How the Racing Committee generate dinghy handicap numbers.

What we do with handicaps is quite involved but quite logical. There are two distinct issues with the RYA numbers. The first is that some are simply wrong or out of date and the second is that they do not account for tidal currents which penalise the slower boats more than the faster ones (see the model below). There is a third difficulty in that we are familiar with some of the classes but not with others.

So we need to generate an alternative sequence that meets our racing requirements better. We also have to provide a number for any visitor in any class at any of our handicap events that is consistent with the numbers we use for club classes. Further we want to be able to reconcile back to the RYA scheme for every class.

There are 2 stages.
Firstly we want a list of numbers that we think are appropriate for all classes as best we know.

1). We have looked at the RYA numbers and decided that a number of them do not match what we see on the water. So for the HISC list some of them we have increased and some we have decreased.

2). We have also seen that some classes are not represented in the RYA list at all and so we have made numbers up for them.

Having done this we have a list of reasonable numbers that we would use if there was no tidal consideration. But there is ..so the second stage is to derive the tidal adjustments.

3).To do this we look at the results that are achieved by club classes in our events and see what changes we have to make to get a fair distribution of race results across the classes. This is a work in progress …. and probably always will be..

4).These then become the 'known points' on the line and we have then come up with a series of rules to pro rata the differences across the range. We have nailed the Flying Fifteen to the RYA scheme and moved classes up as they get slower and down as they get faster. This is to prevent the adjustments from getting too big. However not all types of boats are affected the same by the tide so we have split the classes into 3 groups. To this we could now add a fourth -hydrofoils - but for ease of use we have retained them in the third group.

The groups and the rules that pertain to each are as follows. Note that the numbers would be our (perhaps adjusted) RYA number.

classes with spinnakers and hiking aids	classes with spinnakers but no hiking aids	classes with neither spinnakers nor hiking aids
Rule 1. 1 less point for every 4 numbers less than 1025	Rule 1. 1 less point for every 4 numbers less than 1025	Rule 1. When less than 950 then one less point for every 2 numbers less than 950
Rule 2 . No adjustment when number over 1025	Rule 2 . When over 1025 and less than 1150 then 1 extra point for every 10 numbers over 1025	Rule 2 . When over 950 and less than 1055 then 1 extra point for every 10 numbers over 950
	Rule 3 . When over 1150 then 1 extra point for every 5 numbers over 1025	Rule 3. When over 1055 then 1 extra point for every 5 numbers over 950

These steps produce the HISC numbers currently in use.

A demonstration of how the current affects yardsticks.

The PY system is based on time taken to travel a distance. The distance is determined by marks which are anchored in the ground under the water. The elapsed time is then the time taken to travel from one mark to another. But….boats do not drive across the bottom of the lake , they travel through the water. If the water is moving this will affect the time they take. By how much though?

Here is the model. We have a slow boat on PY1200, a medium boat on PY800 and a fast boat on PY600. The distance is a 6 miles lap of a couple of marks 3 miles apart and they are all going to do one lap.

Step 1 : Compute the time to sail the course in slack water.

	slow	medium	fast
average boat speed in mph	4.00	6.00	8.00
allocated yardstick	1200	800	600
distance in miles	6.00	6.00	6.00
elapsed time in minutes	90.00	60.00	45.00
corrected time in minutes	75.00	75.00	75.00

Step 2 :Now introduce a current of 1 mph flowing down the course.
Compute elapsed and corrected times for this lap.
Repeat for a current of 2 mph.
Step 3 :Compute new yardsticks to restore parity between the boats.

Repeat with a current of 2 mph.	slow	medium	fast	slow	medium	fast
distance in miles	3.00	3.00	3.00	3.00	3.00	3.00
foul current in mph	1	1	1	2	2	2
speed made good in mph	3.00	5.00	7.00	2.00	4.00	6.00
elapsed time in minutes	60.00	36.00	25.71	90.00	45.00	30.00
corrected time in minutes	50.00	45.00	42.86	75.00	56.25	50.00
distance in miles	3.00	3.00	3.00	3.00	3.00	3.00
favourable current mph	1	1	1	2	2	2
speed made good in mph	5.00	7.00	9.00	6.00	8.00	10.00
elapsed time in minutes	36.00	25.71	20.00	30.00	22.50	18.00
corrected time in minutes	30.00	32.14	33.33	25.00	28.13	30.00
Elapsed time for the lap	96.00	61.71	45.71	120.00	67.50	48.00
corrected time for the lap	80.00	77.14	76.19	100.00	84.38	80.00

So the three boats who had the same corrected time of 75 minutes on slack water now have different corrected times.
Compute what the slow and medium boats need as a yardstick to achieve the new corrected time of the fast boat.

Circumstances	Elapsed time	Corrected Time	Yardstick required for parity with fast boat (elapsed / corrected)	Adjustment Required to slack water Yardstick
Slow boat in 1 mph current	96.00	76.19	1260	+ 60
Medium boat in 1 mph current	61.71	76.19	810	+ 10
Slow boat in 2 mph current	120.00	80.00	1500	+ 300
Medium boat in 2 mph current	67.50	80.00	844	+ 44

You can repeat the above calculations for any combination of current strength and average boat speed.

At the moment the adjustments for comparable classes are..

Class	RYA PY	HISCYardstick	Variance
SOLO	1155	1206	+51
RS800	822	771	-51
MOTH	690	573	-117

So the Solo gets an adjustment of +168 against the Moth and +102 against the RS800 and the RS800 gets an adjustment of +66 against the Moth. These numbers will not cater for all conditions but are consistent with the model.