

Kon-Tiki 2013 Information Pack



Where: Discovery Holiday Park, Lake Bonney, Barmera

When: Thu 25 – 12pm Sun 28 April 2013, Construction starts: 7am Fri 26

Note: This is the last weekend of the school holidays and we expect that most teams will attend their usual Anzac Day activities, then travel to Barmera afterwards ready to make an early start on the Friday morning.

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The Competition

The Origins

Each year, hundreds of Scouts and Girl Guides converge on Sandvlei (a shallow lake), Cape Town in South Africa to take part in the annual Kon-Tiki Adventure. The competition has been organised by the Cape Western Area Sea Scouts since 1978. Accompanying the teams are hundreds of members who come along to enjoy the great atmosphere of the event and to also assist the teams in the raft building.

Their inspiration was the Kon-Tiki raft used by Norwegian explorer and writer Thor Heyerdahl in his 1947 expedition across the Pacific Ocean from South America to the Polynesian islands. See <http://en.wikipedia.org/wiki/Kon-Tiki> or even better, read the book.

The Competition in South Australia

This will be the second time the event has been held in South Australia. It is being organized by the Scouts, Sea Scouts and Venturers as a SA Branch event for Scouts, Venturers and similar aged guides.

The event has been modified somewhat based on feedback from last year, the main change has been to use a 3 day weekend.

What do we do?

The competition is in two parts:

1. Build a giant raft which is capable of staying afloat for a minimum of 24 hours.
2. Board the raft and stay on board for 24 hours while performing a number of "Raft Team Challenges" including a cooking competition

Fringe Activities - there are also activities for the support crew while the rafters are on board

The competition starts on Friday morning from 0700 when the raft construction starts. Raft teams have to build a raft which is capable of staying afloat for a minimum of 24 hours. The raft has to provide covered, waterproof and hygienic accommodation for a team of six Scouts/Guides/Venturers.

There are various guidelines for the raft crew in this Team Information Booklet.

The construction demands a high quality of pioneering, because no nails or screws may be used on the raft. The teams are limited to using pioneering spars and ropes plus flooring.

Who can enter?

The raft team consists of 6 youth members from ages 13.5 to 17.

The event is planned as a more adventurous activity and Scouts will probably only have one chance to go on a raft during their time in Scouts, however everyone is welcome to help build the raft.

Each raft team needs 4 Scouts and 2 Venturers. If you don't have a unit in your group, we suggest you make contact with a neighbouring unit.

If it is not possible to get 2 Venturers (ie if there are very few in your district), you may submit an exemption application to have only 1 Venturer. Remember the Venturers will be just as keen to come and they can't enter without 4 Scouts. This is a good opportunity to meet the District Venturer Units.

Guides of the appropriate ages are also welcome to enter, however they will operate under the Scout Australia rules, especially the safety rules.

Support Crew

The recommended raft base area is 4m by 6m and will take a long time to build with lots of helpers in addition to the rafters. The extra people are called the support crew and also the fringe team.

The support crew should have at least 5 youth. Everyone is welcome to help in the support crew, the motto is "The more, the merrier." This can include younger Scouts, leaders and parents.

What can the support crew do?

- Help find materials for the raft
- Drive equipment and people to/from the site
- Help build the raft
- Set up the camp site
- Cook meals for the raft team and support crew - obviously the raft team needs to cook for themselves once they board and the rafting begins.
- It is ok to provide some meals from a local fast food outlet, however we recommend pre-arranging to ensure they have sufficient food.
- Enter the fringe activities
- Barrack for their team
- Help disassemble the raft after it finishes

Cost?

Group	Cost	Provides
Raft Team	\$210	Event costs for a team of 6, including: <ul style="list-style-type: none">• Camping fees

		<ul style="list-style-type: none"> • Certificate and badge • Raft Team Challenges
Support crew (youth)	\$25	<ul style="list-style-type: none"> • Camping fees • Certificate and badge • Fringe events
Leader & parent	\$20	<ul style="list-style-type: none"> • Camping fees • Badge

How do we enter?

There is a limit of 12 teams and we think the event will be very popular so we recommend you download the expression of interest form and submit it as soon as possible.

You may do this immediately without paying any money, however we will contact you several times to check on your progress with gathering materials and practising.

Download the registration of interest form from:

<http://www.scouts.sa.scouts.com.au/kontiki>

We will provide the entry form to collect names and money for the raft team, and gather an indication of numbers for the support crew in January. We expect the team members will vary until the event is close, so we give you as much time as possible.

Raft Team Member Entry Conditions

There are a few entry conditions for the teams and these are summarised below:

1. All raft team members must be at least 13 years 6 months on the Saturday of the event.
2. Two raft members must be invested Venturers and have their Venturer Skills award.
3. All raft members must be able to swim 50 metres.
4. All scout age raft members must have passed part one of the Pioneer Water Safety Badge or Guide equivalent.
5. We recommend that one or both of the Venturers should have their Level 1 Canoe Charge (not mandatory)
6. We recommend that each team sends a leader or expert to attend the Raft Construction course. This is not mandatory since they can learn the techniques from the web or other sources. The expert will need to train their raft team and support crew.
7. Support crew – there are no entry conditions other than Guide, Scout or Venturer membership or being a member's parent.

Design Requirements:

Raft Frame approx 4m x 6m

Drums for flotation

Decking

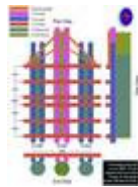
Raft Cabin:

- Sleeping area
- well ventilated kitchen
- Separate private area for a chemical toilet

Mast with sail and flags

Water safety requirements (more info to come)

Safety features (more info to come)



Sample Raft Design

Raft Frame

See the sample design above for an idea of how your frame might look, however other teams did a different design. This design used 14 barrels and other teams have used up to 20.

There is another sample design, which was laid out with 24 barrels, see the sample video.

Permitted materials:

- Pioneering poles
- Manila ropes – see the notes about rope for tying the various components

WARNING: It is very difficult to tighten lashings enough on square timber, we strongly recommend you use round poles.

See the Water safety requirements too.

Drums

A 200-litre drum will float approx 100kg at 50% depth. An average Scout with kit weights about 100kg. How much will your structure weigh?

Ensure that you have sealed all the caps on your drums and that your drums are watertight.

The Environmental Protection Authority (EPA) have requested that judges inspect drums prior to building them into the rafts so we don't accidentally spill oil or pesticide into the lake.

They recommend teams purchase unused drums or use a commercial company to clean second-hand drums.

A petrol drum is ok once the petrol has evaporated off, and many farmers have been trained in how to clean their pesticide drums but don't attempt it yourself.

A diesel or oil drum should be cleaned by a professional because the waste water from washing must not be released into the storm water or sewage systems.

You can find commercial cleaning companies in the Yellow Pages under "Oil & Chemical Spill Recovery or Dispersal"

You can buy clean drums from:

Paramount Browns
99. Cavan Road
CAVAN SA 5094
Tel: 08 8260 6333

The plastic 200 litre drums were on special for \$19 when we checked (normally \$32). There were also steel drums on special for \$15 but the top only clipped on, so you might want to weld them shut. The plastic drums have a screw on lid and would be useful to transport other gear, eg ropes and tools.

The sample design requires 14 drums, so we recommend fundraising or sponsorship.

In 2012, the event crew were able to obtain drums for several teams. Please [contact us](#) if you need drums.

We were also asked about using 1000 litre bulk storage containers. Sorry, we won't accept them.

Decking

Decking can be planks or wider materials but you will need to lash them together. It is ok to drill holes at the edge of wide boards so you can lace them to the raft frame. It is recommended to lace them with a blanket stitch and a lever to tighten it.

Raft Cabin

You must have a dry windproof/waterproof shelter with the following separate sections:

- Sleeping area
- well ventilated kitchen
- Separate private area for a chemical toilet

Kon-Tiki is a test of pioneering skills. The framework of the hut must be lashed together and then lashed to the raft frame. The points for hut construction will be primarily for the pioneering effort that goes into the hut construction and securing.

The walls and roof of the cabin must ALL be rigid – no canvas, plastic or other material will be accepted. It is ok to use thin plywood, eg 3ply.

The cabin must be adequately ventilated - even if it is cold.

The entrance to the cabin must be clearly defined.

Sleeping area

The sleeping accommodation sufficient for the crew. The shelter must be able to protect the whole crew if it rains.

For mixed gender teams, there must be a clear separate sleeping/changing facility for boys and girls. This can be achieved by making use of thick curtaining that can be moved aside to open the floor area when necessary.

Well Ventilated Kitchen

The kitchen needs to be ventilated so you don't get a build up of carbon monoxide from the cooking stoves.

Plan to use 3 gas burners.

Open flames are not permitted, ie no Trangias.

Most teams have a raised bench for preparation and cooking with storage space for boxes and esky underneath.

Toilet

The toilet room must offer total privacy to anyone using it and it should have a door that can be secured.

Chemical toilet with a lid

Team Identification

Two 1m x 1m Raft numbers – Black number on a white background (displayed port and starboard on the cabin walls)

Cabin & Raft Theme Design

The theme design of the raft is related to the annual theme of the competition. Teams use their imagination and come up with the most amazing ideas, such as an aircraft fuselage or a cowboy chuck wagon. Teams who take the time to make sure their raft blends in with the event theme are rewarded by the 'theme' judging which takes place after the rafts have launched.

It is recommended teams make the raft design and the team costume fit the theme.

This year the theme is "Pirates of Lake Bonney".

Mast with sail and flags

You need a mast at least 1 metre above the cabin with:

- Sail painted with the Kon-Tiki mask. You will probably need to release the sail in case of wind.
- flags – in order from the top: Australian flag, Group flag and team flag
- bright white navigation light that can be seen from 360 degrees throughout the night. A solar garden light is not bright enough and won't last long enough. This light is important for the safety boats to find the rafts at night.

Water safety requirements

Boat mooring

See Kon-Tiki Raft Layout Requirements.pdf

- The port side of the raft must be clear of protruding poles so a safety boat can approach safely.
- a Samson post to tie a towing line (we will provide training in how to use it). See Samson Post for Towing.pdf
- a push point with a tyre so a boat can push the raft back to shore
- uncoiled anchor ropes

Tender

- Each raft needs a 2 person canoe or small rowboat as a tender.
- It will be used to transport the meal to shore for judging, for any emergencies and for a tender race.
- The event team will provide canoes for the first 10 teams.

Safety Equipment

- 2 Anchors (10kg Danforth type) - see Anchor Diagram and Details.pdf for information on the anchors and tow rope. Some of the information about obtaining an anchor is South African specific, so ignore that. Please contact the [event crew](#) if you need help constructing them.
- tow rope
- navigation lights – red light on the port side, green light on the starboard and a bright 360 degrees white light at least 1m above the cabin. All lights must stay bright throughout the night, so the safety boats can find the raft easily.
- 6 punting poles each 4m long
 - a. We recommend bamboo which is light and strong.
 - b. You might need to tie 3 thin poles, each of 15 - 20mm diameter, together for rigidity.
 - c. Gardening or riggers gloves will help to avoid splinters.
- Fire extinguisher
- See **Construction Step Judging** for a checklist quality checks required during construction and a list of items required before teams may board the raft.

What is NOT allowed

1. Tents as cabins or tarpaulin as they are fire hazards
2. Ready made boats to form base
3. Welded framework/drums
4. Boat engines
5. Inflated tubes or containers

6. Nails, bolts, screws, staples or metal pins
7. Metal sheets
8. Plastic/Metal strapping wire or cable ties
9. Thin or weak ropes such as Sash Cord, Sisal or string for lashing raft frame and drums
10. ANY pre-constructed items (except paddle wheels): Where pre-constructed or disallowed items are brought for construction, the judges note these items and the team will only be notified if it is a safety hazard. This will attract penalty points without it being necessary for a judge to enter into a discussion with the team.

What is NOT allowed on the raft

1. Any open flames – including fires of any sort or candles (no Trangias!)
2. Paraffin stoves or lamps
3. Gas lanterns

Activities

Once the rafts launch (the target is 10am) there will be a range of activities for the raft teams and the support crews.

Raft Activities

Raft teams will compete in a variety of activities

Raft Team Challenges

Raft Team Challenges form an integral part of the raft competition. Teams have to carry out various activities on board to test their skills. These are normally in the form of testing pioneering and creative skills and the results are judged on the Sunday morning. This aspect of the competition counts towards the overall points for the raft competition and also earns a separate floating trophy for the winning team.

Hint: These challenges are a good way to keep the night watch awake overnight.

Raft Master Chef Competition

Teams aboard the rafts have to enter their meals in the raft cooking competition. They will be provided a list of ingredients in advance and will be given a recipe at the event. The meals will need to be ready at a specified time and a serving has to be presented for meal judging. This aspect of the competition also earns a unique floating trophy as well as the points counting towards the overall raft competition.

Tender Race

The tender race will be a relay race with pairs of raft team members paddling their canoe and changing crews.

Fringe Activities

The Fringe Events are to provide activities for the support crews but are not part of the main competition. In Cape Town, the Fringe is so popular that they need to stop teams from entering it without being attached to a raft team.

There will be a variety of activities. Some of the favourites were fishing, carp chucking and the quadrathlon.

Fishing and Carp Chucking

It is recommended that the support teams bring fishing rods, since we will hold a carp chucking competition again. Carp will need to be at least 40cm long to throw.

Every carp caught will earn their fringe team a point. European carp are noxious fish and **must not be returned to the water**.

Quadrathlon

This is a relay race between teams consisting of the following legs:

1. Run (200m)
2. Kayak & change paddler
3. Kayak
4. Swim to shore

Kon-Tiki Construction:

1. Construction Materials
 - Types of Ropes Required
 - Methods to Tie Components
2. Construction Techniques
 - Tightening Lashings with a Lever
 - Rope Ends & Finishing
 - Decking
 - Construction Course
3. Obtaining materials & sponsorship
4. Construction Step Judging
5. Seaworthiness Certificates

Construction Materials

The main materials required are:

Item	Note
Pioneering Poles	You need longer lengths than usual, eg 4m for the width and 6m or 7m for the length
Ropes	10 mm manila for the frame and barrels. Telstra rope is ok for the cabin and deck.
Drums	200 litre (aka 44 gallon) drums are recommended They must be clean and firmly sealed. Silicone is recommended to avoid leaks.
Deck	Most teams used 15mm thick plywood sheets which are 1200mm wide.
Cabin Walls & roof	Most teams used 3-ply sheets for the cabin walls and roof.

The event crew will provide each team with a 2 way radio and can supply up to 10 canadian canoes for use as a raft tenders.

The event crew can assist with obtaining drums and 10 kg danforth anchors, but please let us know early.

Types of Ropes Required

The types of ropes required for the various tasks are:

Task	Type	Note
Raft frame	Manila, 10mm	Need structural strength, non-stretch rope which swells when wet.
Fixing barrels to frame	Manila, 10mm	Need structural strength, non-stretch rope which swells when wet.
Tying deck to frame	Any, eg Telstra	Telstra, sisal or 8mm manila are ok for this
Tying cabin walls	Any, eg Telstra	Telstra, sisal or 8mm manila are ok for this

Methods to Tie Components

The recommended methods to tie the components are:

Component	Method
Frame lashing	Square lashing using levers to tighten frequently, especially for the frapping turns. It helps to stand barrels under the corners of the main lengths, so you can work at waist height.
Barrels to frame	A truckies' hitch uses a 2:1 ratio and gets the barrels very tight. It helps to use a small block of wood to keep the barrel off the rope around the frame. This allows the rope to slide around easily when tightening.
Decking to frame	Use a blanket stitch to tie the deck to the frame. This allows you to tighten the rope better than a simple stitch. It helps to have one person underneath to pass the rope back up.
Cabin walls	Use a blanket stitch to tie the walls and ceiling together.
Fixing cabin to deck	Use a blanket stitch. One team tied timber to the deck to form a frame and then fixed the cabin to it. They still tied it to the deck but it was easy to get the position right.

Construction Techniques

Tightening Lashings with a Lever

As noted earlier, you need to use ropes and lashings to tie the raft together like they used for the Kon-Tiki Expedition across the Pacific. You are not permitted to use nails, screws or staples since they were not invented during the period the expedition was emulating (approx 500AD). We will allow drums for flotation since we don't have a supply of balsa trunks.

Your lashings for the base and drums need to be strong enough to last a full day on the water without coming loose. Nylon ropes tend to loosen over time, especially as the raft flexes on the water when the team moves about. Manilla ropes expand slightly when they get wet and this makes the lashings stronger.

You can buy manilla rope from:

Schillings in Wingfield, tel: 8244 7611, who are Scout friendly. Peter is the contact. It must be three strand rope for the base. We recommend 12mm manilla rope but recognise that 10mm manilla is much cheaper and you use it at your risk. Sisal rope is also cheaper than manilla but much weaker, you use it at your risk – it is most likely to break when tightening with a lever.

It is best to use a frapping hammer as a lever to tighten the rope many times while you tie the lashing. There is information about this process at <http://ropesandpoles.blogspot.com/2007/02/tightening-lashings-using-frapping.html> Once you have used the lever to tighten after a turn, use a hand to hold that part tight while you complete and tighten the next turn.

Rope Ends & Finishing

The rope ends must be neat and you can't use the burning method with manilla ropes, so this is a good time to practice whipping or back splicing the rope ends.

Please make sure the scouts whip lots of ropes but you don't need to whip them all. You can finish many ropes by putting tape around the end. This has the advantage that there are lots of whippings left for scouts the following years. The tape method is quicker but may not last as well, so you can use this as a justification for doing more whipping the next year.

You need to avoid long lengths of rope dangling at the end of a lashing by finishing the lashings with a suitable knot.

Whipping the rope ends	see http://www.youtube.com/watch?v=YMq9KdOtSJ0
Backsplice the rope ends	see http://www.youtube.com/watch?v=kc1_rdlq4U

Tying a Drum to the Frame

The best method to tie a drum to the frame securely is to use a truckie's hitch, eg <http://www.animatedknots.com/truckers/index.php>

One technique is illustrated in the Cape Town photo below. Notice they have used small blocks to hold the drum away from the pole, so the rope can slide around easily to tighten it.



Decking

Decking can be planks or wider materials but you will need to lash them together. It is ok to drill holes at the edge of wide boards so you can lace them to the raft frame. It is recommended to lace them with a blanket stitch and a lever to tighten it.



Construction Course

These techniques will be demonstrated at a training session nearer the time. Please nominate a team expert or leader who will attend this session or learn the

standard required from the web resources and then teach the raft team and support crew.

Obtaining materials & sponsorship

Teams need to obtain lots of materials for this event and these would be expensive if you bought them all new.

We strongly suggest you ask around your groups for contacts who can donate items, such as clean second-hand drums, wall, roof and deck materials. You can approach local hardware shops for sponsorship to obtain materials at reduced prices.

ForestrySA prunes the young pine trees each year and you can work with them to obtain 4m to 7m pioneering poles.

Sponsors always want publicity for their donations and we suggest you offer them:

1. a colourful certificate of thanks that they can display in their shop, preferably with a picture of your raft
2. endorsement in your newsletter and a mention in any article you provide to the local paper
3. a sign with their name or logo on the raft (maximum size of 500mm square so it stays smaller than the team ID number).
4. For publicity, they may have a photo of your raft with a larger advertising sign, but it must be removed after the photo.

Construction Step Judging

Each team will have a 'Construction Step Card'. Please ask at the HQ for an inspection when you reach the end of a step. Once the judges are satisfied that the structure is seaworthy, your card will be signed and your team can continue the next step.

The steps are:

Step	Title	Criteria
1	Frame - basic raft frame before drums are added	a) Suitable spars (-1 per unsuitable) b) Lashings correct and tight c) Manila rope in good condition d) Rope ends finished (-1 per unfinished end) e) Base sturdy f) Samson post built securely g) Team number on display on building site
2	Drums - once drums have been attached to the frame	a) Quantity suitable for frame (-1 too few) b) Suitably positioned (-1 per overly large gap) c) Rope end finished (-1 per unfinished end) d) Lashing ended off neatly (-1 for each not neat) e) Drums securely lashed (-1 per drum not

		secure) f) Manila rope in good condition
3	Deck - once all decking has been secured	a) Suitable material for all decking pieces b) Appropriate method of attachment c) Decking secure d) Decking stable and rigid e) Decking pieces fitted neatly f) Deck size appropriate to frame g) Port side clear for a boat to moor h) Push point at the back using a tyre
4	Hut - basic weatherproofed structure	a) Sturdy frame of suitable material b) Frame secured to raft base c) Suitable weatherproofing d) Frame pioneered e) Sturdy walls secured to frame f) Sturdy roof secured to frame g) Separate rooms for kitchen and toilet
5	Final boarding checks	Mast & sail (painted with the mask), flags Gas cooking stove & at least 4 litres water each Separate sleeping area for boys and girls 6 punting poles Chemical toilet, separate and private with a door 2 signs (1m, black on white) Safety equipment PFDs, whistles etc Navigation lights – mast (360), port, starboard Fire extinguisher Two 10kg Danforth anchors, with uncoiled ropes

Seaworthiness Certificates

Once the final step has been judged, your raft will be issued with a Seaworthiness Certificate. Your raft could earn one of three certificates:

Class	Title	Conditions
A	Open water certificate	This enables you to moor your raft anywhere within the designated area, subject to further instructions from the Water Safety Officer
B	Secured anchorage certificate	This restricts your raft to being tied to the hawser.
C	Moored certificate	This restricts your raft to being tied to the bank.

The class of certificate you receive is entirely up to you and will depend on the construction, safety and seaworthiness of your raft.

In the event of strong wind, ALL rafts will be tied to the hawsers or bank for their own protection.

Depending on the weather, the Water Safety Crew may make the decision that the fleet or any individual raft moor to the hawser or bank during the hours of darkness or at any other time deemed necessary.