



AMATEUR BOAT BUILDERS' ASSOCIATION

August September 2017

LEEUWIN — AND THEN THERE WAS THE RIGGING



Hull Launch and Rollover 1st March, 1986

At the August meeting, members were fortunate to have a presentation by maritime artist, Ross Shardlow. Ross spoke about his memories in designing the masting and rigging for the Leeuwin - a gracious three masted barquentine currently home ported in Fremantle harbour and used as a sail training ship.

It was not until he referred to his role on the Leeuwin Project at rigger Barry Hicks funeral twelve months ago, that Ross felt comfortable about talking publicly about his involvement in this project. It was a task which he admits he was not qualified for or in Ross's words, his presentation to ABBA was about *"how a marine artist got to design a sailing ship."*

However, there was a great deal of support available from the many people involved with the masting and rigging of *Leeuwin*, and in particular, the immediate few that Ross had direct contact with – Barry & Robin Hicks (riggers), Mike McKenzie (foreman, who was called rig-master), and Ray Miller and his brother Ken (spar-maker and ship's carpenter) as well as, Len Randell – Chief Naval Architect in Charge, the man who actually designed the *Leeuwin*.

Ross also had a background which assisted in the task that was to unfold;

"I had been working as a book illustrator with the Education Department for 13-years, and then, in 1980, I quit my Government job and became a full-time freelance artist with an unaccountable passion for painting sailing ships and the sea. I don't know where that passion came from. We did have a beach shack down at Point Peron. I certainly mucked around in boats and felt very comfortable on a sea, but I had no practical experience in sailing or boat building or naval architecture, whatsoever – but I did like painting sailing ships."

Ross had, and still has, a passion for painting sailing ships.



Leeuwin off Cape Leeuwin (1984) – my first attempt “an awful painting”

So it all began in July, 1984, when a chap called Malcolm Hay approached Ross to do an artist's impression of a proposed sail training barquentine for the promotion of a sail training ship project in WA. It had to be done quickly and there was no funding other than what Malcolm provided from his own pocket. The *Leeuwin* project was Malcolm Hay's baby. He had been relentlessly pushing to have a sail training ship for Western Australia for 10-years.

Ross was given a fibreglass model and a basic sail plan drawn up by Len Randall. The result was a “bloody awful painting” – Ross's words. However, this was the conception of the rig for the *Leeuwin*.

The goal was to have a grand sailing ship ready as a spectator ship for the America's Cup by 31st January 1987, with minimal funding. Construction of the hull started in early 1985.

Malcolm Hay approached Ross again. This time he asked Ross to prepare some new artwork to show the *Leeuwin* in more detail, more like an architectural drawing, for a promotional calendar.

Ross's response:

"I said I was happy to do the painting but, after my experiences with the first painting, confessed I really didn't know what the ship actually looked like when it came down to the specific detail of

sail and rigging plans, and as Len Randell was now flat out trying to keep ahead of the hull construction, I had no-one to advise me on the finer detail required for an accurate painting. Malcolm Hay then advised me to go and see the newly assigned project riggers Barry and Robin Hicks, whom I had never met before, and said "they would supply me with everything I need."

My desk diary for 29 August 1985 recorded my first meeting:

I went round to see Barry and Robin Hicks, riggers and sail makers, and introduced myself. We got on exceptionally well.

What an understatement that was – my whole life changed from that point on.



Barry and Robin Hicks at work in the rigging loft

It transpired that Barry and Robin were as much in the dark as I was – without a set of rigging plans they could not make a start on their work. Furthermore, the basic sail plan they had been given looked ALARMINGLY MODERN to Barry's traditional eye.

As we seemed to be in happy agreement about what a barquentine should look like, Barry suggested I go away and "just draw something up that I would LIKE to see." When I came back with a sail and rigging plan typical of the barquentines that plied the Western Australian coast in the 1880s, not the 1980s, Barry's face lit up: "Well that's more like it", he said, "we can do something with that – when can we have the rest of the drawings?"



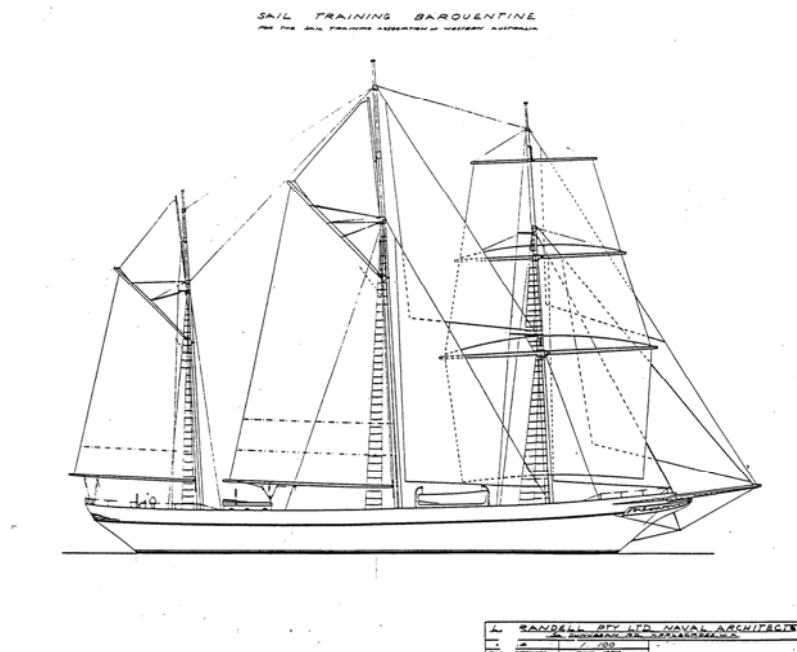
Leeuwin II 'broadside' calendar painting by R. H. Shardlow (1986)

Barry showed the plans to the rigging team foreman Mike McKenzie. Mike, in turn, passed the plans on to Len Randell – and I ran for cover imagining Len would be after me any minute with a marlinspike. Barry and Mike had presented the plans to Len with the recommendation that this was the sail plan they wanted to build for the Leeuwin.”

When these plans were shown to Malcolm Hay and the executive board of the Leeuwin Project, they became the recommendation for the sail plan of the Leeuwin. Whilst Ross continued to assert that he was a Marine Artist and not a Naval Architect, this had little effect. Len Randall ‘approved’ the traditional sail plans presented and accepted Mike McKenzie’s ‘generous offer’ for Ross to supply all the construction drawings for everything above the deck – in the event, a total of 180 drawings covering masts and spars, standing and running rigging, pin and fife rails and all the fittings to go with them.

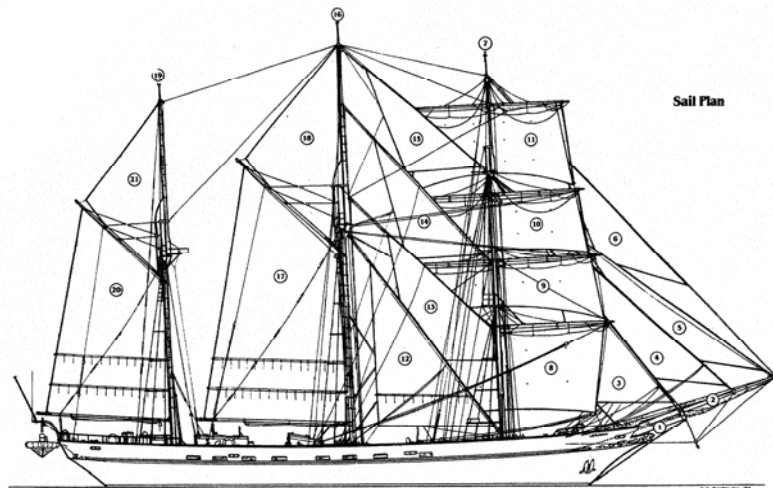
The project was underway, the sail plans had been accepted and Ross’s art studio in Victoria Park was converted to a drafting office. Ross was informed that he would be working for Len Randell, that Len was the Naval Architect in charge and that all his drawings would be scrutinised, calculated and checked by Len, and would remain his property. To assist the process, Barry Hicks presented Ross with a book “*Steels Mastings and Rigging*”. Ross also met spar-maker Ray Miller at this time and so the team was formed – Ross, Mike, Barry & Robin, Ray and his carpenter brother Ken.

The design of the masting and rigging was based on “empirical measure” in the absence of any other design guidance. To quote Ross “*it was all based on the ‘rule of thumb’, ‘belt & braces,’ ‘empirical measure’ – meaning, if a thing broke you simply built the next one stronger - bigger and thicker.*”



Len Randell’s Sail Plan from July 1984

Len Randell had designed what was essentially (in the team’s minds) a three masted ocean going yacht, albeit with gaff-rig and square sails, but an ocean going yacht just the same. Ross admitted to not having Len’s ability and only knew about traditional sail through knowledge gained from research to ensure the accuracy of his maritime paintings.

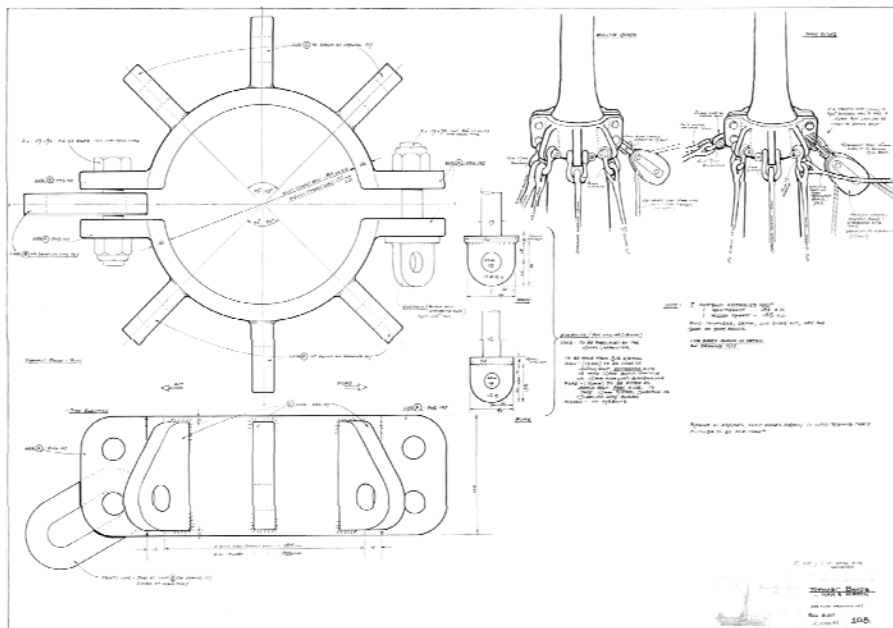


Ross Shardlow's revised sail plan for construction May 1986

Ross drew up a sail plan of a traditional barquentine superimposed over Len Randall's 'beautiful' hull and introduced a greater number of smaller sails (like upper and lower topsails), for easier and safer sail handling. The masts were designed to accommodate easy maintenance and so that the ship could still be sailed if it was partially dis-masted. However, there were some limitations on the design as the mast locations were fixed because the hull had already been designed and the mast steps were already in place. In addition, the spar timbers were already in the kilns so Ross had to work with set lengths and quantities of timber that were to hand.

To maintain authenticity, only traditional materials and skills were to be used. Hence, the construction drawings were based on the use of timber, mild steel, sail cloth, wire and rope and not aluminium, stainless steel or plastic.

Ross did have some experience in drafting through his previous work at the Education Department's Publication Branch. He deployed similar methods on the Leeuwin Project.



Drawing No.108 – Topmast Bands Main and Mizzen

"The drawings were done by the old-fashioned method, by hand, using setsquare, French curves, ruling-pens and spring-bows. Initially the drawings were drafted up as pencil roughs on layout and tracing paper before the final drawing was done on film with a crow-quill mapping pen. They were then sent off for copying on a plan printer. Various scales were required from 1:50 for the ship itself to 1:1 (full size) for the various fittings."

In summary - mast, rigging and sail drawings were roughed out in pencil and then later inked in on film. However Ross had trouble in keeping up with production. Subsequently the manufacturing drawings were provided as pencil sketches for production and inked in at a later stage. The term 'sketch' is an understatement, as even the pencil sketches Ross showed us on the night were of a very high quality. The pressure to get drawings completed was continually in competition with the time to acquire research materials.



Ray Miller's spar loft.

As Ross explains;

"It was chaotic at times and there was little time to gather and study research material. My own library provided most of the reference material and I got some valuable help from other sail training projects including the Spirit of New Zealand, Falie and One & All in South Australia. Empirical measurements came from various sources, Lloyd's (of London), Nord-Deutscher Lloyd and Middendorf's Manual being particularly useful.

When we started the project there were other Australian sail training projects ahead of us, but we caught up fast and it looked like we were going to be the first sail training ship to conform to the new Commonwealth Survey Standards. The trouble was, up to that time, there were no Commonwealth Survey Standard Rule Books (for sailing ships) to work from. As ours was the first ship down the ways, the book would have to be written by us – consequently, my drawings came under special scrutiny. It was very difficult trying to explain to the surveying officers just what empirical measure actually was – they wanted mathematical calculations, not a raised thumb."

One of the requirements of the Leeuwin was that she had to self-right after being blown flat to an angle of 90°. This became a very serious matter in May 1986, just three months before the Leeuwin was launched, when the sad news broke that the American replica *Pride of Baltimore* had capsized and sunk with the loss of her captain and three crew. The subsequent inquiry ruled

the ship was top heavy and could not right herself after being knocked down in a white squall. In the event, Leeuwin surpassed this minimum requirement and is theoretically able to achieve self-righting after going over to 105°.

Throughout this period, Ross had to keep his role on the project quiet due to his lack of formal training and experience. He was therefore known as the “ship’s artist”.

The Leeuwin had two launchings. Since the hull was constructed upside down for ease of fabrication, she was launched upside down on 1st March, 1986. Following the launch, she was rolled over and re-slipped to complete the deck, cabin, masts, spars and rigging. She was finally commissioned in September 1986 - four months before the start of the America’s Cup. Ross was still completing drawings as he watched the Leeuwin sail over the horizon on her sea trials.



Brothers Ken (left) and Ray Miller on the delivery voyage 13 September 1986.



Rigmaster Mike McKenzie standing by the foremast truck prior to the mast being stepped on the ship.

As a testament to Ross’s contribution to the Leeuwin, there have been no changes to the design of the spars after 30 years.

Sadly, most of the original team – Mike McKenzie, Ray Miller and Barry Hicks – are no longer with us but fortunately Robin Hicks is now carrying the baton and has been put in charge of the spar loft - as Ross puts it; “his own spar loft, in which he does wondrous things.” The ‘official’ drawings have also disappeared over time but Ross has been able to duplicate a, albeit incomplete, set of drawings from the rough pencil sketches he retained.

Ross has recently relocated from his Victoria Park studio of long standing to a studio in Albany where he is continuing his work as an outstanding maritime artist.

ABBA thanks Ross for making the trip from Albany to present to members on this extremely interesting aspect of the Leeuwin Project and wishes Ross and his wife Barbara well in their new life in Albany.

ROBIN HICKS — 'THE GREEN WORKSHOP'

It was most opportune that our Toolbox visit on Saturday 2nd September to Robin's workshop followed Ross Shardlow's meeting presentation. It is annual refit time on the Leeuwin and many of the spars were at the workshop for renovation together with some replacements standing by in case of breakages aboard. Ross also happened to be paying a visit to the workshop that afternoon and his comment in a later email to your editor best sums up the wide range of material that was available for members to inspect. To quote Ross; "I have been going to Robin's Shed on a regular basis for over 30 years – and I still haven't seen it all " .

The picture below shows the range of spars in storage or course of maintenance including the forecourse yard weighing in at several tons which was mounted on a trolley in doors.





These two photos show the full expanse of the workshop and the extent of display boards along the walls. The various benches appear to each have a specialist purpose. The long pipe with hooks that hangs in the roof space in the top photo is lowered to floor level for use in making offshore rescue nets for ships. The workshop comprises a mix of active tools and projects as well as a large collection of tools that Robin has collected over his lifetime.





About a third of the width of the workshop was covered by a mezzanine floor that ran the full length of the premises. This provided storage for a range of items including many rope coils and included a sail making space at one end.



There were numerous display panels for Robin's collection, some of which comprised active tools and traditional ships chandlery, others mainly tools of the past preserved for future enjoyment.





Before machines, there was a tool for every conceivable purpose, here with, no doubt, blades of every shape. And planes in timber and steel (hanging on the wall) of every size and for rough as well as fine work.



And if you need an anvil or machine clamp, there is one here of every size and configuration you can imagine.



The broken forecourse yard from Leeuwin was deemed not repairable and was replaced.



The components of a new set of jaws for a replacement gaff for Leeuwin await further work.



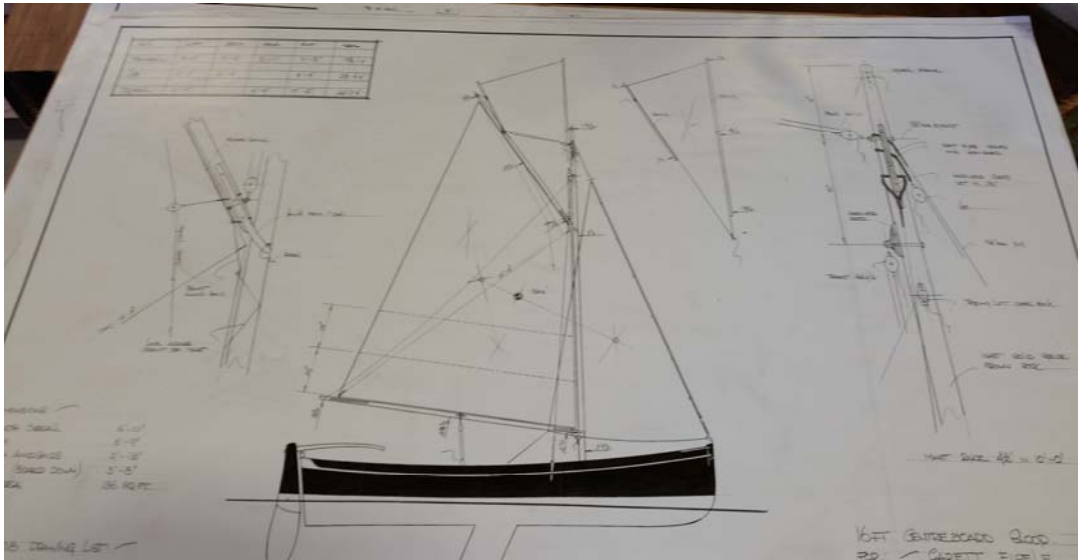
The mobile band saw designed and constructed by Ray Miller specifically to machine the corners and tapers on the large, long spars for the Leeuwin continues to be used for its original purpose.



One of the current projects which Robin briefed us on in detail was the construction of pilot's boarding ladders for ships. Robin explained that although these are constructed to strict Australian shipping standards, they comprise mostly traditional materials — jarrah rungs and manila rope — because these material show their wear and age more clearly than synthetic ropes, plastics and the like. They are then replaced before they fail. The two longer rungs on these pilot's ladders are to stop the ladder rotating if it swings clear of the ships topsides. Similar life boat ladders do not have the longer rungs. The lowest rungs are high density rubber mouldings designed to double as fenders between the pilot boat and the ship.



A rubber 'V' block each side of each rung is held very firmly in place by tight whipping. The photo to the left shows the tool Robin uses to ensure this whipping is much tighter than could be achieved solely by hand.



A significant project in course of construction is this Gartside design 16 foot gaff cutter which is being built by two ladies under Robin's instruction. The objective is to complete her in time for participation in the 2019 Australian Wooden Boat Festival in Hobart. The moulds and the Fijian Mahogany stem are in place in the photo above. The laminated outer stem below awaits fitting after completion of the planking.





There were three very pretty dinghies at Robin's workshop. This is Jack Tar, built by Brian Axel at the Fremantle Boat Works for Syd Corser to get his grand children onto the water. She has Victorian ash ribs and a range of other timbers in her construction including Latvian oak, mahogany and silver ash. She was bequeathed by Syd Corser to the Maritime Heritage Association and is in safe keeping at the 'Green Workshop'.





Further photos of Jack Tar showing the attention to detail that goes into the construction of a traditional clinker dinghy at the hand of professional boat builders who are masters of their art.





More examples of the professional artisan's work. Two examples of the Herreshoff Columbia dinghy which were on show outside the workshop.



Ross Shardlow was certainly correct. Robin had a huge collection of tools as well as a wide range of projects in progress at 'The Green Workshop' - arguably too much to take in during one afternoon. It was a most interesting visit and ABBA thanks Robin for making his premises available for our enjoyment, as well as his briefing on so many aspects of his work. We also appreciated the afternoon tea which Robin so kindly provided.

ADMINISTRATION NOTES

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Event Coordinator	Damien Bourke	9249 9439
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OCTOBER MEETING

Our next tech meeting will be on Wednesday 4th October, as usual in the Heritage Room at South of Perth Yacht Club, 7.30pm for an 8pm start. Our theme for the night is a Show-and-Tell on the 3 W's. **What Went Wrong** with your amateur boat building project.

SEE THE FLYER ON THE NEXT PAGE FOR DETAILS AND START THINKING ABOUT YOUR 3 W's!

NOVEMBER TOOLBOX VISIT

The next Toolbox will be a visit to Carbatec at 1/168 Balcatta Rd, Balcatta. Carbatec are unable to hold an event on Saturday afternoons but have kindly offered to host a visit, talk and look around their shop at an evening event. They are also prepared to offer a discount for items purchased on the night and possibly a door prize. Your Committee is currently finalising details and a date with Carbatec. Please stay tuned for further advice closer to November.



Amateur Boat Builders' Association



OCTOBER TECHNICAL MEETING

Our next tech meeting will be on Wednesday 4th October, as usual in the Heritage Room at South of Perth Yacht Club, 7.30pm for an 8pm start. Our theme for the night is a Show-and-Tell on the 3 W's. **What Went Wrong** with your amateur boat building project.

I'm sure we have all had something go wrong during our time building or maintaining our boats, be it minor or major. We would like you all to come prepared to speak for a maximum of 5 minutes on the topic "What Went Wrong". It can be something small or something on the scale of these pictures. No matter what the disaster, I'm sure we can all learn from each other's experiences. Feel free to bring along examples, props or pictures or just be prepared to speak for a few minutes. The night will be very informal and remember you are among friends. If you have many examples, don't feel that you are limited to just one. I'm sure we will be keen to hear about them all.

If you have photos or videos that you would like to display on the screen during your talk, e-mail them to Bruce Cadee at cadeefamily@bigpond.com or call him on 0419 508 785 and he will make the necessary arrangements.



**Epic Sailing
Images Of
The Week**



ADMINISTRATION NOTES (Cont'd)

ABBA LOGO

Members are reminded that Bruce Cadee has made arrangements with Shaun Luong of Image Embroidery at 26 Tulloch Way, Canning Vale (Phone 9456 2324 Mobile 0403 250 389) for an embroidered ABBA logo. The logo can be applied to your own clothing (assuming it can be accommodated in their equipment) or to shirts, caps or hats purchased through Image Embroidery. Feel free to call in on Shaun to look at the limited range of clothing he has on site or visit the following web sites to choose your preferred style, size and colours. The weblinks below are only examples of the wide range available. Half chest measurements are included on the web sites to help ensure you select the correct size. Ladies styles are also available.

Clothing (excluding Logos)

Style 1300 – Aussie Pacific Mens Murray Polo, Navy/White/Ashe or White/Navy/Ashe - **\$20.00 + GST each**

Weblink: http://www.aussiepacific.com.au/the-murray-polo-navy-white-s?color=Navy%2FWhite%2FAshe&primary_color=Navy&secondary_color=White

Style 1304 – Aussie Pacific Mens Eureka Polo, Navy/White/Ashe or White/Navy/Ashe - **\$21.00 + GST each**

Weblink: http://www.aussiepacific.com.au/mens/polos/eureka-polo-sky-navy-s?color=Sky%2FNavy%2FAshe&primary_color=Sky&secondary_color=Navy

Hats/Caps (excluding Logos)

Style 4199 – Headwear Brushed Heavy Cotton Cap, White/Navy (many other colours available too) - **\$6.50 + GST each** **Weblink:** <http://au.headwear.com.au/productDetails.cfm?&prodID=53&prodCatID=2&pageNumber=1>

(Also refer poly/cotton legionnaires hats Styles 4057 or 4126 for maximum sun protection under website sub heading 'Hats, Visor & Beanies' <http://au.headwear.com.au/productList.cfm?&pCategoryID=7>)

Style 4199 – Headwear Brushed Heavy Cotton Cap, White/Navy (many other colours available too) - **\$6.50 + GST each (includes poly/cotton legionnaires hats for maximum sun protection under website sub heading 'Hats, Visor & Beanies')**

Weblink:

Style 4223 – Brushed Sports Twill Bucket Hat, White/Navy (many other colours available too) - **\$8.00 + GST each**

Weblink: <http://au.headwear.com.au/productList.cfm?&pCategoryID=7&page=2>

To make your annual membership even more value for money, ABBA will pay for up to 2 logos per financial year to be applied to your items of clothing. The current cost to ABBA is \$7.15 per logo. There is no intention for this to be an ABBA uniform so the choice of style and colour is totally yours. If you are seen wearing the logo while building, working on or using your boat or anywhere for that matter it might get people asking questions and wanting to join our association. You are free to deal direct with Image Embroidery but please ensure you get an itemised invoice showing a separate price for the logo and present this to Bruce Cadee for reimbursement. Bruce Cadee is happy to take orders and liaise with Image Embroidery if you so wish.