

New GRYC Mixed Fleet Ratings

September 2017

Background

For many years the Goolwa Regatta Yacht Club has applied a “class based” or “yardstick” rating to mixed fleet race results to allow direct comparison of the performance of boats from different classes. This rating is intended to reflect the potential performance of a boat assuming that it is in top racing condition and that it is sailed well.

The ratings applied at GRYC has generally been referred to as a Class Based Handicap or CBH because they have been based on CBH ratings developed in Victoria for trailable yachts.

Australian Sailing, the overall governing body for the sport of sailing in Australia, has adopted the Victorian CBH as part of the Australian Trailable Yacht and Sports Boat Rule (ATYSBR) for use around Australia. The stated objective of the ATYSBR is:

“to provide a national system for even and fair racing on handicap in a mixed fleet of trailable yachts and/or sports boats, resulting in racing success being primarily determined by the skills of the crew.”

The ATYSBR CBH ratings are based on a calculation under the Junior Offshore Group (JOG) measurement system which involves a complex theoretical calculation taking account of factors such as hull shape, weight, righting moment, rig and sail area to generate a theoretical handicap. Where necessary the theoretical handicap figures generated by this measurement system are adjusted on the basis of performance information (ie race results) and other empirical evidence to ensure a fair and even system of rating the potential performance of boats.

In line with the stated objective, the ATYSBR Technical Committee now maintains an official list of CBH ratings covering many of the trailable and sports boat classes of yacht sailed in Australia. However this list is not comprehensive and does not include the large majority of the One-of-a-Kind (OAK) and modified yachts or even include several of the classes of boat that are sailed at Goolwa.

Australian Sailing (AS) is now proposing that only Class Based Handicaps listed in the current Appendix A of the ATYSBR should be applied to results from mixed fleet races and in a recent letter to the Club, Australian Sailing indicated that:

“Race organisers should not allocate to a boat, or class of boat, or a modified boat, a CBH that is not listed in a current version of ATYSBR Appendix A”

The consequence of adhering to this directive would mean that nearly 2/3 of the fleet in GRYC Twilight races and more than half the fleet in the Milang-Goolwa Freshwater Classic would not be eligible for a “yardstick” result. Subsequent discussions with AS officials indicated that they consider the Club should apply a personal handicap system for those boats not covered by the official Class Based Handicaps and that these boats should compete in separate divisions to boats with an ATYSBR CBH.

The GRYC Race Committee considers that these proposals are not satisfactory and considers that a comprehensive “yardstick” based handicap or rating system which reflects the potential performance of each boat under local conditions should be used for all races conducted by the Club. The Race Committee also considers that the Club should continue to use the personal handicaps in addition to the yardstick rating as is the case currently.

The GRYC Mixed Fleet Rating

To implement this decision the Club has established a “GRYC Mixed Fleet Rating” to provide a potential performance rating for every boat racing at GRYC. This will ensure that all boats can compete in races conducted by GRYC fairly with corrected time results reflecting how well the boat is sailed rather than the relative potential performance of the boat.

This paper outlines the structure of the new ratings, how they have been developed and how they will be managed and adjusted in the future.

The new GRYC Mixed Fleet Ratings consist of 3 tiers:

- Confirmed Rating
- Provisional Rating
- Interim Rating

These reflect decreasing confidence in the accuracy of the rating applied and are explained in more detail below.

Confirmed Rating

The Confirmed Rating is the long term rating for a class of boats, a “one of a kind” (OAK) boat or a modified boat that reflects the potential performance of that boat relative to other boats in the fleet assuming it is maintained in top racing condition and sailed well under the conditions that prevail in the Lower Lakes and Goolwa waters.

A confirmed rating represents a reasonable degree of confidence that the rating is an accurate reflection of the potential performance of the boat relative to other boats. The Confirmed Rating assumes that the boat is not modified or changed in any way that may affect its potential performance (beyond any modifications undertaken prior to the Rating being assessed). In the case of the Confirmed Rating for a boat from a recognised class of yacht, it is assumed that the boat is maintained in line with class rules in all respects.

A Confirmed Rating will not be altered unless:

- the boat has been modified or adjusted (outside of class rules if applicable) in a way that may influence its potential performance; or
- there is strong and persistent evidence that a class of boats or a OAK boat is being significantly advantaged or disadvantaged by the current Confirmed Rating.

The procedure for identifying if a confirmed rating should be reviewed and the methods that will be applied in undertaking a review are explained in detail later in this paper.

The initial Confirmed Ratings for all boats have been transferred directly from the existing GRYC published list of ratings for the 2016-2017 season with the exception of any classes of boat or OAK boats currently under review.

Provisional Rating

A provisional rating reflects the Race Committee’s best estimate of the potential performance of the boat or class under consideration relative to other boats when there is insufficient information available for a confirmed rating to be determined. It is based primarily on a preliminary physical comparison with similar boats and limited race data.

A Provisional Rating will apply while relevant data (such as physical measurements and appropriate race data) are collected to enable a Confirmed Rating to be developed. Generally a Provisional Rating will not be altered once it has been allocated until a Confirmed Rating is determined. A provisional rating will usually be in place for at least a year to allow sufficient race data to be accumulated and will only will be changed or a confirmed rating allocated either after the completion of a summer series or at the start of a new racing season (ie in April or October in any year).

Interim Rating

An Interim Rating is an estimated rating based primarily on a comparison with similar boats and the knowledge and experience of Race Committee where very limited or no race data are available and no CBH is available under the ATYSBR. An interim rating will generally only apply for up to 6 races while appropriate data are being collected to allow a provisional rating to be decided. An interim rating may be adjusted during this time as additional data become available. If the Interim Rating is changed during a series of races the results for previous races will be recalculated using the revised rating for the series result.

Processes for Developing Ratings

A rating to allow direct comparison of results between different classes of yachts is, by necessity, a compromise. It is a compromise that needs to reflect the relative potential performance of different boats when sailing up-wind and down wind, in strong winds and light airs. Importantly the rating also needs to take into account the relative potential performance of a boat under the local wind and water conditions.

Several different handicapping systems have been developed for use in multi-class sailing races including:

- ORC (Offshore Racing Congress)
- IRC (these initials don't actually stand for any specific name)
- AMS (Australian Measurement System)
- SMS (Sportsboat Measurement System)

These all calculate a theoretical rating based on extensive measurement and using a complex computer algorithm. These algorithms are not generally available to individual clubs and the data required to run them are extensive.

Forailable yachts, the Australianailable Yachts and Sports Boat Rule (ATYSBR) Class Based Handicaps (CBH) are also a theoretical rating based on extensive measurement and using a computer algorithm not available to individual Clubs.

Goolwa Regatta Yacht Club has decided to adopt a simpler and more practical process for developing ratings which is considered appropriate for the Club and does not rely on complex computer algorithms.

How Will a GRYC Mixed Fleet Rating be Determined?

The GRYC Mixed Fleet Rating for a boat or class of boats is determined by the Race Committee based on an assessment of all of the readily available relevant information. Primary consideration is given to:

- Direct comparison with other similar boats with a Confirmed GRYC Rating;
- Current or past ATYSBR and YSA CBH ratings and ratings applied at other clubs; and
- An assessment of relevant race results.

The comparison with other boats may require measurement of physical parameters of the boats such as sail area, rig parameters, hull shape, righting moment, displacement and waterline length. Race results will be used to derive a Back Calculated Handicap (BCH) which will be just one of the factors considered in establishing a Mixed Fleet Rating. Importantly in all of these processes the Race Committee will engage the skippers /owners of the boats for which a Rating is being established. Skippers and owners will be invited to provide relevant information regarding their boat and the relative performance of her with respect to other boats in the fleet.

Where possible, agreement of the skippers / owners to the key parameters on which the Rating will be based will be sought. A recent example of this approach has been the agreement between RL28 owners to utilise simple rig parameter measurements to differentiate between the different rigs on the boats in this class.

A Confirmed Rating is determined by the Race Committee taking account of all these factors as well as personal knowledge and observations. While this process in some respects is different to some of the official rating systems, it avoids the majority of the complexities, anomalies and costs associated with obtaining a formal rating under the ATYSBR and it will provide as fair as practicable mixed fleet ratings for sailing in local conditions.

Process for Initiating a Review of a Confirmed Rating

Once a Confirmed Mixed Fleet Rating has been adopted for use by GRYC, it will only be reviewed or changed if, in the opinion of the Race Committee:

- A boat has been modified in a way that is likely to affect its potential performance relative to other boats; or
- It is evident from performance data collated from GRYC race results that a class of boats or a OAK boat is being significantly advantaged or disadvantaged by the current GRYC Confirmed Mixed Fleet Rating.

If the Race Committee decides to undertake a review of a Confirmed Rating, the owners and skippers of the boat or class to be reviewed will be informed immediately to ensure that appropriate factors and circumstances are taken into account. The review will follow the same process as that outlined above for the development of a Confirmed Mixed Fleet Rating.

Alternatively a skipper or class representative may request a review (in writing with supporting justification). The Race Committee will assess whether there is sufficient justification to warrant a review and will advise the applicant of their decision in writing including justification for that decision.

Appeal against rating decision

If a skipper or class representative (an “appellant”) considers that a review decision or a Confirmed Rating determined as a result of a review is incorrect, they may appeal to the Race Committee by making a written submission putting their case as to why a review decision or a Confirmed Rating is incorrect in their view. Such a submission must contain or have appended to it all of the information and evidence upon which the appellant relies in making the appeal. The Race Committee will consider the written submission and the information and evidence provided by the appellant and make a determination of the appeal. Subject to the terms of the GRYC Mixed Fleet Rating such a determination by the Race Committee will be final and there will not be any further right of appeal.

However, if an appellant considers that the Race Committee has failed to provide natural justice or has acted improperly in making its determination of the appeal, it may make a written complaint to the General Committee. In such an event the General Committee’s processes for considering complaints will apply.

Rating Adjustment for Modifications

The ratings allocated by the Race Committee are based on the configuration of the boat at the time the rating was assessed. Any modification to the hull, rig or sails must be assessed regarding the likely impact on the potential performance of the boat. Failure of a skipper to notify the PRO of a modification may result in that boat being protested by the Race Committee.

In order to simplify the process for adjusting a rating to account for the impact of a modification, the Race Committee is establishing a list of standard rating adjustments for common modifications such as conversion to an asymmetric spinnaker or conversion from $\frac{3}{4}$ to masthead spinnaker. Such a standard rating adjustment will be applied unless the Race Committee determines that, in the particular case under consideration, an unfair rating would result.

Any modification not covered in this list of common modifications will be assessed by the Race Committee and a revised rating issued if appropriate.

Spinnaker vs non-spinnaker

Most races conducted by GRYC have separate spinnaker and non-spinnaker divisions. In those races where there are not separate divisions, all boats may use a spinnaker if allowed under class rules and the relevant Sailing Instructions and Notice of Race. As a consequence the listed ratings will be applied to boats whether they are in the spinnaker and non-spinnaker divisions.

Summary

To ensure that the GRYC can continue to provide for even and fair racing in mixed fleets of trailable yachts and sports boats with success being primarily determined by the skills of the crew, the Club has decided to adopt a system of GRYC Mixed Fleet Ratings using a transparent and open process to determine ratings and to adjust them where appropriate.

Appendix A: Methodology for Undertaking a Back Calculated Handicap

If the Race Committee decides to undertake a review of a rating, the skipper(s) of the boat or class to be reviewed will be informed immediately to ensure that appropriate factors and circumstances are taken into account.

In reviewing a rating based on race results the following criteria will be applied if possible:

- A minimum of 15 and a maximum of 25 of the most recent race results involving the class or boat under consideration racing against a variety of other classes which have well established GRYC accepted rating will be used;
- Where possible, the race results used will cover the full range of weather conditions experienced when racing at Goolwa; and at least 2 of the races considered should be longer races (eg Goolwa to Narrung, Milang to Goolwa or Dauntlus Cup).

The requirement for a minimum of 15 races will generally ensure that a good range of weather conditions are covered and the inclusion of longer races should ensure that racing with both extended windward or downwind conditions and close-quarters racing with multiple buoy roundings are included in the analysis.

The maximum of 25 races and the requirement for the race results to be most recent available should ensure that there is a minimum amount of change in the fleet being used in the comparison and that the review of rating can be undertaken within a reasonable timeframe (ie 1 full season or less).

Calculation of a Notional rating from Race Results

A notional rating is derived from an average of the calculated theoretical ratings that would be required if the class/boat under consideration were to finish with the same corrected time as each other boat being used in the analysis (a process known as 'back calculated handicap').

Where possible, to ensure that the derived rating represents a class rating based on boats being sailed to their potential, only the fastest (on corrected time) 40% of the fleet is used in this comparison (this applies both to the class under consideration and the rest of the fleet against which the class is being compared).

In addition, when assessing the rating for a class of boat, the boat which is recognised as most consistently being the lead boat in the class under consideration and the lead boat in the rest of the fleet may be excluded to ensure that most anomalous results are avoided.

Also, any other class or boat whose rating is under review is excluded from the analysis.

Clearly if only one boat is being reviewed, some of these approaches to minimise uncertainties will not be practical.

The Race Committee will use the notional rating calculated on race results to inform a decision on a GRYC adopted rating for the class or boat under review also taking into account any relevant measurement or empirical data available.

This process will also be used to confirm (or adjust) interim and provisional ratings once sufficient race results are available.