British Conference of Undergraduate Research

Southampton Solent University

QS STARS RATED FOR EXCELLENCE 2017
INCLUSIVENESS
TEACHING

THE DEVELOPMENT AND GROWTH OF THE THAMES A-RATER FLEET

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CONTENTS

- The Thames A-Rater
- Project Aims
- Method
- Future Advances

THE THAMES A-RATER

Vessel Particulars

- Average length 7.90m
- Average breadth 2.10m
- Average depth 0.45m
- Displacement (excluding the crew) 340kg
- Maximum sail area 32.52m^2
- Maximum mast height 13.11m
- No. of crew 3

THE THAMES A-RATER

History

- First designed in the late 1800s to be sailed on inland waters
- Designed to Dixon Kemps rating rule

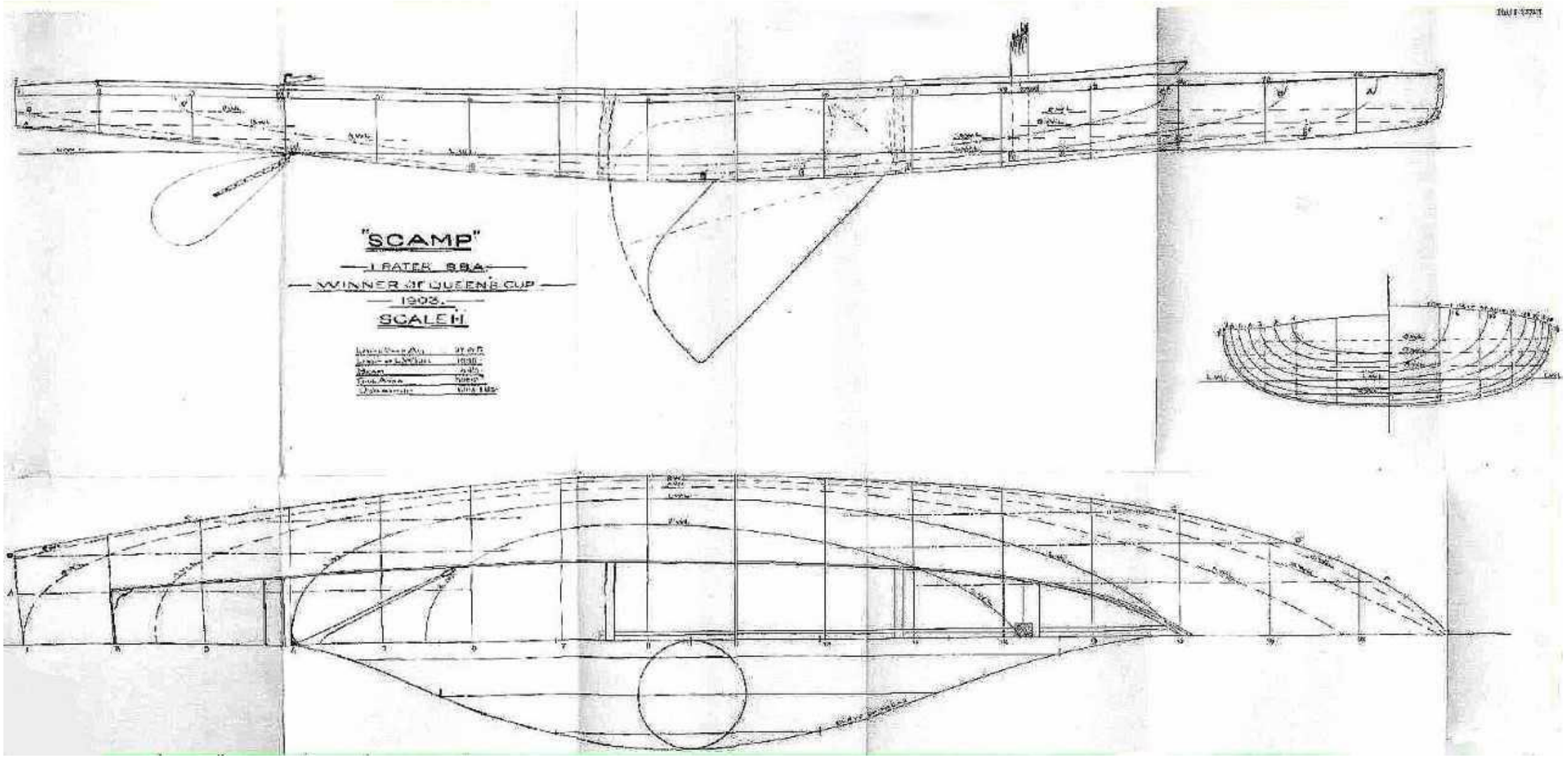
$$\frac{Sail\ Area\ \times Length\ Waterline}{6000}$$

- Rule change to maintain the class aesthetic

> *"A new hull will only be considered to be an A class Rater hull if it is an exact replica of an existing Rater as defined above, taken from either an existing hull, or original lines, subject in both cases to a tolerance of one and one half inches."*

- More built in the 1980s from fibre reinforced plastic

SCAMP LINESPLAN 1903



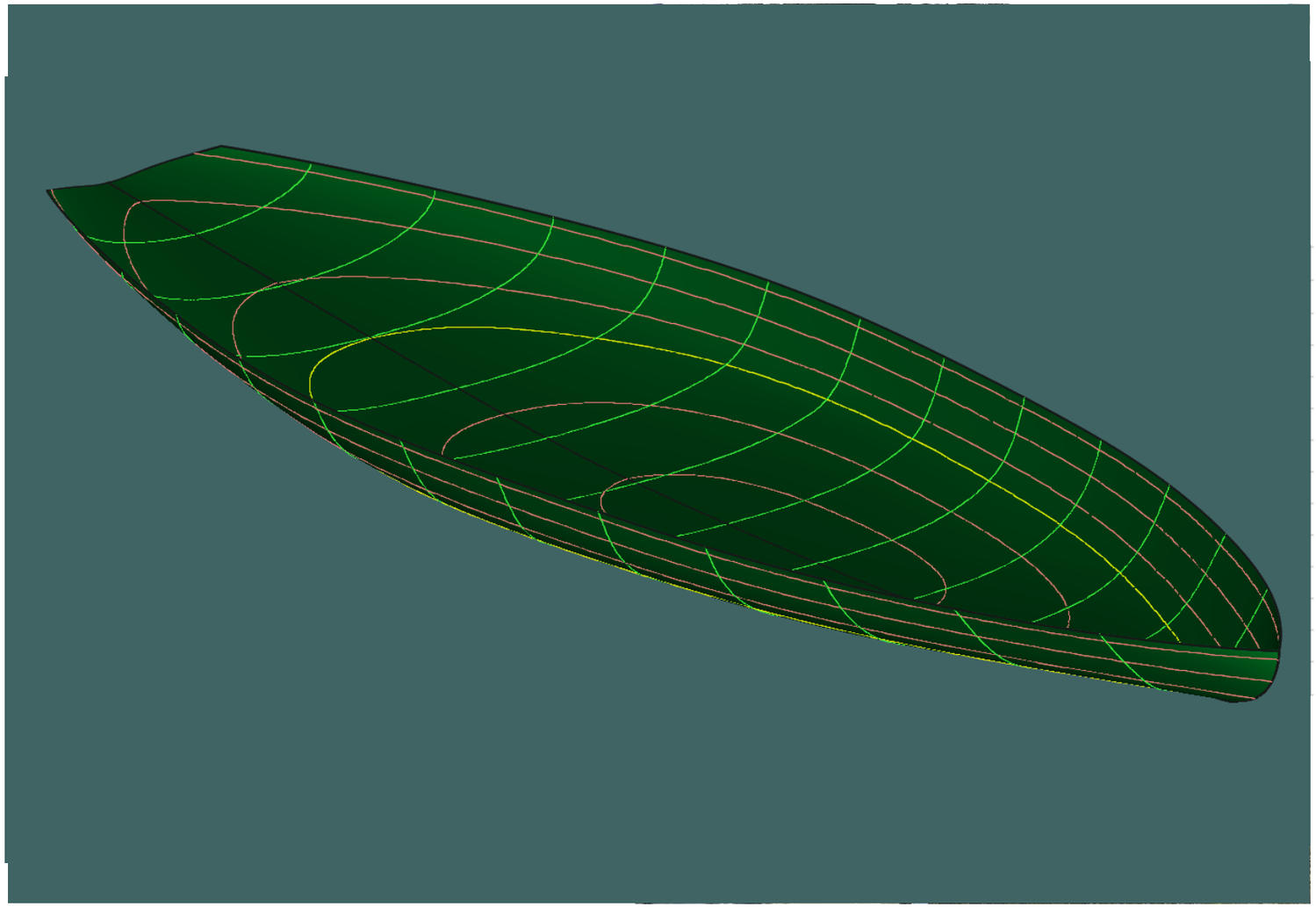
PROJECT AIMS

- Create a Catalogue of linesplans
- Analyse each hull with performance analysis software
- Identify the fastest and most efficient hull
- Design a new wooden A-Rater

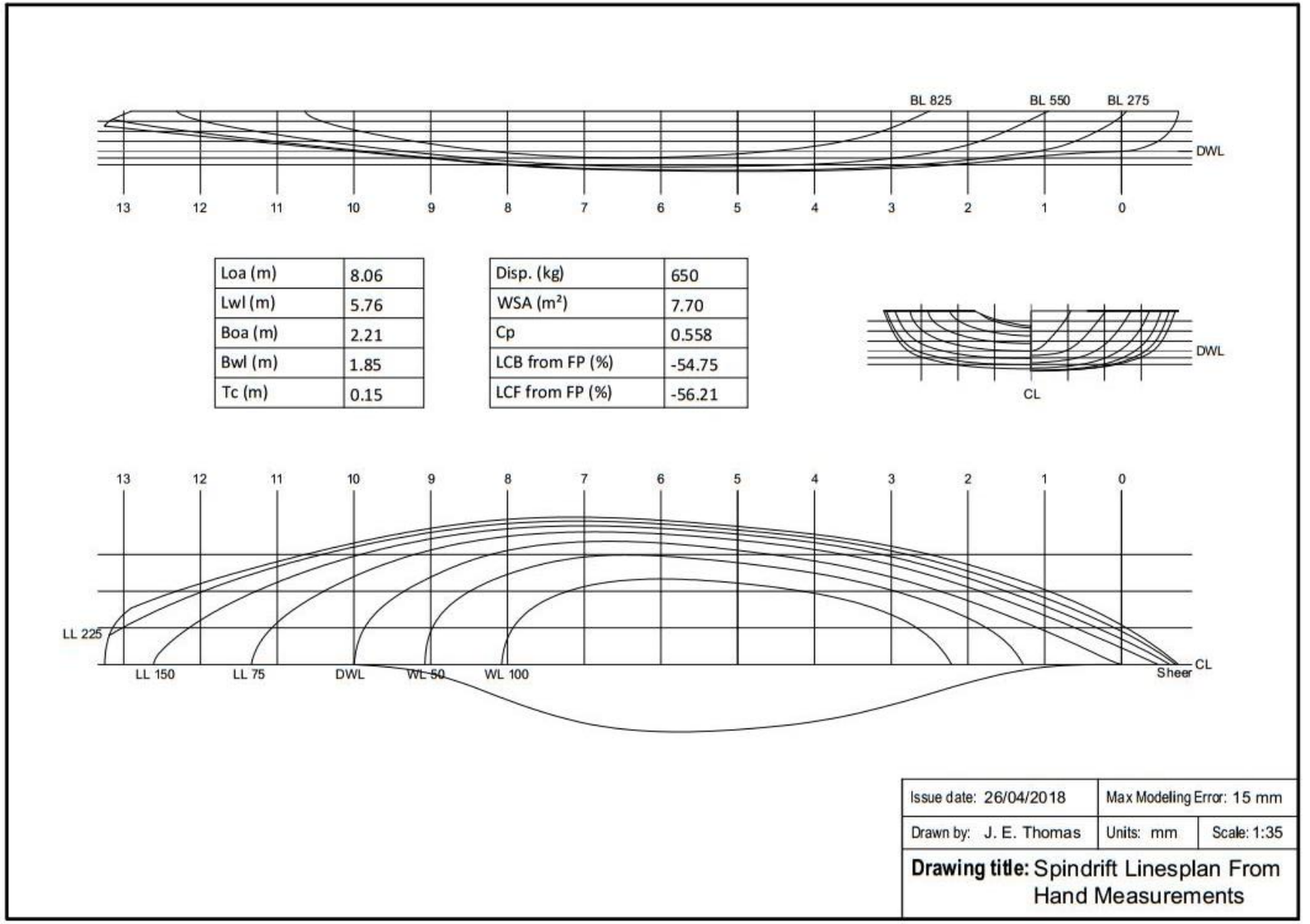
METHOD

Hull Measuring

- Hull measured by hand
- Table of offsets created
- Point cloud created
- 3D hull model created



SPINDRIFT LINESPLAN 2018



Loa (m)	8.06
Lwl (m)	5.76
Boa (m)	2.21
Bwl (m)	1.85
Tc (m)	0.15

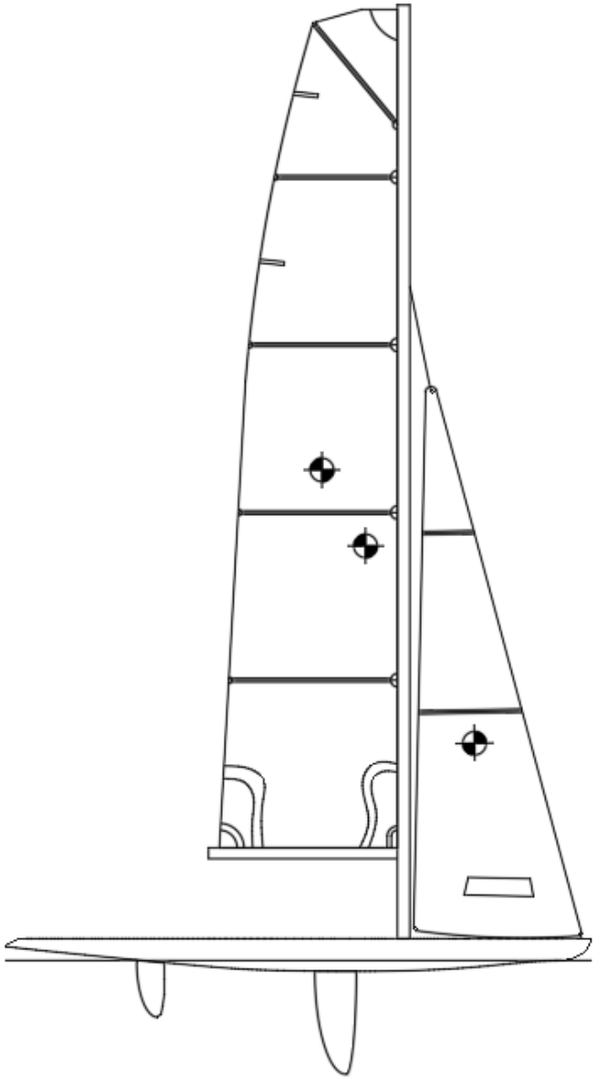
Disp. (kg)	650
WSA (m^2)	7.70
Cp	0.558
LCB from FP (%)	-54.75
LCF from FP (%)	-56.21

Issue date: 26/04/2018	Max Modeling Error: 15 mm	
Drawn by: J. E. Thomas	Units: mm	Scale: 1:35
Drawing title: Spindrift Linesplan From Hand Measurements		

METHOD

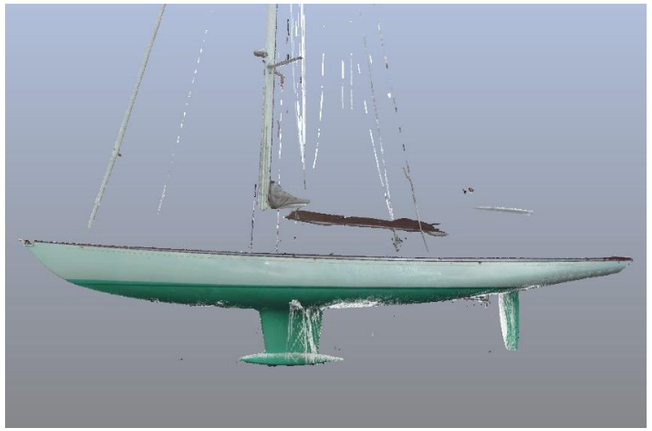
Hull Testing

- Designed sail set and rig
- Designed rudder and centreboard using aerofoil analysis
- Ran hulls through velocity prediction program (VPP)
- Final Hull was decided on



FUTURE ADVANCEMENTS

- Use a hand held 3D scanner to create models of existing boats at a higher rate
- Expand my catalogue of linesplans to include the entire fleet
- Build my A-Rater design using cold moulded mahogany



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THANK YOU!

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