

History of the Yacht “*TERRA LINNA*”

Compiled by and for the Wooden Boat Guild of Tasmania Inc.

2002

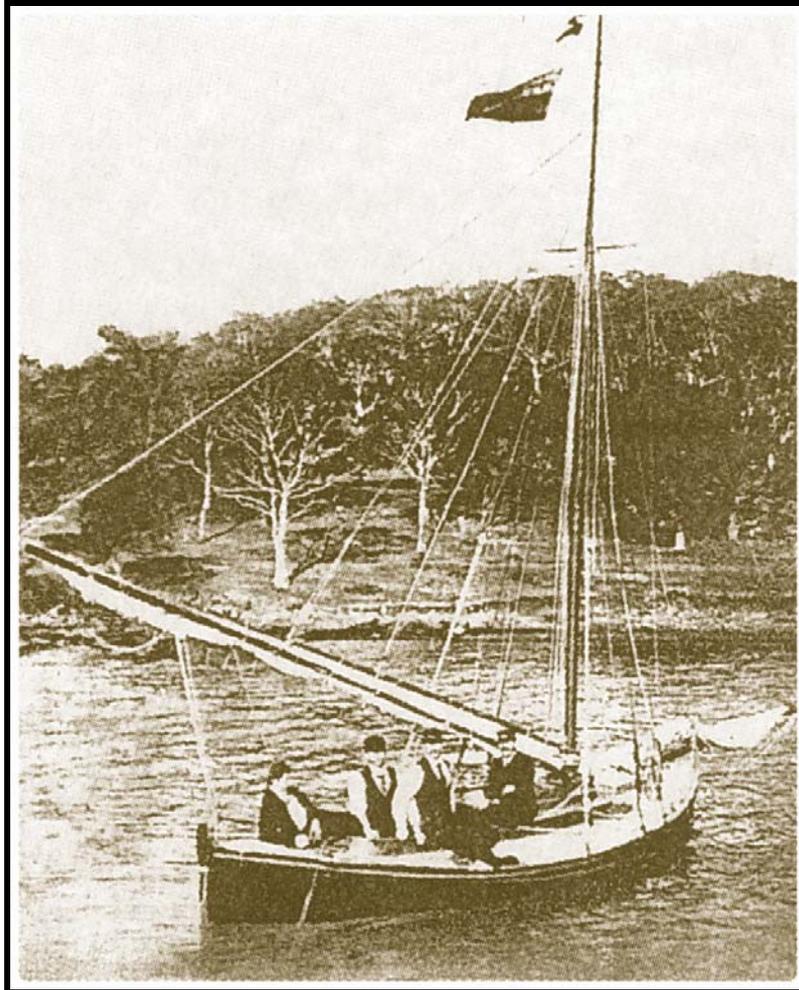
Editor Peter E Higgs, Snr Vice President WBGT, 2002

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TABLE OF CONTENTS

Forward.....	7
Acknowledgements	8
Erratum.....	9
History and Features of the yacht “Terra Linna”	10
Introduction.....	10
Builder.....	10
Family and Terra Linna history excerpts by the State Reference Library	11
Known Owners	11
Construction	12
The Tasmanian Whale Boat, an excerpt from “Wooden Hookers of Hobart Town” .	12
“Whale Boats”	12
The yacht “Terra Linna” excerpt from Graeme Broxam’s “Those That Survive”	13
Andy Gamlin’s account of the hull as found in 2001.....	14
Closer hull observations	14
Racing Record	15
An excerpt from “Sailing On”	16
Subsequent alterations	17
Rig & Sails.....	18
The Wooden Boat Guild of Tasmania’s rescue of the yacht “Terra Linna”, an excerpt from the 22 nd Journal, 2002, of the Guild.	19
“The “ <i>Terra Linna</i> ” Adventure	19
Developing the lines	23
Measuring methods	23
Data processing	23
Drawing.....	24
Research methodology.....	27
End notes	27

The Yacht "*Terra Linna*" photo c 1880 ⁱ



Type	Double-ended centreboard cutter yacht.
Built:	Hobart 1880-81 by designer George Luckman.
Tonnage:	8 Thames Measurement (by WBG T calcs = 3.2 tons).
Dimensions:	28.0 wl x 9.0 x 3.9 ft.
Owners	H.W. Knight & George Luckman; 1884 H.W. Knight sole owner; 1905 W.G.P. Beddome.

Note:

Thames Measurement Rule

<http://www.boatus.com/goodoldboat/ratingrules.htm>

By Ted Brewer

Early attempts at creating rating rules were based on the old British tonnage measurement system, which was created in the Pleistocene era to calculate the tonnage volume of large, commercial sailing ships. It gave the vessel's carrying capacity in tons (at 35 cubic feet per ton) or, as some believe, in "tuns" (casks of wine). Sail area was not included, of course, nor were any credits given for less efficient rigs so, naturally, in the yacht-racing field the cutters predominated. Eventually, this rule was modified in 1854 as the Thames Measurement Rule: $Tons = ((L-B) \times B \times .5B)/94$. (L = length stempost to sternpost and B = maximum beam.) But rigs were still ignored, and the depth measurement was eliminated.ⁱⁱⁱ

Forward

The Wooden Boat Guild of Tasmania was formed in 1993 and in its 9 active years it has been able to educate, promote and provide an avenue for the passing on of skills associated with historic wooden boats. This has been achieved through boating events, festivals and the building of a c.1890's piners punt replica for the use of Guild members and the people of Tasmania.

The opportunity that has arisen in the '*Terra Linna*' project is another step in preserving and recording Tasmania's rich maritime history.

Members of the Wooden Boat Guild are drawn from a diverse spectrum of skills, from shipwrights to enthusiastic lovers of wooden boats and all are fully aware of the task ahead.

Experience gained on projects such as 'May Queen', 'Preana' and that of members who have restored, maintained or built replica classic wooden boats, will be invaluable to this project.

'*Terra Linna*' project has been embraced by the members of the Wooden Boat Guild with enthusiasm and with their wealth of knowledge, experience and support I am sure the '*Terra Linna*' project will succeed.

Ainesley Smith
President
Wooden Boat Guild of Tasmania Inc.

Acknowledgements

The history of the yacht “*Terra Linna*” has been compiled as a result of funding made available by the Australian National Maritime Museum’s (ANMM) Project Support Scheme (MMAPSS) 2002-03. The Wooden Boat Guild of Tasmania applied to the ANMM due to the foresight and passion of Guild member Andy Gamlin to stabilise the derelict hull, take its lines and then prepare to restore her to be able to sail again. This is an account of the first stage in achieving this as well as providing a limited historic account of the yacht *Terra Linna*.

The last entry in the sections dealing with **Construction** and **Developing the Lines** is an account of the recent research conducted by Andy Gamlin as a result of his survey of the yacht *Terra Linna*. This account details much of the original construction and has accurately recorded her lines. As such these accounts will be invaluable to maritime historians, the Wooden Boat Guild of Tasmania during its efforts to return *Terra Linna* to sailing condition, the Australian Maritime Museum, the Maritime Museum of Tasmania and wooden boat enthusiasts, including trainees and apprentices as a record of boat building in early Tasmania.

The Wooden Boat Guild of Tasmania is indebted to and wishes to acknowledge the contributions and the granting of permissions to use excerpts from certain publications of the following to enable the yacht’s history to be compiled.

Graeme Broxam, author of “*Those that Survive*”, The Royal Yacht Club of Tasmania and various members for support, donation of and permission to re-produce information in their publication “*Sailing On*”, David Murphy, Clearwater Publications and Publisher of the Guilds Journal “*the Rudder*”, staff of the Tasmanian Maritime Museum, Tasmanian State Archives, State Reference Library, The Mercury and members of the Wooden Boat Guild of Tasmania. As well, the Guild would like to express its sincere thanks to Sandy Boyer for her excellent design work on the cover of this publication and Dallas Manning for her layout accuracy and visual impact in Desk Top Publishing the final works.

Erratum

In compiling and reproducing this important history of the yacht "*Terra Linna*", an important part of the Tasmanian maritime heritage, it has not always been possible to identify and or contact authors of source material and some photographs. This has also meant that rightful acknowledgements may not have been made. Every effort, given the time available to compile this brief history, has been made to ensure the accuracy and origins of source material have been made. As such the Wooden Boat Guild of Tasmania acknowledges and appreciates contributions made by unknown contributors. If instances of inaccuracy or omissions exist please do not hesitate to contact the Wooden Boat Guild of Tasmania at PO Box 28, Battery Point, Tasmania 7004 so we can set the record right.

History and Features of the yacht “Terra Linna”

Introduction

The yacht “*Terra Linna*”, was built in Sandy Bay, Hobart by boat builder and horticulturist George Luckman during 1880 for H. W. Knight, they shared ownership until 1883/4. She was built to compete in the 28 footer class on the Derwent Estuary as a registered yacht of the now Royal Yacht Club of Tasmania, Hobart^{iv}.

One hundred and twenty years later she lay on the waterfront at Battery Point, stripped of many planks, most deck, her rig gone covered by remnants of a plastic sheet - a forlorn and sad state of affairs for a boat that has a significant place in Tasmania's maritime heritage.

The Wooden Boat Guild of Tasmania Inc applied to the Australian Maritime Museum for funding to document the history, lines and details of this valuable boat and was subsequently successful through the Maritime Museums of Australia Project Support Scheme for 2001-2002. The Guild's vision is to restore the yacht *Terra Linna* to sailing condition.

Builder

There is very little conclusive information available about the boat builder George Luckman and or other boats he may have built. Whilst pursuing further information a staff member of Archives Tasmania advised that at the time, 1800's – 1900, the trade/craft of boat building was not regulated and for that reason very little is documented of either boats/craft or their builders. The following information could only be put together through various research efforts of numerous documents, books and newspaper articles.

As previously mentioned, George Luckman is accredited with building the yacht “*Terra Linna*” in 1880. He was also the builder of “*Daphne*”, a Dixon Kemp 21 foot class yacht^v, in the late 1880's and possibly the builder of “*Romtenah*” another 21 footer recorded as being owned by George Luckman^{vi}. *Daphne* is recorded in “Sailing On” as having come second on handicap to *Hebe* in the 1897-98 sailing season for one of the early races of the season for the newly formed Bellerive Yacht Club which was patronized with members of the now Royal Yacht Club of Tasmania where *Daphne* was registered in the name of G. Luckman.

Family and Terra Linna history excerpts by the State Reference Library

Firstly there were at least four George Luckmans in Tasmania in the 19th century. The birth records listed in the Tasmanian Pioneers Index on CD-Rom list three George Luckmans.

- Son of James and Rosina - christened on 14th July, 1830
- Son of Alfred and Mary Ann Jane - born on 24th July, 1859
- Son of George and Esther - born on 16th February, 1856 (Their marriage is recorded in Hobart 13th June, 1854, Registration No. 385.)

It is believed that the George Luckman most likely to be associated with the *Terra Linna* lived in Sandy Bay and died in 1920, aged 90. His death notice (Mercury 17th May, 1920) and the obituary (Tasmanian Mail 20th May, 1920) ^{vii}states that he was married to the late Esther Luckman and also that he was a well-known horticulturalist who lived in King Street, Sandy Bay.

The F.B. Maning Tasmanian Directory ^{viii}, 1881-2 does not list a George Luckman in the Hobart area. However, the Tasmanian Government Gazette 1881 lists George Luckman as owning several properties in Sandy Bay and occupying the one in King Street. One of the properties he owned was occupied by a Mary Ann Knight. A couple of entries in "*A hundred years of yachting*" published by J. Walch and Sons, 1936 mention the *Terra Linna*. One is for the 1881 entry in the Hobart Regatta where the *Terra Linna* is attributed to H.W. Knight and then in 1883/4 H.W. Knight is given George Luckman's ownership [share]. Both yachts are specified as 27 ft. There is a picture of the yacht on page 89 with caption "Harry Knight's "Terra Linna", one of the first nine boats on the register of the Derwent Sailing Boat Club (now the Royal Yacht Club of Tasmania)".

In Nicola Goc's book "*Sandy Bay*" a social history, published by Gentex Publishing, 1997, mention is made of the "Terra Linna owned by H.W. Knight (this cutter had been built by George Luckman for Mr Knight who lived in a house adjacent to the beach near the hotel Traveller's Rest)". There is more information in her book [this information is provided in the section on *Racing Record*], also with association to George Knight as well as other business interests^{ix}".

Known Owners

1880	H.W. Knight (supposedly in partnership with the builder George Luckman, which Luckman relinquished to H.W. Knight in 1883/4)
1905	W.G.P. Beddome
1953-1970	Gatehouse and others (TBA)
1970-1977	Erik Madsen
1977-1986	George Burrows, Black Snake Inn, Granton
1986-2001	Gerard Wilhems
2001 -	Wooden Boat Guild of Tasmania Inc.

Construction

The Yacht *Terra Linna* is Huon Pine batten seam carvel planking (9 planks per side) on Blackwood, including a Blackwood keel^x. The batten seam planking reached above the waterline with two clinker planks (each side) to the sheer line. She was what was originally known as half decked and carried a centerboard. Her lines indicate as do other records that she was designed as a variation to the Tasmanian Whale Boat.



The Tasmanian Whale Boat, an excerpt from “Wooden Hookers of Hobart Town”

The following is an account of the Tasmanian Whale Boat as described in “Wooden Hookers of Hobart Town”^{xii}.

“Whale Boats”

Tasmanian boats were no doubt built from the American mode. Their length was from 28 feet to 32 feet, with a beam up to six feet, but they had not quite so much freeboard, were given more shear and were not fitted with a center board. However, they carried a lug or spritsail and were built of Huon Pine or Blackwood timbers. They were very light and splendid sea boats in the hands of men who were expert in handling small craft. A 28-footer carried six men; five at the oars and one controlling her with a powerful twenty-foot steer oar. They carried three sixteen-foot and two seventeen-foot ash oars.

The oarlocks were leathered or padded. Other equipment was five short paddles, two line tubs containing approximately 300 fathoms of neatly-coiled whale line, four harpoons, four lances, a hatchet, a water breaker, a bag containing biscuits, a lantern, matches, candles, signal lights, balers, a compass, all neatly stowed and in their proper places. Indeed, they had to be, for when a whale was struck and made off or sounded, the line, if fouled, would swamp the boat. In such a situation, the hatchet, which was sheathed handy, was quickly brought to serve its purpose of severing the line. The whale would then be free with the harpoon and a valuable amount of line.”

The yacht “Terra Linna” excerpt from Graeme Broxam’s “Those That Survive”

“Type	Double-ended centreboard cutter yacht.
Built:	Hobart 1880-81 by designer George Luckman.
Tonnage:	8 Thames Measurement (calc by WBGT as 3.2 tons).
Dimensions:	28.0 wl x 9.0 x 3.9 ft.
Owners	H.W. Knight & George Luckman; 1884 H.W. Knight sole owner; 1905 W.G.P. Beddome.

The most popular class of racing yachts in Hobart during the 1880s and early 1890s were those which measured below 28 ft. waterline length. One of the first was the double-ended centre-board cutter *Terra Linna*, which was in most respects identical to the traditional half-decked double-ended 'whaleboat' type fishing boats of the period, but with a rather wider beam and, of course, no wet-well. An important feature was the use of three clinker planks above a carvel-planked lower hull, which amongst other advantages helped the lightly built Huon pine hull to retain its shape, despite the substantial deterioration of the blackwood keel and ribs.

Launched in January 1881, *Terra Linna* was one of the first nine yachts registered with the Derwent Sailing Boat Club, which ultimately became the Royal Yacht Club of Tasmania. She went on to win the 28-foot class race at the Hobart Regatta in 1882, 1884 and 1885.

In February 1884 H.W. Knight became sole owner, and in October the same year it was announced that extra lead was being added to the vessel's keel, presumably to stiffen her during races. By the late 1880s, however, she was superseded by more modern vessels and during the 1889-90 season made only a single unplaced start in club events which attracted 13 vessels in the class. The extra lead was removed and she was then relegated to cruising, and apart from the occasional mention in the yachting columns, more or less disappears from trace for the best part of a century. Fitful efforts in recent years to convert her into an inshore cruising boat by building up her topsides and covering the forward half of her deck were never completed, and she spent the 1980s derelict at Geilston Bay, ashore and full of water by the early 1990s. She has, however since been rescued by Gerrard Williams and is under-going an extensive refit at Battery Point. *Terra Linna* and *Maggie* are the two last known survivors of their class^{xiii}.

Andy Gamlin's account of the hull as found in 2001

The hull, while missing some planks port and starboard, still described her original shape – a double ender and 28 feet long, stem to stern. Slightly hollow waterlines, both fore and aft, between straight stem and stern posts both raked a little to the full length straight keel. A pronounced sheer was still evident, in spite of the raised deck sides running from a lengthened stem for some two thirds of the boat. The top two planks are clinker, while the remaining hull of batten seam carvel construction and of light scantlings. Part of the original aft deck was still in place; all other decking had been removed. Some distortion of the lower planks was evident due to the hull being supported by a chock each side, but these had kept the hull upright on the keel.

The hull had obviously been re-ribbed, more than once, and attempts to prepare the aging hull once again for the sea were evident. A new keel had replaced the original (said to be of Blackwood) and an outer stem replacement had been fitted. All fit out had been removed. The bilge stringers and what appears to be thwart risers were still in place. Evidence was found of a previous engine installation from caked oil and grease in the bilge. No “hard” frames had been included in the hull save a small grown frame towards the stern.

Closer hull observations

Drawing of the plans and inspection of the hull has revealed some interesting information.

1. Thwart risers (port and starboard) have matching knots cut to receive two thwarts that are no longer in the boat. The for'ard thwart would give lateral support to the centreboard case (also gone) while the aftermost thwart may have been used for rowing stations; the height relationship of riser to gunwale is correct and *Terra Linna* would not have carried an engine originally.
2. The chainplate fastening holes found in the raised deck planking are not found in the sheer planks giving rise to the idea that both sheer planks have been replaced. Without a mast step, location of the original mast position is not clearly evident.
3. Many parts of the boat have been replaced over its 120 year life. However, the hull retains a shape considered to be that of when the boat was built; the lines are fair, the keel straight and many planks thought to be original. However, most ribs have been replaced more than once with very few original remaining.
4. Original copper fastenings had roves while it appears that some refastening was carried out by clenching the nails.

5. The keel has been replaced during the last six years, along with a new outer stem and sternpost. The centre board case has been sealed up during this job or during an earlier refit; perhaps when a conversion to inboard engine prior to 1950.
6. The hull lines are more or less symmetrical and strongly reflect the shape of a whale boat; double ended, light scantlings, carvel batten seamed with top two planks of clinker construction. Slightly hollow waterlines both fore and aft may also have been considered an important sea worthy or a speed inducing feature at the time. Scribe marks near the bow and stern were used to identify the waterline and used as a datum for the plan drawings.
7. Calculations from the drawings with regard to centre of lateral resistance and centre of effort (from the various rigs arrangements possible) indicate a “lead” of less than 10% which in turn would indicate that *Terra Linna* may have had considerable weather helm. Questions still not answered centre on the exact mast position, fore and aft hull trim when sailing, centreboard configuration etc could help identify solutions to this problem, and may not be resolved until the *Terra Linna* can be re-launched and sailed once again.

Also:

1. The original rudder was recovered and while broken, provides the ideal pattern for construction details. It had been cut away to make way for the propeller thereby severely weakening its construction and leading to its deterioration.
2. A large number and range of fittings such as wooden blocks, parrel beads, bronze and iron rigging fittings were recovered and will be restored to working order.
3. As is so often the case, the parts quickest to rot or deteriorate have disappeared and the “canvas” sails have obviously not survived. They would have provided valuable information regarding the rig dimensions.

Racing Record

Launched in January 1881, *Terra Linna* was one of the first nine yachts registered with the Derwent Sailing Boat Club, which ultimately became the Royal Yacht Club of Tasmania. She went on to win the 28-foot class race at the Hobart Regatta in 1882, 1884 and 1885^{xiv}.

In 1886 it is mentioned that the yacht *Terra Linna* competed in the Hobart Regatta. Other craft recorded in the event were *Sunbeam*, F. Turner; *Mabel*, George Cheverton; *Fawn*, J. Condon; *Gem*, A.C. Johnston^{xv}. In the same publication the “Luckman’s” were recorded as “commoners”.

An excerpt from “Sailing On”

“In March 1886 the now Royal Yacht Club of Tasmania conducted a race to Port Esperance for 28 footers with a sweepstake prize of 10s. per boat. Entries included F Turner’s *Sunbeam*, Mr Calder’s *Magic*, Mr Knight’s *Terra Linna*, Mr Lewis’s *Milly*, Mr Cheverton’s *Mabel*, and Mr Maddock’s *Myrine*. The race was started in a light westerly breeze. With the assistance of spinnakers and topsails good progress was made to the Grange, where the breeze fell light and hauled off shore. Light baffling breezes persisted until the fleet was off Browns River where the *Magic* had gained a comfortable lead. At the entrance to D’Entrecasteaux Channel a westerly breeze freshened and topsails were lowered. *Magic* still led *Sunbeam*, and *Mabel*. Near Peppermint Bay the breeze came off shore feather white with a roar and sail was again shortened. *Terra Linna*, renowned for her stiffness, went flying ahead at Kinghorn Point; *Magic* well snugged down was in second position. *Sunbeam*, *Myrine*, *Mabel* and *Millie* made for the lee of Shepherds to bail out water. The usual lull under the Long Bay shore enabled those left in the race to hoist their topmasts and be ready to face the Huon River where a good ducking awaited them. Beyond Three Hut Point a very heavy sea was met; with the furious breeze that was blowing it was astonishing that any headway at all was made. It was do or die and through it they went. After working up under the lee of Huon Island the leaders made a fast passage to Blubber Head where the breeze fell much lighter and sailing was smooth and pleasant. The *Terra Linna* dropped her anchor first, 35 minutes ahead of *Magic*. She [*Terra Linna*] had won the hardest and longest race ever sailed by this generation of boats.”^{xvi}

Other yacht’s recorded as 28-footers listed in *A Hundred Years of Yachting* in the same era as the yacht *Terra Linna* were *Myrine* Maddox Bros; *Mabel* George Cheverton; *Magic* Arthur Williams; *Edith* Gregory Bros; and *Millie* K W Lewis.^{xvii}

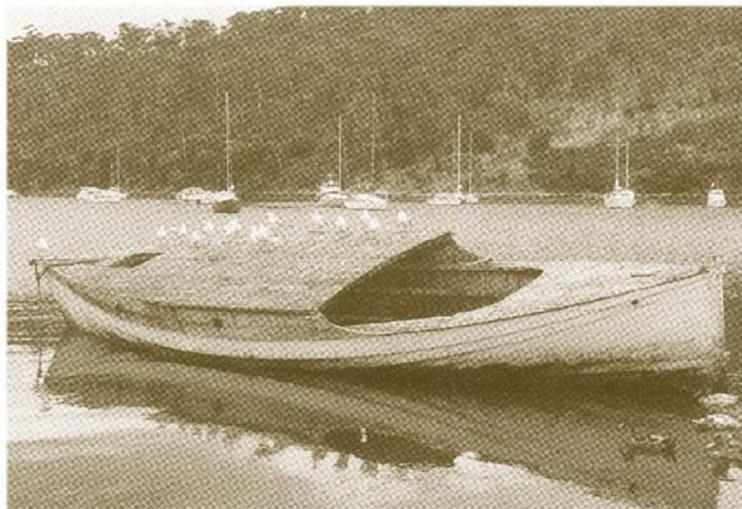
By the late 1880s, however, she was superseded by more modern vessels and during the 1889-90 season made only a single unplaced start in club events which attracted 13 vessels in the class.^{xviii} Little more published material on the yacht *Terra Linna* has been located until the mid to late 1900’s. One such entry was made in the *Mercury* 3/7/91 when a historian, Paul Drinkwater of Gloucester U.K. came to Tasmania in search of information about crew photographed on the *Terra Linna*. His finding of the yacht *Terra Linna* moored at Granton “in a poor state” confirmed for Drinkwater that he was looking for the trading ketch *Terralinna* built by Purdon & Featherstone in 1922.

Subsequent alterations



xix

In February 1884 H.W. Knight became sole owner [this could be the time that George Luckman sold/relinquished his share of the yacht *Terra Linna*], and in October the same year it was announced that extra lead was being added to the vessel's keel, presumably to stiffen her during races. Fitful efforts in recent years to convert her into an inshore cruising boat by building up her topsides and covering the forward half of her deck were never completed, and she spent the 1980s derelict at Geilston Bay, ashore and full of water by the early 1990s.^{xx}



Rig & Sails

The Terra Linna was rigged as a 'Gaff rigged top sail cutter'.

Original fittings such as goose neck, blocks, bow sprit cap and chainplates along with pieces of the original mast and gaff have been found, all of which will greatly assist in the re-rigging of the *Terra Linna*.

There needs to be more investigation into the lengths of the boom, bow sprit and top sail mast so that an accurate rig can be made and fitted.

The standing rig appears to be steel wire the like of which will be used in the restoration.

Running rigging was more than likely hemp or sisal, the availability of which is to be researched so that as near as possible replacement can be used.

Sailmakers of classic sails are to be approached to establish the types of materials and the style of cut of the sails and to source the most appropriate sail cloth for an authentic restoration.

The Wooden Boat Guild of Tasmania's rescue of the yacht "Terra Linna", an excerpt from the 22nd Journal, 2002, of the Guild.

"The "*Terra Linna*" Adventure

When Guild member Andy Gamlin discovered an obviously very old and interesting double ended hull lying in a sadly neglected state on the foreshore on the site of Purdons old slip at Battery Point, he knew he was looking at an important piece of maritime history.

He was right! Enquiry revealed the vessel was the *Terra Linna*, one of the first pleasure boats built in Tasmania and a successful and well known racing yacht for many years. Built as a 28 footer in 1880 for Harry Knight, a founding member of what is now the Royal Yacht Club of Tasmania, she was the ninth yacht on the register of the Derwent Sailing Club which eventually became the RYCT.

Some time in the past *Terra Linna* had undergone an unsympathetic conversion to a motor launch and in recent years experienced misfortune and neglect which saw her on the brink of being lost. And yet she is an historically interesting vessel with many characteristics in common with the early Tasmanian passage boats of the same era such as *Matilda*, currently on display in Constitution Dock, *Olive May* and *Fancy*.

Terra Linna however is smaller and much more lightly built and resembles a Tasmanian whale boat in her lines and construction. A very early photo of her under full sail (see above) provided by the current owner Gerard Willems, is enough to cause 'hard old hands' to draw breath and shake their heads in wonder and admiration.

Here then was an historically significant vessel worthy of restoration and just the sort of project the Guild should be involved in. Discussions resulted in *Terra Linna* being offered to the Guild as a restoration project.

The first priority was to find a home for the new acquisition – the longer she remained exposed to wind, sun and rain the more rapid her demise. And here fate dealt a generous hand. In a large shed at Peter and Helen Lindsay's Brookfields Vineyard at Margate, 30 km south of Hobart, the previously mentioned *Fancy* sits on chocks awaiting restoration some time in the future when the vineyard is fully developed and the Lindsay's have a little more time on their hands.

"Yes, there is room in the shed for another vessel and yes, *Terra Linna* would be most welcome."

So began a great adventure. A meeting of Guild members on site at Battery Point considered how best to move the hull to its new home. It was decided to slide it down a makeshift slip, across the narrow beach into the water and float it several hundred metres to a launching ramp where it could be loaded onto a trailer for road transport.

However there were a few obstacles to overcome before bringing this plan to fruition. Such as how to stabilise the hull to prevent twisting or damage while it was being moved, how to move it to the water, how to keep the water out during its brief cruise to the launching ramp (several below the waterline planks were missing) and how to lift it from the water and onto what.

And here fate smiled on the venture once again. Parked close to the launching ramp was a six wheeled triaxle boat trailer, almost tailor made to tow a 28 foot hull. When tracked down, the owner, David Turner, readily agreed to lend it for the job. A date was set, Saturday 1 December, 2001, with a team of volunteers organised for the previous weekend to stabilise the hull and lash polystyrene flotation in place.



Will she float!!

The day arrived offering spring showers, intermittent sunshine and an offshore breeze creating flat water conditions in the bay. Once again fate was dealing us a good hand. With a good rollup of members to carry out the task, discussion began on how to proceed with the initial move to the water. There seemed to be a number of theories, all well thought out and all presented with the conviction of those who know they are right. This eventually led to two loosely defined schools of thought which tended to gather at either end of the vessel with a few undecided hovering around midships. A ship with many skippers but light on crew!



Heave Ho!!

With various shouted instructions - mostly ignored - much lifting and heaving and the two groups working more or less independently of each other, *Terra Linna* began to move towards the water.



Is anyone working on the other side!!

As she was about to dip her stern in the briny for the first time for many years, our worthy president Ainsley, working with the group at that end of the vessel, remembered the suggestion made by Guild member Eric Bound that we wrap the hull in black builders plastic to keep the water out.



There is a lot of water getting in!!

A roll of plastic was hastily produced, unravelled and fed under the stern and guided along the hull as it moved into the water.

With generous amounts of water flooding in, the hull quickly began to settle until – mysteriously, magically - the water forced the plastic up around the outside of the hull and she was afloat!

Cheers of joy and amazement quickly turned to more shouted instructions as *Terra Linna*'s now buoyant and light hull began to drift out into the bay guided by the previously mentioned offshore breeze.



Well I never thought this day would come so soon!!

Displaying great presence of mind and focussed on action rather than words, Andy Gamlin leapt aboard and caught a hastily flung line.

Other members sprang into Tee Poo Kana, the Guild's piners punt which was standing by, and the tow to the launching ramp was underway. Even with a considerable volume of water inside the hull, *Terra Linna* moved lightly and with some grace, providing just a hint of how she might perform under sail.



Clear the decks!!

The rest of the maneuvering was carried out without incident, the trailer was backed into the water, she was loaded on, pulled out and, after draining, *Terra Linna* was ready for the road journey to Margate. After much self congratulation and the inevitable photo session with the team lined up against the hull, our precious vessel and a convoy of support vehicles took off.



I am getting out of here!!



Well done!!

Terra Linna is now safely settled on chocks in the shed at Margate bow to stern with her big sister Fancy, also about 120 years old. An amazing co-incidence to have two such historically important vessels, of similar design and age, in the same shed awaiting restoration by two un-associated ventures.



That will be a good spot for the survey before we put it in the shed!!

Andy Gamlin has since obtained from the owners the original mast, gooseneck, blocks and fittings which will add authenticity to the restoration. Unfortunately, the original topmast is long gone.

A grant from the Australian Maritime Museum assisted the drawing of lines and other vitally important details which are now recorded for future generations and will be the guide to the restoration. The Guild is applying for a Tasmanian Community Fund grant to enable the restoration to proceed.

It is envisaged that the restored *Terra Linna* becomes a sailing ambassador for Tasmania's maritime skills, heritage and resources. During the restoration the vessel would be transportable on a trailer with the objective of skillful to schools around the state at regular intervals as a working example of wooden boat restoration. Students would be able to participate in some aspects of the work, including research and making models.

Terra Linna has an exceptional place in our maritime history. She should be restored to take her place with other Tasmanian maritime icons such as the May Queen and would be a thrilling sight under full sail in a stiff Hobart sea breeze. Let's make sure it happens!^{xxi}.

Developing the lines

Measuring methods

A total station digital theodolite and a total of four forced centring tribrachs on tripods provided the physical control framework to which all measurements would refer to, surrounded the hull. Each station, or tripod, was either each side or port or starboard, some fifteen metres from the hull. The stations abeam of the hull were used to survey the boat while the other two provided a means to 'close' the traverse, so controlling the precision of measurement.

The Wild T1600 theodolite records each measurement in terms of bearing, altitude (or depression) and distance. The accuracy of each measurement is approximately within 3 mm of any other. This is far higher than can be determined from drafting accuracy. The closure accuracy surrounding the boat was well in excess of 1:100,000, so ensuring an extremely high precision survey.

To permit visual, and therefore measurement access to each complete side the hull the boat was rolled away from the measurement equipment and skillfully positioned. Measurements to special control points along the stem, keel and stern from each measuring station would allow the two separate surfaces (port and starboard) to be brought back together in the computer environment during the later processing computations.

One surveyor operated the T1600 while the other used a paper thickness target pointer. The target was moved from random points along each plank seam and also to specific points describing the hull's important features. More than three hundred separate measurements to each side of the hull were recorded. Three dimensional co-ordinates for each point would allow fair curves to be drawn to accurately represent the hull shape, both port and starboard.

Data processing

The data was processed and the separate data of each side was married to the other. This was achieved through transformation of the common control points along the keel, stem and stern. The software, developed for land management purposes required some manipulation to achieve this very different task, but was skillfully done. At this point it is estimated that each measured point on the hull is within approximately 5mm of its true distance from any other point.

Finally an output in the shape of a plot on to paper, to a 1:16 scale was computer drawn. The drawing plotted each point; each point was repeated in the plan and elevation, and therefore could be identified in both dimensions.

Drawing

The points then became the spatial identifiers of the outside skin of the hull. Interpolation between the points permitted the development of specific new points from which the hull waterlines (plan view) could be drawn at the same scale. The points were also transferred to the elevation drawing where the hull buttock lines could be drawn. Also section detail and shapes at the ten equally spaced points along the waterline could be drawn.

A little fairing of the points on the hull was carried out to ensure that existing hull distortions would not be represented in the drawings. Waterplanes were drawn at 6 inch spacings, buttock lines at 12 inch spacing, while diagonals were drawn as shown in order that the fairness of the hull could be checked. The sections were drawn at identical intervals when dividing the (estimated) waterline (of 26 foot 8 inches) into 10 equal parts. A curve of areas (using each section) was finally plotted and again proved the fair distribution of the lines. In deference to imperial measurements at the time of building which related to the class of boat itself, the plans have been drawn at the convenient scale of $\frac{3}{4}$ inch to a foot, or 1:16.

The raised deck would not be shown in the drawings, but the discovery of the original rudder (in two pieces) would allow that element to be accurately detailed.

Research into the size and shape of the original rig and sails proved to be inconclusive. Only three useful photographs of the rig have so far been discovered and spar lengths difficult to determine. The rig, as shown, is therefore a best estimate solution from these investigations.