out the lights required to be shown in poor visibility. There is also a requirement for Steersmen to understand and observe local navigation rules. Appendix 5 headed “Navigation, Sounds and Signals” deals with sound signals laid down by the COLREGS but unfortunately does not touch on navigation or collision avoidance.
- 10.3 There is, however, on the ARA website an excellent paper “Tideway Steering and Navigation” which although focussed on rowing on the Thames has much in it relating to general navigation and collision avoidance.
- 10.4 The ARA Water Safety Code appears to be quite widely promulgated amongst and is being taught to Rowers. Safety Advisors were generally aware and familiar with the contents. The cascading down of its information and requirements is an ongoing process and kept under review by the ARA. The ARA and rowing community have introduced and continue to initiate measures to ensure promulgation and compliance. A number of these are noted in attachment H.
- 10.5 Whilst education appears to be improving amongst the majority of the rowing population, the momentum apparently established over the last two or three years needs to continue. Suggestions and recommendations have been received in several areas. One example is making the certification of each cox/steersperson compulsory, with a syllabus to include a minimum of practical water time. Making an adapted rowing /tidal version of RYA2 a requirement for all coach boat drivers was another. However, a balance has to be maintained between desired outcome and availability, particularly due to shortage of coxes. Whilst it is not felt a significant majority are abusing the code or failing to fully comply, there are recommendations that can be put forward.

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- 10.6 During the period of our study, it has been seen that not all the ARA Water Safety Code requirements and recommendations are uniformly observed. However, it does not appear that any significant majority of rowers are failing to observe the overall requirements.

**11. EFFECT OF TIDAL HEIGHT AND STREAM**

- 11.1 Generally the height of tide defines the width of the channel that can be utilised both by rowers and other vessels. At high tide the maximum width of river is available for navigation, which reduces the density of traffic. This in turn reduces the risks of collision, whether rowers are proceeding with or against the tide. However, at low tide, particularly during the Springs, the river channel is at its narrowest. In some areas this produces pinch points due to extending banks and outer bridge arches that cease to be navigable even by rowers. These pinch points tend to force rowers towards the central stream of the river and main channel which is where deeper draft power driven vessels would be navigating. This will occur whether Rowing Rules or the Right Hand rules are applied.
- 11.2 At Hammersmith Bridge during low water the bank extends from the north or Middlesex bank to approximately the middle of the centre arch of the bridge. Also the Surrey side arch ceases to be navigable, so that all traffic is concentrated into a relatively narrow stretch of water. An additional problem for this area is the crossing of rowers above the bridge when leaving and returning to their boathouses on the north bank, and also the additional lane of boats heading into the stream and parallel to the north bank that are boating or landing.
- 11.3 Similar situations occur at many of the other bridges when at low tide the outer arches cease to be navigable and all traffic becomes concentrated through the centre arch.
- 11.4 The tidal stream affects the flow of traffic at pinch points. For instance between Putney and the Syon crossing point the following is the situation.
- 11.5 On the flood tide rowers and all other traffic travelling downriver will remain on the starboard or Surrey side with traffic travelling upstream keeping to the their starboard side e.g. on the Middlesex side for much of the river between Teddington and Putney. Thus both traffic streams should effectively be adhering to Rule 9. The only area where this changes is between the cross over points at Chiswick Bridge and Chiswick Steps when the Rowing Rules allows rowers travelling against the steam onto the Middlesex bank around the bend past Barnes Bridge.

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- 11.6 On the ebb tidal stream rowers and other vessels heading downstream with the flow will keep to the starboard side (nearest the Surrey bank) of the main channel. Power driven vessels travelling upstream remain on the starboard or Middlesex side of the main channel, whilst rowers will be close in to the port or Surrey side keeping outside of the main channel. Providing the southern or Surrey arch is available there is a dividing line between those vessels proceeding in the main channel and rowers proceeding in the opposite direction outside of that channel. Again the only area where this changes is between the cross over points at Chiswick Steps and Chiswick Bridge (The Ship) when the Rowing Rules allow rowers travelling against the steam onto the Middlesex bank around the bend past Barnes Bridge. This allows both traffic streams to be on the starboard side according to Rule 9.
- 11.7 The main area of potential conflict between vessels moving in opposite directions occurs at low tide when outer bridge arches are unavailable to rower traffic and all vessels are forced to converge into the main channel through the central arch. Generally in practical terms rowers mitigate this hazard by one traffic flow rowing against the current keeps close to the bridge pier, whilst the other rowing with the stream moves towards the centre of the channel. However, other river users may not be aware
- 11.8 Generally the tidal stream will be strongest and the channel deepest towards the outsides of the various bends and flow round those bends roughly parallel to the banks. However, where there are islands or other major obstructions then the water flow may be at an angle to the main channel, either forcing vessels outwards towards the bank or in towards the centre of the stream.
- 11.9 We note that the busiest time when the maximum number of rowers are on the river is on a Saturday or Sunday morning between 0700 and 1100hrs. Currently the Tide Tables show that generally there is a spring low tide every other weekend which approximately coincides with this busy period.
- 11.10 One mitigating factor relating to conflicts between rowers and power driven vessels is that at low water when the channel is narrowest there are likely to be fewer deeper draft vessels proceeding up or down the river.

**12. WASH**

- 12.1 Wash is held by rowers on the Upper Tidal Thames to be one of the principal hazards, often quoted as exceeding the risk from collision. Severe wash can either capsize smaller craft such as single and pair sculls or cause swamping, resulting in boats sinking and crews being deposited in the water. In some cases excess hogging/sagging has caused severe fractures in longer boats. Novice rowers, especially scullers, are particularly susceptible to wash. Whilst primary wash has the most immediate effect, secondary wash or washes reflected from the bank can be more difficult for a rower to anticipate and counteract.
- 12.2 The wash and ensuing risk varies with the combination of state of tide, width of river, nature of the bank and distance from the vessel or bank. For a given vessel characteristic and speed the risk to rowers appears greatest at high water when the flats are covered and wash rebounds from built up steep or vertical banks. Particular locations identified are from Putney Railway Bridge to Dukes Meadow, and from Chiswick Bridge to Syon Park, especially on the Middlesex Bank. This is higher than would be/is encountered in a tideway with gently sloping banks, but not felt to be any higher than can be anticipated for the conditions. In addition to the speed limit of 8 knots 'through on or over the water' powered vessels are also required to limit the amount of wash that they produce.
- 12.3 Wash from Class V operators (with one or two named exceptions) was not found to be a significant problem. A combination of vessel design (sleek u/w profile low Cb) and the responsible operation of vessels, which included early speed reductions to minimise wash and the alerting of rowers whilst still well ahead by means of sound signals, helps to reduce the problem.

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- 12.4 Wash from pleasure craft (PDV): Unfortunately because of the timing of this study during the Autumn and Winter months very little motor leisure cruiser traffic has been observed. However, anecdotal evidence from various river users suggests that the apparent ignorance and amateurish actions of some users does increase the hazard. Many leisure boats do not have the relatively sleek hull design of most Class V vessels and may produce rather more wash for a given speed. It is apparent that whilst some cruiser users reduce speed and take considerable care to minimise wash, others reduce speed far too late to have any effect. A few will power on with apparent total ambivalence as to the possible damage that they may cause to other users, particularly rowers. However, in general terms it has not been determined that wash from pleasure craft exceeds that which would normally be expected on a waterway with an 8 knot speed limit. Rowers particularly mentioned the confused and heightened effect of wash at high water reflecting off vertical banks when created by a string of cruisers following each other at maximum speed of 8 knots in convoy
- 12.5 Comments were also received about the amount of wash generated by some Rowing Club coach boats. Whilst under the PLA byelaws coach boats are permitted to exceed the 8 knot speed limit whilst actually accompanying and coaching rowers, they still need to monitor their wash and the effect on other river users including other rowers. Whilst some coach boats may produce moderate wash with one or two persons on board, the wash will become rather heavier with three people. Coach boats are required to be licensed by the PLA as conforming to limits of maximum wash, however, the implementation of this requirement appears to have largely fallen into disuse over the last few years. Although drivers of coaching boats are required to be over 16 years of age, no training or certification is required, although the ARA Water Safety Code does recommend that drivers undergo a course in boat handling skills such as RYA Level II – see also ARA initiatives and Recommendations
- 12.6 The level of wash generated on the river is also combined with a lack of awareness or ability amongst some rowers to deal with it. There is an apparent lack of experience and/or poor training regarding the most effective means of riding the wash which exists amongst some members of the rowing community. This is combined with the lack of an effective lookout and resulting awareness of what is approaching. The latter is probably exacerbated during intense training and “pieces” when rowers are totally concentrating on style and technique rather than the river ahead, which can result in a sudden rude awakening. A number of submissions from various river users, including some rowers, mentioned the use of unnecessary and offensive language by a few rowers who had been interrupted by wash during such training.

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- 12.7 Discussion with many rowers suggested that the usual way of riding wash was to head straight into it, whereas some experienced rowers, including members of clubs used to greater levels of wash in the Greenwich area, stated that the most effective method to deal with more severe wash, particularly when in longer boats, is to turn parallel to the waves. Some rowers specifically stated that they would avoid using the river at times of high usage by cruisers and likely resultant wash as part of their risk assessment. These times were identified to us as being most likely at summer weekends, particularly when there was a Bank holiday.
- 12.8 Speeding, and resulting wash, by the emergency services has also been raised in interviews. It is necessary for these craft to operate at times well above the speed limit. At such times it would always be prudent to forewarn other users of their approach and high speed by using their flashing lights and/or sirens. The same guidance as is presumably provided to shore based vehicles should prove sufficiently robust to counter noise pollution / light pollution criticism. Given the less regulated traffic on the river this appears prudent in all respects.
- 12.9 Enforcement of speed limits is one topic that has featured in both written submissions and discussions with river users. Currently there appears to be little ability or determination to enforce the speed limit other than by visual observation by the duty Harbour Services launch, although radar speed guns should be available as are also utilised by the EA launches. We understand that at times the Environment Agency personnel initiate high profile campaigns on speed limits above Teddington. We note also that the EA maintains a rather lower speed limit on the non tidal Thames above Teddington of 8 kilometres per hour (4.2 knots) over the ground together with a wash restriction.
- 12.10 One suggestion for monitoring speeds and reinforcing speed limits on the river has been the fitting of radar guns (speed traps) and the use of radar activated speed warning signs on bridges. Notices on bridges or alongside the river reminding users of the speed limit would also assist.
- 12.11 We have considered suggestions for additional speed restrictions for powered leisure craft but have concluded that a lower limit would not be practical, particularly for vessels steaming against the tidal stream. With commercial operators constrained by timetables and tidal height, and risks to others apparently already mitigated through hull form and overall consideration in their operation it would not be prudent or particularly effective to reduce the speed limit with respect to them.

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- 12.12 On balance, this study has not found that the wash normally created by power driven vessels is greater than one would reasonably expect in a tideway allowing for a speed limit of 8 knots through the water. However, on occasions particular vessels may produce excessive wash and, in some areas and some conditions on the river, the wash may be exacerbated. Certainly the river is a facility for all river users and we do not believe that a reduced speed limit would be appropriate.
- 12.13 The submissions and discussions identified the need for training and education to increase awareness of other river users and their characteristics and problems. Also there is a need for all to accept that the river is a complex and dangerous common highway rather than a boating lake or a racing circuit. All river users need to have a desire to compromise on all sides. Whilst captive audience of rowers (mainly identifiable) and club based PDV users can be reached and educated through their member organisations, the question of the casual, non-affiliated user remains.

### **13. ROWING CRAFT**

- 13.1 Whilst a study of the history of rowing boat design has not been attempted, it would appear that older wooden boats previously used on all section of the Thames, above Teddington, over the area of this study and also below Tower Bridge were wider and heavier and therefore probably more stable and adaptable to adverse weather. As designs and materials have advanced for increased speed and lightness, so boats have arguably become less stable, although modern composite materials including Kevlar are much stronger than earlier boats built of wood or fibreglass.
- 13.2 All rowing craft are inherently susceptible to severe wash. For all boats there is the risk of swamping and, particularly for single and pair skulls, there is an inherent likelihood of capsize. The boats themselves, though, will tend to float in this situation and recommended safety actions in the event of capsize use this feature by advising the crew to stay with the boat.
- 13.3 Rowing craft can also be swamped as a result of excessive wave height conditions due to adverse weather. Swamping also carries the additional risk of hypothermia during most of the main rowing season. In view of the relative frequency with which incidences of swamping or capsize and resultant sinking occur we believe that it is imperative that suitable safety criteria for boat buoyancy are in place. For many years swamping incidents have occurred, including on the Tidal Thames, with a number of fatalities reported worldwide. In March 2004 during the Vesta Veterans Head of the River Race (HARR) a number of rowers had to be rescued from the water due to their boats being swamped, sunk or capsized; fortunately RNLi and other safety boats were quickly on the scene and no serious casualties occurred.
- 13.4 Recently, floatation has been addressed within the United Kingdom rowing community and fitting of additional buoyancy has been required under the ARA Water Safety Code in all new boats built since 1 April 2003. If after risk assessment for a planned activity a boat, new or old, is judged not to have sufficient buoyancy then more should be added. It is also the responsibility under the Code for individual Club members and Clubs to ensure that all equipment is safe for the purpose for which it is intended. Coaches are also required to take into account the athlete's capabilities and limitations and the limitations of their equipment where adverse weather or water conditions are anticipated.

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- 13.5 In the Code there is the requirement that "Boats constructed after 1st April 2003 must have inherent buoyancy sufficient, together with their oars and sculls, to support a seated crew of the correct design weight in the event of being swamped".
- 13.6 In the Code's Guidance Notes "All equipment used for rowing, sculling and coaching needs to be properly and regularly maintained to ensure that it is safe and adequate for its intended purpose and to ensure that it does not expose its users to danger. All new boats constructed after 1st April 2003 must carry a plate indicating the maximum average crew weight the boat can carry and support seated in the event of being swamped. A club or individual purchasing a new boat must ask the manufacturer to supply this information". The guidance on equipment goes on to say in 2.6.1.2 i) "If after risk assessment for a planned activity, it is judged that a boat, new or old, does not have sufficient inherent buoyancy, additional buoyancy should be added".
- 13.7 The ARA's recommendation to boat builders for the plating on a boat is that it should indicate the amount of freeboard showing when fully swamped with its seated crew.
- 13.8 It has not been established during this Risk Assessment that the newer boats have become significantly more susceptible to wash and adverse weather conditions than previously. We note that boats used by experienced rowers are typically the same on the non-tidal Thames, upper tidal Thames and below Tower Bridge. This despite the fact that conditions relating to wash and waves are significantly different in the three areas. It would appear that the training, experience and awareness of rowers below Tower Bridge compensates for the increased wash and wave heights found in that area, as we understand that such incidents are rare and this appears backed up by ARA casualty data.
- 13.9 The ARA's risk assessment based approach into the rowing Clubs will if fully applied by everyone, from novice to veteran, assist the overall safety by removing rowers from the situations where their craft are not suitable.

**14. CONCLUSIONS**

**i. Establish the value and credibility of PLA Notice to Mariners U6 of 2002 (the Rowing Rules) and whether, as drafted and applied, they:**

- § **constitute an effective regulatory framework; and**
- § **as a risk control, contribute effectively to reducing the identified risk to As Low As Reasonably Practicable.**

14.1 The value and credibility of PLA Notice to Mariners U6 of 2002 (the Rowing Rules) is reduced greatly by both apparent conflict between its requirements and those of the Collision Regulations and by its drafting, presentation and promulgation. Notice U6 of 2002 sits within an interwoven regulatory framework of Notices, Directions, Byelaws, Acts and guidance whose fragmented nature and presentation severely reduces the effectiveness of promulgation and understanding amongst river users.

14.2 The regulatory basis of the Rowing Rules is severely weakened by apparent conflict between them and the Collision Regulations over positioning of vessels on the river. This conflict with opposing streams of traffic on the same side and place on the river increases the risk of collision to a level above that acceptable. The regulatory basis is also weakened by inherent conflict within the Rowing Rules: positioning of opposing traffic streams on the same side of the river (as drafted) and ambiguity at the change of tide leading to direct conflict. They are hard to justify in on a regulatory basis.

14.3 The Rowing Rules are not applied as drafted, with most rowers proceeding with the stream following the centre line rather than the starboard side of the fairway. This mitigates the inherent risk amongst rowers and is not enforced by PLA launch service personnel for this reason.

14.4 The perception of conflict between the COLREGS and Rowing Rules is increased by ambiguity within the Regulations and by confusion in application, with regards actions taken where risk of collision exists, especially a head on situation. There is no actual conflict between the two sets of regulation on this aspect.

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- 14.5 The apparent regulatory conflict over position and direction on the river, between rowers and other vessels may be reduced or removed dependent on the definition of the channel and whether rowing vessels are able to navigate outside the channel. This is not possible at some locations, particularly the river past Syon crossing, at the permanent pinch points and would be tidally constrained at others.
- 14.6 As a risk control measure the applied Rowing Rules increase the risk of collision between rowers and other craft. This is particularly so at pinch points but can occur anywhere; this is exacerbated by loose application by rowers with regards position on the river.
- 14.7 The Rowing Rules do reduce the risks to rowers from identified physical hazards on the sides not currently rowed, predominantly the Middlesex bank.
- ii. **Determine how well the present PLA Rowing Rules and ARA Safety Rules are understood and applied by:**
- **Rowing Clubs, their Safety Representatives and Coaches;**
  - **Practicing rowers on the water;**
  - **Class V passenger vessel operators in the area;**
  - **Other leisure craft – both powered and non-powered;**
  - **PLA employees working in the area.**
- 14.8 The level of understanding of the Rowing Rules varies amongst user groups. Interviewed Rowing Club representatives and coaches were found to have a generally high level of understanding of the positioning and crossing points within the Rowing Rules, with the exception that several instances were found where the use of the centre line was advocated instead of the starboard side as drafted for rowers going with the stream. It was also found that knowledge could be very localised with failure appreciate changes to the Rowing Rules where they affected stretches other than those most often rowed.
- 14.9 PLA employees working on the river were fully aware of the Rowing Rule requirements and of the discrepancies in practice. Similarly, Class V operators demonstrated an excellent knowledge of the required tracks, crossing points and general requirements.

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- 14.10 Other user groups had less and in some cases no knowledge of the Rowing Rules even when attention had been drawn to them by this study. This was accompanied by general confusion and increased apprehension as to actions of encountered rowers, both through ignorance of the Rowing Rules and inappropriate action by rowers to avoid collision. Visitors and casual users, both rowers and powered, were held to have less awareness of the Regulations or appreciation of the needs of the other users or the characteristics and hazards of the river. Generally the user groups were most familiar with the Rules specific to them; i.e. power vessel operators with the COLREGS and rowers with aspects of the Rowing Rules. Poor promulgation of the Rules was recurrent theme.
- 14.11 Levels of application of the Rowing Rules and wider COLREGS varied much more. Whilst there were many examples of rowers acting in accordance with the Rowing Rules we have noted exceptions to most requirements both of the Rowing Rules and the wider regulations. It is generally acknowledged that there has been a dip in standards on the river both of knowledge and application of the Rules and general river knowledge. Within the rowing community loss of the traditional knowledge base and user profile appear contributory. There was an identified groundswell amongst the rowing bodies to acknowledge and address this failing, but this has yet to fully materialise amongst the rowers. This also needs to encompass a culture change to address issues such as foul language and balking, representative of a polarisation amongst some parties.
- 14.12 We have considered application of the wider COLREGS by all river users. As well as inappropriate action to avoid collision (under the COLREGS) another recurrent theme both during interviews and review of accident records is the keeping of a proper lookout. Whilst recommended practice varies the level of knowledge appears higher than practice. This issue is fundamental and is felt causative of many incidents irrespective of the rules being followed. The rowers do not sufficiently compensate for the inherent weakness of rowing boat design in this respect; particularly on the dynamic river environment.
- 14.13 Poor promulgation and presentation are held as contributory to the present levels of knowledge.
- 14.14 Whilst knowledge by the PLA staff of the Rules and Regulations was high enforcement had lowered. This was partly symptomatic of weakness of the Rowing Rules as a risk control as drafted and a lack of belief in their regulatory strength. This has probably been contributory to the apparent lowering of standards on the river.

- iii Determine whether the overall safety of navigation for all river users between Putney and Teddington is better achieved by continuing with some form of Rowing Rules, including the modification to Rule 9 (a), or by withdrawing the Rules and reverting to the International Regulations for Preventing Collisions at Sea (1972).**
- 14.15 This finding depends very much on the understanding and limits of the channel being considered and on the status of any Rowing Rules. The study identified that the present Rowing Rules as understood and applied increased the risk of collision and could not be supported as Regulation in their present form. Doing nothing is not a suitable option.
- 14.16 The assessed level of risk posed by identified physical hazards is dependent on distance from them. Differing interpretations of the requirement to be “as close to the starboard side of the channel / fairway as practicable” appear at least in part responsible for differing risk assessments if reversion to the COLREGS is considered. The different interpretation is exacerbated by lack of definition of the narrow channel or marking of its limits the river. Rowers with a shallower draft will tend to be closer to the bank than most other river users if required to be on the edge of the channel. Some form of mitigation is required for the risks introduced to rowers by physical hazards avoided under the present Rowing Rules. The avoidance of physical hazards is the only justification for special rules for rowers.
- 14.17 By definition Rule 9 of the COLREGS applies to vessels following a narrow channel (whilst also imposing control over vessels intending to cross and of certain type / length using the channel). As long as they do not impede traffic constrained to such a channel vessels are able to operate outside the channel as best suits whilst in compliance with the wider COLREGS.
- 14.18 It is concluded that the best method of achieving overall safety of all river users will be to have the COLREGS in place as PLA Regulation for a defined narrow channel. Notice to Mariners U6 should be repealed. Alongside this guidance in the form of a Code of Practice for rowers should be established that within limits would permit but control the practice of “rowing the slacks”.

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- 14.19 The other option appears to be reversion to the right hand rule over the full width of the river. Pure physical mitigation of the hazards is as an option open to consideration. Options include permanent marking at the extremities of banks. This would probably reduce the hazard from the bank, but may present a further obstruction to be hit (by rowers in particular) and may constrain the passage of rowers. The practical application of whatever Rules are in place must also be considered. From all the evidence we believe that it will be extremely difficult to prevent rowers from operating some form of “working the slacks”. Without much increased and rigid enforcement it is assessed the rowers will continue to operate in this manner. This must be considered. It is therefore concluded that some form of instruction on navigation of rowers is required in order to control this practice rather than have it wholly un-regulated, for the safety of all users.
- 14.20 Apart from the navigational safety factors, the probable negative impact on the sport of rowing of constraining rowers purely to the starboard side of the river or within a narrow channel, should be considered.
- iv. If it is recommended that the Rowing Rules should remain part of the PLA’s regulatory framework, identify any changes to the Rowing Rules, which could be made to improve the effectiveness of the Rules, whilst being acceptable to all river users.**
- 14.21 If taken as not being the full width of the river the limits of the narrow channel should be specified. If the smoothed 1m contour is taken, as seen on PLA charts, the channel is a maximum of three vessels wide and passes through the main / central arch of all bridges, reducing to two vessels wide past the Syon crossing. If all vessels were required to follow this channel it is felt that there would be a negative impact on congestion of all traffic, with possible (though not evaluated) increased risk from overtaking situations to lessen the benefit from the right hand rule.
- 14.22 Rowing vessels keeping to the present defined routes would be able to keep outside such a channel at (most) states of tide, other than at pinch points, i.e. without conflict with the COLREGS, provided positioning is better adhered to and overall application increased (lookout in particular).

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Under bridges where the main channel has to be used there are a number of options:

- Define and mark the channel limit on the bridge.
- Where there is sufficient width for multiple passage including outside the channel passage remains as above.
- Rowing vessels are made to use the starboard side – this would increase crossing of the channel, and risk during crossing.
- Rowing vessels proceed with caution (area indicated on the bank) and avoid impeding the passage of any vessel following the channel – i.e. wait until clear.

14.23 Improved understanding and application of actions to avoid collision. Particular emphasis is needed on the actions in head-on situations to ensure all “power driven vessels” alter to starboard.

v. **In any event, identify any changes to other established risk control measures, or any new risk control measures, which could be applied to reduce further, the identified risks to life and navigation.**

14.24 The study identified shortcomings in several aspects including promulgation, interaction and cross-awareness of river users. This included the failure of effective user groups including the Teddington/Tower River User Amenity Group. Lack of identification of boats on the tideway was felt to be an issue, though amongst the ARA/TRRC this now appears to be in hand. The education of users, control of coaching boats and the standardisation and level of training of coaches were also identified as areas for improvement. The navigation lighting of boats was also found to be of concern, though whilst apparently improved over the recent term it is in need of better understanding and standardisation in practice. Recommendations have been made against all these subjects.

14.25 Awareness of physical hazards and of the location of crossing points was also hampered by lack of marking. Marking within the channel itself may be of benefit from one aspect but may introduce hazards to rowers (partly through lack of good lookout). Outside the safety aspect but worthy of consideration and would probably be is the impact on the sport.

- 14.26 Risks at crossing points may be mitigated by better promulgation regarding the location of these areas and advanced warning notices, including marking the actual crossing points on the adjacent banks. By ensuring rowers proceeding against the stream remain adjacent the bank, they will be outside the position of PDVS for a substantial section of the area reviewed. This must be achieved through better education and enforcement. Where risk of collision does exist action of both vessels in accordance with the COLREGS (and specified in the amended Rowing Rules) would resolve the head on issue in most cases. Better education amongst all parties is the key to this issue, supported by enforcement. Improved enforcement both from the PLA and within the user groups is also required.
- vi. **Advise on how any revised Rules or new regulations could be more effectively promulgated to improve understanding and compliance from all parties. Suggest the most effective form the regulations should take.**
- 14.27 The study identified failings in the promulgation of the current Rowing Rules. The study process itself has increased awareness amongst users both of the present rules and shortfalls. This awareness must be built upon to ensure knowledge of whichever options are chosen.
- 14.28 Effective promulgation must start with a roll-out programme by the PLA of the final rules and regulations and continue through better access from PLA sources, including the website, physical entry points to the river system and wider environment. To this end a number of recommendations are provided including the use of leaflets, signage along the river and at key locations.
- 14.29 Suitable promulgation will not be achieved by the PLA in isolation, though. Disengagement of the various interests and polarisation of the user groups has contributed to the present situation. Recommendations are provided covering formation of a suitable river user group focussing on navigational safety issues, co-operation with the rowing organisations and other authorities both in the presentation of the rules/regulation and in production of joint or mutually supportive documentation. Improved coverage can also be achieved by measures including linking with associated web-sites, together with improving the PLA's own site, ease of use and visibility to leisure / non-commercial users. A number of recommendations are made.

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- 14.30 A Code of Practice has been recommended for control of navigation by rowers in addition to the COLREGS. A format similar to the MCA M-Notices would probably assist, with summary of the main points supplementing the detailed contents.
- 14.31 It is also felt that a (separate) single document should be produced that would incorporate all navigational requirements i.e. the navigational Byelaws incorporating the COLREGS and the Code of Practice. It is outside this remit but any streamlining of the Byelaws to address each topic area sequentially and prevent cross-referencing is recommended. An example is the EA rules for navigation document.
- 14.32 A streamlined “glossy” version should be provided, to include a diagram / map highlighting the main physical aspects and areas of operation for ease of use by leisure users.
- vii. If it is established that those parts of the ARA Safety Code relevant to navigating are not being heeded by a significant majority of rowers, make recommendations to the ARA, Thames Rowing Council and PLA as to how better compliance could be achieved.**
- 14.33 Promulgation of the ARA Water Safety Code was generally good. Understanding amongst senior members of the Rowing Community was also appropriate. The ARA Water Safety Code itself does not directly address the issues of prime concern, identified above. Recommendations are included in the promulgation of the rules or guidance.
- viii. Determine the effect the height of tide and tidal stream has on the application of the Rowing Rules (especially at busy periods at LW around Hammersmith).**
- 14.34 The state of tide affects the application of the Rowing Rules. The tidal height changes the nature of the physical hazards, increasing risk from flats and debris and introduces pinch points at Low Water. At low tide conditions the width of navigable water make an increase of collision likely through increased interaction of vessel types. At high tidal conditions, wash is increased and subsequent risks to rowing vessels in particular. At change over times, ambiguity results in the track to be followed and risk of collision increases. In practical terms this is generally mitigated by application of good practice.

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**ix. Establish if the wash normally created by power driven vessels between Putney and Teddington is greater than one would normally expect in a tideway with a speed limit of 8 knots.**

14.35 Wash has not been found to be higher than expected with a speed limit of 8 knots. Failures across all user groups to appreciate the effects of wash or to respond appropriately appear to be the cause of several incidents and of general unease in this respect.

**x. Determine if rowers are adequately prepared for the prevailing conditions (tidal stream, wave height, wash and weather).**

14.36 Rowing craft have not been found to have substantially reduced in their river worthiness. The craft, particularly single and double (skull) are inherently liable to capsize periodically. Recommendations exist and are supported for enhancements to rowing vessel buoyancy. A number of other recommendations have also been made with regards physical safety.

14.37 Wash is a problem amongst the rowing community, resulting in swamping and occasional boat damage. The effects can be mitigated through more effective education and actions by rowers and non-rowers alike. Better situational awareness and consideration by all users is required.

14.38 Accident records show that a number of incidents occur because the rowers were not prepared or were caught out by the tidal stream and carried onto an obstruction. Whilst queries have been raised about suitability of certain boats / levels of experience the problem continues, including during this report period. This matter should be addressed to reduce the frequency of such incidences to as low as possible.

14.39 Full implementation of the risk-based approach promulgated amongst the rowing community is recommended and should enhance safety with regards the craft type and suitable use.

14.40 Night time rowing appears to have reduced but still features along with lack of or inappropriate navigation lighting. A number of ARA recommendations are in place already with regards lighting, personal safety of rowers and boat safety. These are shown in attachment H. This drive needs to continue.

**15. RECOMMENDATIONS**

**15.1 Improve Control of Rowing and wider Safety of Navigation:**

1. Repeal Notice to Mariners U6;
2. Introduce a Code of Practice covering rowing – sponsored by either PLA or ARA /TRRC as best fits PLA's SMS and regulatory requirements. Communication with and participation by all three recommended in the production of the Code. The Code should be local to the upper tidal Thames;
3. Introduce a river user's guide either separately or with the Environment Agency; see Promulgation below;
4. Increase simplification and promulgation of whichever rules are in place, including any Code. See promulgation below;
5. Address fragmented presentation of the various rules and requirements. Streamlining and combining of the actual legislation may be considered and would ease maintenance, promulgation and understanding;
6. Define the channel limits e.g. 1m smoothed contour;
7. Clarify the relationship between any guidance on rowing and the COLREGS:
  - a. Action taken to avoid collision is to be in accordance with the COLREGS irrespective of position on the river e.g. to alter to starboard in a head-on situation;
  - b. Requirements of Rule 9, applying to all vessels when within any defined narrow channel;
8. Such clarification to be included within any Code produced and within other guides and any notices & etc. (see Promulgation). Consider separate promulgation;
9. Identification of all boats used on the Tideway as required under Byelaws with standard sized and formatted name plus Club alpha/numeric code;
10. Enforcement of boat identification can be placed to rowing authorities / Clubs – require periodic reports of boats held, compliance with applicable rowing Code for construction and marking / identification. In parallel, PLA to monitor and enforce the present or amended Byelaw that requires boat identification;
11. A level of control is possible and recommended by noting boats joining the Tideway at manned entry points from enclosed waterways e.g. upper Thames, and canals;

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12. Maintain a log of transgressors from rules as noted on the river by PLA Harbour Service personnel & promulgate list at the manned entry points. Use the list to take action when the craft are seen again – e.g. informal advice through to action taken by PLA harbour service personnel in accordance with their powers. Whilst control works best with a registration scheme as seen on other waterways, it is understood that this may not be possible due to the open nature of the river. If a registration scheme were an option this would be recommended – i.e. not licensing but monitoring of river users, evidenced say by display of a permit, including day permits);
13. Increase enforcement, at least for a period of introduction of any new Rules or Code:
  - a. Inspection and licensing of all coach boats to be implemented as per Byelaws;
  - b. Review the type of Harbour Services vessel used – consider shallower vessels creating less wake, able to navigate all areas and at suitable speed to respond to issues;
  - c. Style of enforcement – consider less formal approach. Discuss options with rowing and other user groups. A closer matching with the user profile may assist as seen with police style (e.g. using cycle patrols & community policing) and on some other waterways. Co-operation and use of user group personnel may assist but thought difficult due to the voluntary nature. An alternative or to compliment this greater routine involvement with the user groups may assist.
14. Speed limit – greater enforcement with speed guns and/or speed indicator boards on bridges;
15. Formalise the dispensation from the 8 knot speed limit for rowers in addition to accompanying coach boats;
16. Formalise the requirement of rowing craft to act as ‘power driven vessels’ under the COLREGS when in collision situations;
17. Consider Markers/ colouring at some physical hazards to increase visibility;
18. No overtaking approaching bridges (within a distance to be further assessed, e.g. 200m);

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19. Consider monitoring wash levels particularly during any required certification process, but also in general use – more difficult on a tideway but Environment Agency apparently prosecute (if they do at all) under wash and damage caused rather than speed. (They monitor height of wash using simple stick gauge at bank);
20. Consider whether designated crossing points are advantageous as they have the disadvantage of concentrating crossing traffic but also have the advantage that it identifies where traffic is most likely to be crossing;
21. Consider the option of the application of Rule 9 through Kew Bridge on a tidal basis at Low Water;
22. Consider the options for navigation at low water between Kew Bridge and the Isleworth Ferry Gate;
23. Input to the PLA Navigation Safety Management System to be improved. Include specific problems of:
  - i. Collision risks at Kew Bridge
  - ii. Collision risks at Chiswick Bridge
  - iii. Collision risk due to conflict at change of tide.

## **15.2 Improve Promulgation:**

1. Produce one publication combining all navigational controls. Ideally one set of rules consecutively numbered including the requirements of COLREGS, BYLAWS etc. and addressed under each topic e.g. application, speed, lookout and etc.;
2. Publish, be co-sponsor or otherwise actively involved in production of the rowing Code, if accepted;
3. In parallel publish a joint River Thames User Guide with Environmental Agency or
4. Publish a PLA Tideway User Guide or “Leisure Safety Code”;
5. The river user guide should include either a summary description of any rowing special rules / rowing Code of Practice requirements or have the rowing Code incorporated;
6. The river user guide should include a schematic / map of the river highlighting risks, special requirements such as at pinch points and other points of note.

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The guide should summarise safety features and requirements, (see present Environment Agency version), as well as any social /pleasure information;

7. A launch programme for the new regime including a series of introductory presentations and meetings at or hosting main Clubs. Work alongside the ARA / TRRC in presenting a joint front in respect of agreed rowing procedures and/ or present to senior figures amongst their body and agree an ARA / TRRC presentation that they will make to members;
8. Revision of the PLA website to become more user friendly and less impenetrable:
  - a. Greater visibility of any navigational rules;
  - b. Improved search facility or drop down indexing for leisure users – drawing attention to navigational rules;
  - c. Reproduction in screen viewing format and printable format of any Code plus other publications decided upon such as a river Thames / Tideway User Guide, if this does not include the rowing Code;
  - d. Production and greater visibility of a summarised version of the navigation rules for leisure use; i.e. more “glossy” than bland Byelaw reproduction;
  - e. Linking the web site with other sites including main user bodies (ARA / TRRC etc) and official bodies particularly from adjacent regions e.g. the Environment Agency;
9. Use the Tourist Information network and associated leisure interests to gain wider publication; link to their web sites, make guide available to them;
10. Work with TRRC / ARA to widely publicise the requirements. Link selected sections of websites. Ensure they pick up the changes as a theme and use internally;
11. Similarly tie in with other user groups and raise awareness possibly as part of a launch programme;
12. Provide leaflets at Thames Tideway entry points e.g. Limehouse, Teddington, Brentford Locks, etc. Use of map / schematic diagrams alongside written advice;
13. Marking of channel is possible but would introduce hazards; consider signage along the bank at strategic locations such as entry points, approaching bridges with diagram of channel and river width;

14. Other signage to be considered:
  - i. Speed limit;
  - ii. Simple notice of areas where rowing is anticipated;
  - iii. Depth gauges at all bridges;
  - iv. Signs at entry points to the river system; simple clear examples using schematics and/or plain language showing general rule / constraints including any channel, speed limit and presence of boats outside the channel (if this is permitted);
  - v. Signs at intervals (diagrammatic) showing that rowers may be following a track different from right hand rule (if this is permitted);
  - vi. Signs along the bank highlighting the position of the channel (if so designated); e.g. passing through centre arches of bridges, clear of sewage outfalls etc.;
  - vii. Warning signs indicating approach to crossing area (designate crossing or presence of slipways / club houses);
  - viii. Warning signs at crossing points.

### **15.3 Improve Cross-User Communication:**

1. Form a new User Group with a more effective fixed agenda to concentrate on matters of safety as a high priority. Encourage greater interaction between river users and with the PLA to raise awareness of rowing procedures;
2. Increased informal contact with user groups including TRRC. Periodic (3 or 4 monthly) meetings with TRRC safety advisor to discuss general and safety issues;
3. Communication and transfer of information between PLA and ARA can be improved; variance in incident statistics highlights gaps in knowledge transfer. This may be partly attributed to possible adverse use of data:
  - i. Clarification of the use may be required – safety improvement or enforcement purpose;
  - ii. Consider measures to improve formal and informal data transfer:
    1. Anonymous reports / identity masking for safety improvement use from TRRC/ARA to PLA;
    2. Better communication at un-minuted meetings;

3. Regular quarterly of four-monthly meetings with TRRC safety adviser;
4. Guidance required on acceptability/standards for boat lighting as well as use to be better applied and enforced;
5. Observation cameras on bridges for a trial period with regular scheduled meetings between PLA and ARA / TRRC to review evidence.

**15.4 Recommendations to be put to the ARA/TRRC:**

1. Identification of novice crew / cox / steers person; day-glo vests worn by cox & bow/steers person for a probationary period (particularly if tied in with certification);
2. Alternately using differing colours all coxes / bow / steer persons to have day glo vests – seen used to good effect on the river. Improves visibility and conspicuousness;
3. Certification of cox / steersperson should be compulsory: syllabus recommended to include a minimum time on the water in a training capacity;
4. Certification of coach boat drivers should become compulsory e.g. RYA Level II with ARA specific modules;
5. Increased education and effective training amongst the rowing community – noted as Attachment H
6. Personal Buoyancy Aids – ARA to continue investigation/research/design for a suitable aid for rowers;
7. Increased internal enforcement by ARA/TRRC/Clubs. At least for a period of introduction of any new Rules or Code of Practice. To be tied in with promulgation, enforce the rules with regards positioning, overtaking and manoeuvring;
8. To improve internal enforcement consider appointment by TRRC of ‘duty marshals’ to monitor activities at busy periods such as weekends. Divisional Representatives should play a significant role in this respect. Improve reporting and enforcement procedures within Clubs and Divisions.

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9. Review of accident statistics and action on trends to be visibly improved. Include in discussions with PLA at periodic meetings. e.g. the ARA statistics contain several comments querying the use of 4's on the tideway, particularly for inexperienced crews. Incidents with rowers caught out by stream on bridges and fixed marks continue, including 2005 during Ladies Heads meetings;
10. Provide guidance and take up as a theme the fact that user risk assessments should include better assessment of interaction with other craft – i.e. is it assessed sensible to row set pieces without deviation in a dynamic environment seen on the river;
11. The Water Safety Code provides little direct input relating to navigation. And in particular does not touch on navigation or collision avoidance. Produce a local Code or promulgate any Code decided after this study, to include local hazards and rules and the COLREGS. Emphasise role of COLREGS and in particular in collision avoidance;
12. If a system of rowing routes outside the main channel is chosen by the PLA, emphasise within training and publications that rowers proceeding against the stream are to remain adjacent to the bank. There must be greater awareness of other users;
13. Lookout – decide upon standardised guidance on frequency and operation and promulgate this widely;
14. Lookout – make this the focus of a safety campaign within rowing community. Monitor accident and incident statistics; take action against those where poor lookout is a feature;
15. Lookout – other options include lead by powered craft and verbal control; rear view mirrors (no formal assessment seen). The current situation must be improved and if not by better application of standardised guidance then other means must be introduced for safety;
16. Review enforcement actions open to rowing authorities:
  - a. Greater publicity of offenders;
  - b. Restrictions on competitive rowing, including removal of ARA membership;
  - c. Sanctions against Club for members and hosted rowers;
17. Buoyancy – it is imperative that all boats are sufficiently buoyant. Ensure adoption and compliance with international / national standards;

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18. Navigation Lights - Standardised design of lights for fitting forward and aft with lights also visible from side;
19. Lights - Boats to be fitted with light mounting brackets forward and aft standardised for lights in No 17;
20. Lights - consider forward light having characteristics of a combined fixed and flashing/pulsating light (with fixed light aft)– discuss with PLA;
21. Lights – coach boats accompanying rowers at night are recommended to have a white light plus red/ green sidelights;
22. Locate or design a standard fitting for lights and for light characteristics and recommend these within the safety Code or other guidance;
23. Coach boats must actually be coaching to enjoy the concession of exceeding 8 knots and must be approved and certificated by the PLA as acceptable for wash;
24. Coach boats or safety boat should accompany all rowers at night / poor visibility; particularly single scull as potentially most vulnerable;
25. Continue with noted work towards boat identification against a standard system for identification, including the use of a code sequence such as “LRC 27”;
26. Use of day-glo and reflective strips on the vests or tops of single scullers, and at least the bowman and coxswain in larger boats and / or designate novice coxes and steerspersons;

## **15.5 Physical Mitigation of Risks:**

1. If the right hand rule only is permitted across the full width of the river, mitigation of physical hazards will be required:
  - Drying banks and shallows. Place fixed marks at the ends and possibly periodically along the length. These marks could be either fixed timber piles or withies, or small watch-radius plastic buoys. These markers would probably incur some increased risk of contact. They would in any case potentially reduce the available width of river for rowing and constrain the rowers to within the main channel for much of the time, with detrimental impact on congestion and other users. Outside of safety issues the use of markers would probably be detrimental to the sport, due to the higher density of traffic in the channel, risk of contact with markers, particularly for rowers and would negatively impact on the sport of rowing.

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- Fulham Flats and the Flats opposite the Bandstand: these are fairly uniform in width but do have protruding banks that extend a considerable distance into the river. Marking would further constrain the available channel width and place rowers towards the centre of the fairway.
  - Removal of debris and obstructions. Increased reporting by rowers and/or detection by PLA Harbour Service personnel of obstructions over flats and at the edge of the fairway would be required.
  - Piers - these are outside the main channel and so only a hazard to those passing close by – e.g. rowers potentially. Should be apparent but possibly will still be hit. Additional marking is not felt to be of benefit.
  - Tidal Stream: consider use of “tape / streamer” type markers fixed at bridges to better indicate tidal stream direction; this could present a hazard to some craft, dependent on length / type of marker.
  - At Putney, the present rowing route against the tide follows the track close to the Surrey bank and inside the moored boats upstream of Putney Pier, separating rowers from craft in the main channel. This benefit would be lost under right hand rule for the majority of the time.
2. Under either right hand rule or defined channel, mitigation would be required at pinch points:
- Define and mark the channel limit on the bridge; i.e. similar to road bridges with height restrictions. Use lights in similar manner to centre span marking but relative to channel edges, as shown on PLA charts;
  - Where there is sufficient width for multiple passage including outside the channel passage remains as above;
  - At bridges consider making rowing vessels use the starboard side – this would significantly increase crossing of the channel, and associated collision risk during crossing;
  - At bridges consider rowing vessels to proceed with caution (cautionary area indicated on the bank) where they may encounter the main channel - avoid impeding the passage of any vessel following the channel – i.e. wait until clear;
  - At bridges reduce the channel width to one vessel (10m) and have single passage through; control would be required e.g. give way to oncoming craft from one side. Problems with congestion and waiting near bridges / hazards would arise. Channel limits could be marked at the bridges;

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- No overtaking within a set distance from bridges, e.g. 200m. Area marked on the bank side;
  - Depth gauges to be placed on all bridges for assessment of when / where safe to use side and main arches.
3. At blind bends; restrict overtaking or prohibit overtaking within a set distance, indicated on the bank;
  4. Past Syon it is recommended to retain the right hand rule due to narrowness of the river;
  5. If a channel is defined and suitable channel limit is chosen it can be shown that the outfalls from the sewage works are outside the channel and therefore not necessary to go over them. Marking of the channel may be possible by simple signage alongside the bank, rather than physical marks in the river;
  6. Under a defined channel regime when navigating within the narrow channel rowing vessels should:
    - (i) Avoid impeding vessels which can safely navigate only within the narrow channel (Rule 9 COLREGS);
    - (ii) With the stream – proceed on the starboard side of the channel but note this does not have to be up to the edge of the river and proximity of hazards;
    - (iii) Against the stream, if rowers have to enter the channel at Bridges or Pinch Points, they should approach with caution and if necessary wait until it is clear of approaching traffic i.e. to avoid impeding passage for vessels on the starboard side of the fairway;
  7. Removal of overhanging tree limbs at bank side, principally at the islands. Ongoing this would need better communication between the PLA and user groups, rowers in particular to report problems.

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