AUSTRALIAN ARMY

LAND WARFARE PROCEDURES - GENERAL

LWP-G 7-6-5

ADVENTUROUS TRAINING – SEA KAYAKING

This publication supersedes Land Warfare Procedures - General 7-6-5, Adventurous Training – Sea Kayaking, 2011.

SAFETY PUBLICATION

This is a safety publication. These orders and procedures deal with actions designed to preserve human life. They are mandatory, require strict adherence and deviation is not permitted. Orders are clearly phrased as orders (for example, 'must' 'is to' or 'are to'). Failure to comply with orders by ADF members, or lawful and reasonable directions by APS employees may result in administrative or disciplinary action, or APS Code of Conduct action respectively. Defence employees generally remain at all times subject to Work Health and Safety legislation and other safety legislation (except at certain times on warlike operations overseas), breaches of which may result in personal liability or civilian charges.

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AMENDMENT CERTIFICATE

Land Doctrine, Army Knowledge Centre is responsible for the management of this publication. The sponsor of this publication is Commandant Army Recruit Training Centre. The doctrine contained herein was approved on 24 May 2019.

1. Proposals for amendments or additions to the text of this publication should be made through normal channels to the sponsor. To facilitate this go to the Doctrine Online intranet website and select the ‘Feedback’ icon. Alternatively, there are amendment proposal forms at the back of hard copy versions of this publication.

2. It is certified that the amendments promulgated in the undermentioned amendment lists have been made in this publication.

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3. Changes have been made to this publication and a familiarisation with all of the content is highly recommended. Significant changes from the most recent rewrite are listed in the following table.

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<tr>
<td><strong>Chapter 1</strong></td>
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<td>Chapter 1 has improved clarity of the differences in activity levels (novice, intermediate and advanced) improving the understanding of relevant conditions, experience and equipment. These changes fundamentally require all unit adventurous training leaders and activity planners to clearly analyse their planned activity area, loan pools and participants to ensure appropriate planning and conduct. All equipment duplication and errors with disparate lists contained in the prior publication have been removed and consolidated into a single equipment list for ease of interpretation and reading.</td>
</tr>
<tr>
<td><strong>Chapter 2</strong></td>
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<tr>
<td>Chapter 2 has updated many of the images to show the current pool equipment and other contemporary equipment available and in common use in Australia.</td>
</tr>
<tr>
<td><strong>Chapter 3</strong></td>
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<td>Chapter 3 has updated some of the maintenance requirements particularly for electronic equipment and highlighted that some items such as personal locator beacons must only be tested to their original equipment manufacturer schedule or else they may not work properly when required or may provide false test results.</td>
</tr>
<tr>
<td><strong>Chapter 4</strong></td>
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<tr>
<td>Chapter 4 has updated images for knots required for sea kayaking and gives a more detailed breakdown for the reasons why items are carried in particular locations, in particular the carriage of the getaway bag as you escalate through more dangerous sea conditions.</td>
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</table>
### Summary of Significant Changes

<table>
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<tr>
<th>Chapter 5</th>
<th>Chapter 5 has had the surf paragraphs removed and consolidated into a new surf chapter.</th>
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<tr>
<td>Chapter 6</td>
<td>Chapter 6 has provided more detail including the reasoning behind particular drills and has provided clarity to minimise the risk of injury during conduct of wet exit and various paddle strokes.</td>
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<tr>
<td>Chapter 7</td>
<td>Chapter 7 has included a number of rescues that were previously practiced but not documented as well as highlighting when they are appropriate to use and risks associated with the various rescues. All of these rescues must be practiced by current unit adventurous training leaders prior to their next recertification.</td>
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<tr>
<td>Chapter 8</td>
<td>Chapter 8 has provided more clarity on tidal effects on crossing coastal bars and risks arising from offshore winds. Additionally definitions have been aligned to the Bureau of Meteorology for types of waves and other definitions that are required to be able to interpret the various activity level limits and forecasts generally. It has also made it explicitly clear that use of technology such as mobile phone applications for forecasts may be used.</td>
</tr>
<tr>
<td>Chapter 9</td>
<td>Chapter 9 has limited revision.</td>
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<tr>
<td>Chapter 10</td>
<td>Chapter 10 has included the cyalume signals for emergency night beach landing.</td>
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Chapter 11
Chapter 11 has updated the medical equipment lists to make the basic kits’ components realistic and practical for use on water and available through the system as well as defining the requirements of larger group kits and waterproofing. Most importantly this chapter has also updated the float plan format to allow easier management of equipment and clarify safety officer ashore responsibility for search and rescue activation.

Chapter 12
Chapter 12 is a new chapter detailing emergency management processes and considerations for rescue to be taken into account during planning or conduct. Of particular note are formalisation of the escalation sequences.

Chapter 13
Chapter 13 is a new chapter formalising paddling procedures and considerations for assessment and conduct of paddling in rocky environments.

Chapter 14
Chapter 14 is a new chapter formalising paddling procedures and considerations for assessment and conduct of paddling in surf environments.

4. All superseded Amendment Certificates should be retained at the rear of the publication for audit purposes.
SAFETY INFORMATION

This is a safety publication. Non-adherence to the instructions/drills in this publication could have serious consequences. If a safety issue arises from the use of this publication, it is to be brought to the immediate attention of a supervisor.
This publication supersedes Land Warfare Procedures - General 7-6-5, Adventurous Training – Sea Kayaking, 2011.

Aim
1. The aim of this publication is to outline the technical information and skills required in order to conduct sea kayaking adventurous training activities.

Level
2. This is a procedural-level publication for use by all corps unit adventurous training leaders who are sea kayaking qualified.

Scope
3. This publication describes the fundamentals of sea kayaking, sea kayak equipment, maintenance, storage and handling, launching and landing, strokes and techniques, rescues and recovery, sea conditions, nautical navigation, communications and planning.

Associated Publications
4. This publication should be read in conjunction with other publications and documents, in particular:
   a. Army Standing Instruction - Military Risk Management
   b. Army Standing Instruction (Personnel)
   c. Army Standing Instruction (Personnel), Part 8 – Medical
   d. British Admiralty 5011, Symbols and Abbreviations Used on Admiralty Charts, Edition 7, 2018
   e. Defence Explosive Ordnance Publication 800.030.F1.10, Topic – 010, Descriptive Data, Signal Distress Day Night No 1 Mk 5
Contents

f. Defence Road Transport Manual
g. Defence Safety Manual
h. Defence Security Principles Framework
i. Land Warfare Doctrine 7-6, Adventurous Training
j. Land Warfare Procedures - General 1-2-5, Army First Aid
k. Land Warfare Procedures - General 4-3-4, Small Craft Operator’s Handbook
l. Land Warfare Procedures - General 6-4-1, Radio Wave Propagation and Antenna Theory
m. Land Warfare Procedures - General 7-6-1, Experiential Learning and Adventurous Training
n. Land Warfare Procedures - General 7-7-6, Environmental Survival.

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6. Images and multimedia in this publication are Commonwealth copyright or otherwise authorised by the owners for doctrine purposes. Online versions may contain multimedia which can be accessed from Doctrine Online.

Gender

7. This publication has been prepared with gender-neutral language.

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**beachmaster**
In sea kayaking, the person responsible for the conduct of beach landing and shore exit.

**raft up position**
In sea kayaking, the position where paddlers gather after launching their kayaks.
ABBREVIATIONS

1. The principal source for Australian Defence Force abbreviations is the Australian Defence Glossary located at http://adg.eas.defence.mil.au/adgms. Abbreviations contained within this publication are in accordance with the business rules, guidelines and conventions for the Australian Defence Glossary at the time of its release. The following abbreviations are used throughout this publication; however, commonly used terms have been presented in their abbreviated format throughout the publication and have not been included in this list.

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<tr>
<td>AFA</td>
<td>Army first aider</td>
</tr>
<tr>
<td>AMSA</td>
<td>Australian Maritime Safety Authority</td>
</tr>
<tr>
<td>ARC</td>
<td>Australian Resuscitation Council</td>
</tr>
<tr>
<td>AT</td>
<td>adventurous training</td>
</tr>
<tr>
<td>BM</td>
<td>beachmaster</td>
</tr>
<tr>
<td>BOM</td>
<td>Bureau of Meteorology</td>
</tr>
<tr>
<td>DR</td>
<td>deduced reckoning</td>
</tr>
<tr>
<td>EPIRB</td>
<td>emergency position indicating radio beacon</td>
</tr>
<tr>
<td>GL</td>
<td>group leader</td>
</tr>
<tr>
<td>GM</td>
<td>group medic</td>
</tr>
<tr>
<td>HW</td>
<td>high water</td>
</tr>
<tr>
<td>OCA</td>
<td>officer conducting activity</td>
</tr>
<tr>
<td>OOS</td>
<td>occupational overuse syndrome</td>
</tr>
<tr>
<td>PIT</td>
<td>pressure immobilisation technique</td>
</tr>
<tr>
<td>PFD</td>
<td>personal flotation device</td>
</tr>
<tr>
<td>PLB</td>
<td>personal locator beacon</td>
</tr>
<tr>
<td>SOA</td>
<td>safety officer ashore</td>
</tr>
<tr>
<td>UATL</td>
<td>unit adventurous training leader</td>
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</table>

2. The following abbreviations appear in tables and figures within the publication.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>APS</td>
<td>Australian Public Service</td>
</tr>
<tr>
<td>ATLI</td>
<td>Adventurous Training Leader Instructor</td>
</tr>
<tr>
<td>ATW</td>
<td>Adventurous Training Wing</td>
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3. The following are common shortened forms or symbols for names of measurements used throughout this publication.

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<th>Abbreviation</th>
<th>Definition</th>
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<td>HT</td>
<td>high tide</td>
<td></td>
</tr>
<tr>
<td>pp</td>
<td>per person</td>
<td></td>
</tr>
<tr>
<td>RA</td>
<td>risk assessment</td>
<td></td>
</tr>
<tr>
<td>RV</td>
<td>rendezvous</td>
<td></td>
</tr>
<tr>
<td>SAR</td>
<td>search and rescue</td>
<td></td>
</tr>
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CHAPTER 1

THE FUNDAMENTALS OF SEA KAYAKING

1.1 Adventurous training (AT) is a tool designed to assist commanders to prepare their soldiers for battle by exposing them to perceived and real risks. AT places participants in situations where there are risks and consequences, which facilitates the transfer of the adventure-based learning experience into the workplace.

1.2 This publication contains technical information for the conduct of sea kayaking AT activities in the Defence Force and must be read in conjunction with the associated publications. *LWD 7-6, Adventurous Training* is the foundation upon which all Army adventurous training is based.

1.3 This chapter details specific safety instructions for the conduct of AT sea kayaking activities.

Description

1.4 Sea kayaking is an AT activity in which kayaks are used to navigate coastlines, confront surf and rocks, cross bodies of water and access remote areas by sea. This activity can be conducted in a variety of sea environments including protected, enclosed or open waters. Sea kayaking activities can be conducted either independently of other AT disciplines or be combined with them to form an advanced AT activity. Sea kayaking activities range from single-day introductory level activities to multi-day expeditions. Regardless of the duration of the activity, detailed planning and preparation are essential to its success. Sea kayaking is most effective when undertaken as a three to five day expedition activity.

1.5 Sea kayaking is a demanding AT activity that has the potential to develop resilience, leadership, self-reliance, confidence, and determination in participants.
The conduct of a sea kayaking activity requires the employment of personnel in key appointments. This section highlights these key appointments and a description of their duties.

For AT sea kayaking activities people must be appointed in the following positions:

a. officer conducting activity (OCA)
b. group leader (GL)
c. safety officer ashore (SOA).

Officer Conducting Activity (Officer-in-Charge). The OCA is responsible to the Approving Authority for developing and managing the exercise environment to ensure that the exercise objectives are achieved in a realistic, safe, environmentally responsible and cost effective manner. The OCA is the officer responsible for the overall conduct of the exercise. The OCA will issue detailed exercise instructions, supplementary to those issued by the mounting HQ, providing operational- and/or tactical-level guidance for the conduct of an exercise. The OCA is assisted by unit adventurous training leaders (UATLs), and other appointed supervisory personnel for the planning, conduct and review of the AT activity.

Group Leader. The GL is a UATL or an authorised person who is placed in command of a group.

One GL is permitted to supervise up to five sea kayaks. The GL is to be a sea kayaking UATL or equivalent, and is responsible for the overall safety of their group. The responsibilities of GLs are as follows:

a. obtaining weather reports and monitoring weather conditions
b. navigation
c. ensuring that the safety precautions outlined in this chapter are adhered to
1-3

d. establishment and maintenance of communication with the SOA (when required)

e. inspection of all group and individual equipment for suitability

f. determining sea and surf conditions

g. coordinating responses to emergencies and advising the SOA whether assistance is required.

1.11 Safety Officer Ashore. One SOA is to be appointed for all novice and advanced sea kayaking activities. The SOA is to act as a single point of contact on land and is responsible for the following:

a. the maintenance of communication with GLs by means such as SPOT tracker, mobile, radio or rendezvous contacts

b. monitoring and plotting the route and location of each group

c. obtaining up-to-date meteorological information and passing it on to the GL

d. liaising with relevant military and civilian medical organisations and/or search and rescue authorities

e. in the event of an emergency, rendering appropriate assistance and alerting medical organisations and/or search and rescue authorities as necessary

f. coordinating assistance to the group if required.

1.12 Second-in-Command. The 2IC is nominated by the GL to be the person next in charge after the GL, and is to assist them in their duties as GL. The 2IC is not required to be qualified.

1.13 Group Medic. The group medic (GM) is a paddler in the group who is Army First Aid qualified and capable of administering first aid to a patient until assistance arrives. Once appointed, the GM is responsible for the carriage of the group first aid kit, application of first aid, and the care of patients, when required.
1.14 **Sentry.** A sentry is a member of the group tasked by the GL to give early warning to the group in the event of hazardous conditions. A sentry may be required when in the vicinity of rocks and surf zones.

1.15 **Assistant Swimmer.** An assistant swimmer is a member of the group who is nominated by the GL to assist others within the group to launch or land their kayaks from the shore. Assistant swimmers need to be strong swimmers in order to perform their tasks.

1.16 **Beachmaster.** A beachmaster (BM) is either the GL, or a paddler nominated by the GL, in command of the launching or landing of kayaks from a beach or shore.

1.17 **Paddler.** Paddlers are all personnel in the group that are participating in the activity.

1.18 **Rescuer.** A person who rescues another person or recovers equipment.

### Weather Safety Precautions

1.19 **Weather.** All weather definitions are as per the Australian Bureau of Meteorology (BOM).

### Limitations

1.20 Sea kayaking can be a potentially hazardous activity and must be led by personnel with suitable training and experience. The major risks in sea kayaking are in misjudging the weather and tides, and in negotiating surf. Misjudging weather conditions and tides can lead to being blown or swept offshore with subsequent exhaustion and possibly hypothermia. Failure to negotiate the surf can lead to direct physical injury. These risks can be minimised by being adequately equipped, ensuring a gradual progression of training, adherence to weather and sea state alerts and limitations, and common sense, foresight and prudence in the planning and the conduct of the activity.

1.21 During the conduct of sea kayaking AT, safety requirements are to take priority over training objectives.
Sea kayaking is greatly affected by weather and sea state conditions. Information on coastal weather forecast areas, emergency frequencies and HF radio schedules is available online from the BOM’s Schedules and Frequencies for HF Marine Radio Voice Services page.

Weather checks with the BOM are to be carried out at the following intervals before the activity begins (and at a minimum of 6-hour intervals during on-water conduct):

a. 36 hours  
b. 24 hours  
c. 6 hours  
d. just prior to the commencement of the activity.

Weather Restrictions. Sea kayak activities are not to commence, or are to cease immediately, if the activity levels table limits are exceeded or the following BOM defined events forecast:

a. severe thunder storms  
b. squalls  
c. gales  
d. tropical cyclones within 500 NM of the activity area.

Where a thunder storm is forecast the GL should not commit to a paddle until observed conditions verify the storm front has passed and no further threat is forecast.

Sea States. This refers to a code or word description used to describe the ocean surface roughness obtained by observation of the average wave height; height being the height of the larger, well-formed waves. Sea state descriptions are listed in Table 1–1.
Waterway Definitions

1.27 Each state and territory has different definitions issued by their maritime safety authorities. For Defence purposes the following definitions are used.

1.28 Inland Waters. Inland water includes rivers, creeks, canals, lakes and reservoirs.

1.29 Enclosed Waters. Enclosed waters are those areas of water that are enclosed from open water by land (with the exception of entrances to the ocean). Enclosed waters are not protected from the effects of weather and sea conditions. Enclosed waters are those areas of water that are:

a. inside the entrance to designated harbours, bays, inlets, ports

Table 1–1: Sea State Description and Wave Heights

<table>
<thead>
<tr>
<th>Sea State</th>
<th>Description</th>
<th>Height (m)</th>
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<tr>
<td>0</td>
<td>Calm (glassy)</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>Calm (rippled)</td>
<td>0 to 0.1</td>
</tr>
<tr>
<td>2</td>
<td>Smooth (wavelets)</td>
<td>0.1 to 0.5</td>
</tr>
<tr>
<td>3</td>
<td>Slight</td>
<td>0.5 to 1.25</td>
</tr>
<tr>
<td>4</td>
<td>Moderate</td>
<td>1.25 to 2.5</td>
</tr>
<tr>
<td>5</td>
<td>Rough</td>
<td>2.5 to 4.0</td>
</tr>
<tr>
<td>6</td>
<td>Very Rough</td>
<td>4.0 to 6.0</td>
</tr>
<tr>
<td>7</td>
<td>High</td>
<td>6.0 to 9.0</td>
</tr>
<tr>
<td>8</td>
<td>Very High</td>
<td>9.0 to 14.0</td>
</tr>
<tr>
<td>9</td>
<td>Phenomenal</td>
<td>Over 14.0</td>
</tr>
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</table>
b. on the mainland side, within well-frequented archipelagos and single islands where the maximum sea crossing to the mainland is not greater than 10 NM.

1.30 Open Waters. This refers to all other areas of water, sea and oceans.

1.31 Protected Waters. Protected water can also be an area of inland, enclosed or open water that remain protected from the effects of the prevailing weather, sea conditions and surf. Protected water must be no more than 500 m from a leeward shore with a suitable landing area.

Activity Levels

1.32 The sea kayaking AT continuum requires that participants undertake specific training to ensure that they are suitably prepared and able to complete the planned activity.

1.33 This is defined as progressing through activity-relevant training and restricted to the following maximum constraints detailed in Table 1–2.
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<th>Intermediate</th>
<th>Advanced</th>
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<td>Waters</td>
<td>Inland, enclosed and protected</td>
<td>Open waters within 2 NM of a safe landing</td>
<td>Open waters beyond 2 NM of a safe landing</td>
</tr>
<tr>
<td>Seas</td>
<td>$\leq 1$ m</td>
<td>$\leq 1$ m</td>
<td>$\leq 1.5$ m</td>
</tr>
<tr>
<td>Swell</td>
<td>$\leq 1$ m</td>
<td>$\leq 2$ m</td>
<td>$\leq 3$ m</td>
</tr>
<tr>
<td>Sea State</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Winds</td>
<td>$\leq 21$ kt</td>
<td>$\leq 21$ kt</td>
<td>$\leq 27$ kt</td>
</tr>
<tr>
<td>Wind exceptions</td>
<td>$\leq 33$ kt in protected and inland water where wind is onshore, no unsafe impact of tide and current with a downwind safe landing $\leq 1$ NM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surf</td>
<td>$\leq 1$ m</td>
<td>$\leq 1$ m</td>
<td>$\leq 1.5$ m</td>
</tr>
<tr>
<td>Instructors</td>
<td>As a minimum a UATL will be present</td>
<td>As a minimum a UATL will be present</td>
<td>OCA minimum ATLI or UATL approved by OC ATW</td>
</tr>
</tbody>
</table>

Table 1–2: Activity Levels
<table>
<thead>
<tr>
<th></th>
<th>Novice</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety ratio UATL/Kayaks</td>
<td>Maximum 1:5</td>
<td>Maximum 1:5</td>
<td>Assessed to meet risk</td>
</tr>
<tr>
<td>Activity</td>
<td>Introduction to discipline, cadets, APS and as an alternate activity in adverse weather</td>
<td>Unit activity in fair weather noting requirement to complete initial training</td>
<td>UATL trainee and major expeditionary activities</td>
</tr>
<tr>
<td>Minimum endurance level</td>
<td>3 to 5 km/h over &gt;10 km</td>
<td>4 to 6 km/h over &gt;25 km</td>
<td></td>
</tr>
</tbody>
</table>
Pre-activity Requirements

1.34 Army Swim Test. All personnel participating in sea kayaking activities must have attained the minimum standard of swimming proficiency detailed in ASI (PERS), Part 8 – Medical [Chapter 4] within four weeks of the activity commencing.

1.35 Medical Support. All activity participants are to undertake revision of specific first aid requirements for sea kayaking such as:
   a. hypothermia
   b. dehydration
   c. sea sickness
   d. marine bites and stings
   e. drowning and near-drowning.

Initial Training

1.36 The purpose of initial training is to provide the minimum amount for technical skill to enable safe conduct. Initial training should be quick and allow progression to the conduct of the primary challenges. Further skills may be taught on an as-needed basis to meet the increasing complexities of challenges.

1.37 Initial training must be conducted in protected waters by a UATL prior to the trip commencing. Initial training must include:
   a. lifting and lowering a kayak
   b. fitting and adjusting participant to kayak
   c. safety brief including casevac plan
   d. emergency signals including familiarisation with flares and strobes carried
   e. 200 m swim test in full sea kayaking gear with paddle
   f. entry and exit of kayak with spraydeck fitted
   g. capsize drills
   h. wet exit
i. draining a kayak
j. holding the paddle/paddlers box
k. basic paddle techniques relevant to subsequent activity
l. an assisted rescue.

**WARNING**

For initial training, capsize drills and wet exit training must be conducted with a 1:1 ratio of participant to supervising UATL.

**Specific Activity Requirements**

1.38 **Float Plan.** The OCA is to ensure that a float plan is formulated for all sea kayaking activities and that all participants, including the SOA, are briefed on the plan. The plan is to include:

a. an outline of the activity
b. the proposed routes and essential timings
c. the safe landing and sheltered areas
d. the identifiable danger areas
e. the local currents and predicted weather conditions
f. the radiofrequencies and call signs
g. the rendezvous and communication drills (primary, alternate, timings and windows)
h. the location of the SOA
i. actions on:
   (1) capsize
   (2) loss/separation of craft
   (3) failure to meet a rendezvous
   (4) failed communications/missed schedules
   (5) bad weather.
1.39 **Health Support Plan.** The OCA and SOA are to ensure that a health support plan is formulated in accordance with *LWP-G 7-6-1, Experiential Learning and Adventurous Training* for all activities, and that all participants are briefed on the plan. Additionally for sea kayaking the plan is to include:

a. identification of safe landing areas
b. the means of evacuation from the water.

1.40 **Search and Rescue Plan.** The OCA and SOA are to ensure that a search and rescue plan is formulated for all sea kayaking activities in accordance with *LWP-G 7-6-1, Experiential Learning and Adventurous Training* and that all participants are briefed on the plan. The plan is to include:

a. the call out and emergency activation procedures
b. the emergency points of contact
c. the location and capabilities of rescue vessels
d. the emergency radiofrequencies, call signs and monitoring procedures
e. the emergency signals and location markers
f. the potential safe harbours/safe landing areas.

1.41 All participants are to know the procedures for requesting assistance in an emergency.

**General Safety Precautions**

1.42 Sea kayak activities can be potentially dangerous and must only be led by personnel with suitable training and experience. When conducting sea kayak training the following general safety precautions are to be adhered to:

a. **Group Size.** A minimum group size for all activities is four paddlers (including any mix of double and single kayaks). With the exception of an emergency, no member is to kayak alone.
b. **Group Spread.** A maximum group spread is limited to the distance required to be able to effectively monitor others within the group and communicate clearly. Factors to consider are:

1. sea conditions including swell size and frequency and hazards
2. wind and noise
3. visibility
4. size of the group
5. skill level of paddlers
6. fatigue of paddlers
7. amount of boat traffic, shipping lanes and channels
8. training outcomes sought.

c. **Internal to Group.** Kayakers are to be allocated to internal sub-groups for control and assisted rescue.

d. **Double Kayaks.** A double kayak is to be taken for casualty evacuation on novice expeditions where there is a greater risk of incapacitation requiring extraction. This may not be applied where vehicle extraction points are available within 1 NM throughout the paddling area. Inclusion or exclusion of double kayaks on activity at all other levels is dependant on the availability of equipment, design of the activity and assessment of injury risk by the GL.

e. **Protective Clothing.** Protective clothing, light footwear and safety equipment commensurate with the activity and the prevailing weather and sea conditions are to be used.

f. **Overloading.** Kayaks are not to be overloaded in accordance with manufacturers’ instructions.
g. **Civilian Laws.** Civilian marine traffic laws are to be obeyed.

h. **Marine Life.** The carriage of weapons and live ammunition is to be considered when operating in crocodile- and shark-infested waters. Special advice is to be sought to determine risk and appropriate response and accessibility requirements.

1.43 **Safety Craft.** Safety craft should generally be avoided in most cases as they detract from the ethos of the activity and, in many cases, may be a safety liability in their own right. Every kayak is to be considered as a safety craft and safety is a group responsibility. Safety craft may not be able to access areas in which sea kayaks can travel and introduce mechanical, qualification and reliability issues. A powered safety craft must be capable of operating in Sea State 5 or above and be able to carry all participants.

1.44 The situations which necessitate the requirement for a safety craft are as follows:

a. When conducting advanced training in strong currents or where navigational hazards are present there are additional considerations.

b. A safety craft either military, civilian, or from a rescue organisation capable of responding to an emergency is to be on call when conducting advanced training in open waters more than 2 NM from a safe landing area (rescue helicopters may be used where appropriate).

c. Consideration needs to be given to likely survival time in water against likely response time.

1.45 **Communications.** A safety net between the GL and SOA is required for all sea kayak activities; this uses satellite communications devices, mobile telephones or radios. The net is to be established prior to departure and is to be monitored continuously by the SOA.
1.46 A system of radio/telephone schedules may be used if continual radio communication is not practical. The required actions by the SOA in the event of missed schedules or lost communications are to be detailed.

1.47 Communications are to be detailed in a communications plan. Redundancy in communications should be increased commensurate with the risk of the activity.

Safety Precautions During Open Water Expeditions

1.48 Intermediate and advanced training involving long expeditions and/or open sea transits can only be undertaken by qualified personnel as per Table 1–2, or personnel who are able to satisfy the Approving Authority that they have necessary skills and experience. Requirements for open water expeditions are as follows:

a. All personnel must have the skills and experience necessary for the planned activity.

b. The highest overall activity level must be planned for and approved in the activity instruction.

c. The decision for progression between activity levels is the responsibility of the GL or senior UATL if conducted with multiple groups.

d. Equipment to be carried is as per Table 1–3 in Annex A.

e. The group is to be equipped with primary and alternative means of communications, which are capable of operating over the planned location and travel distances.

f. The SOA is to be in possession of the trip, health support plan, and search and rescue plans.

Safety on the Water

1.49 Recreational boating safety regulations differ between each state and territory. For safety information relevant to your state or territory refer to the information provided by your local marine authority.
1.50 **Know the Rules.** GLs must be aware of the international regulations for preventing collisions at sea. A summary of these rules is as follows:

a. *Giving Way.* The GL must continually assess the risk of collision with other vessels. When two vessels meet head on, each must alter course to starboard (to the right) and pass at a safe distance. In crossing situations, give way to the right.

b. *Sound Signals.* Special sound signals exist for use by vessels in order to indicate their manoeuvring intentions when they are in sight of one another. The signals are:

   1. One short blast – I am altering course to starboard (the right).
   2. Two short blasts – I am altering course to port (the left).
   3. Three short blasts – I am operating engines astern (stopping/slowing).
   4. Five short blasts – I am unsure of your intentions and I doubt whether you are taking sufficient action to avoid a collision.

1.51 **Safe Distance.** A safe distance between a person and a sea kayak (or any other vessel) is a distance that will ensure that the vessel will not cause danger or injury to the person, or damage to the sea kayak. This must be considered with regard to all relevant safety factors including current weather conditions, visibility, speed of the vessel and obstructions to navigation that are present. A distance of 60 m from persons or non-powered vessels (sailing and passive) that are underway should be maintained. If that is not possible, as safe a distance as possible should be maintained.

1.52 Understanding that sea kayaks are at times difficult to see, an active watch needs to be maintained and a safe course piloted to avoid boats, and channels in low visibility conditions.
1.53 Use of paddles, bright and reflective clothing and white light should be used to alert other vessels of our position

1.54 **Channels.** When navigating in a channel, always keep as far to the right-hand side as is safe and practicable. Some areas may be subject to additional rules. The OCA is to ensure that they liaise with the local authority to determine if any additional rules are in place.

**General Equipment Safety Precautions**

1.55 The following precautions apply to the inspection, transport and storage of sea kayaking equipment:
   
   a. The OCA or GL of each group is to supervise the daily inspection of all equipment before, during and after use.
   
   b. All safety equipment is to be approved for use in accordance with the AT Wing equipment requirements, or is to comply with and/or exceed the Australian standard.
   
   c. The OCA of the activity is to ensure that all sea kayak equipment is stored, transported and used correctly.
   
   d. Each GL is to ensure that equipment within the sea kayaks for which they are responsible is secure.
   
   e. Any equipment found unserviceable or considered unsafe by a UATL or equivalent, or where the slightest doubt exists, is to be tagged and immediately withdrawn from use.

**Annex:**

**A. Minimum Sea Kayaking Equipment List**
ANNEX A TO CHAPTER 1

MINIMUM SEA KAYAKING EQUIPMENT LIST
<table>
<thead>
<tr>
<th></th>
<th>Novice</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Individual</td>
<td>Group(1)</td>
<td>Individual</td>
</tr>
<tr>
<td>Sea kayak</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Paddle</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Paddle leash</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Split paddle</td>
<td>1</td>
<td>2</td>
<td>1/boat</td>
</tr>
<tr>
<td>Paddle float</td>
<td>1</td>
<td>1</td>
<td>1/boat</td>
</tr>
<tr>
<td>Spray deck</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Helmet</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Life jacket (Level 50):</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Signal mirror</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Whistle, pealess</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Rescue knife</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Clothing (see Chapter 2):</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- Long sleeve rashie or</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>synthetic top and bottoms</td>
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<td></td>
</tr>
<tr>
<td>- Hat</td>
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<td>1</td>
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</tr>
<tr>
<td>- Footwear</td>
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<td>1</td>
</tr>
<tr>
<td>- Cag</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>- Sunglasses (secure strap)</td>
<td>Optional</td>
<td>Optional</td>
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<tr>
<td>- Spare warm clothes (polypro/wool thermals)</td>
<td>IAW RA</td>
<td>IAW RA</td>
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</tr>
<tr>
<td>Getaway bag:</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- PLB/EPIRB</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>- Communications – SPOT</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>tracker/VHF radio/mobile/satellite phone(2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- GPS (if it is accessible on</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>water, using GPS on mobile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>phone is OK)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Distress flares – day</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>- Distress flares – night</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>- Waterproof matches/lighter</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Cyalume sticks (white or</td>
<td>2 pp</td>
<td>2 pp</td>
<td>2 pp</td>
</tr>
<tr>
<td>blue preferred)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Strobe light</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- V-sheet</td>
<td>1</td>
<td>1</td>
<td>1/boat</td>
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</table>
## Contents

<table>
<thead>
<tr>
<th>Item</th>
<th>Novice</th>
<th>Intermediate</th>
<th>Advanced</th>
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</thead>
<tbody>
<tr>
<td>- Marker sea dye</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Waterproof head torch (not required if no night activity)</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Space blanket</td>
<td>1 pp</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Individual first aid kit</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sunscreen and lip balm</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Water bottle (2 L minimum)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Portable hand-operated bilge pump</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sponge</td>
<td>Optional</td>
<td>Optional</td>
<td>Optional</td>
</tr>
<tr>
<td>Towline(3)</td>
<td>2</td>
<td>1/boat</td>
<td>1/boat</td>
</tr>
<tr>
<td>Throw bag(3)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Navigation aids:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Float plan</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Charts/maps/case</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Navigation data sheet</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Tide tables</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Handheld compass</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Deck compass</td>
<td>2</td>
<td>2</td>
<td>1/boat</td>
</tr>
<tr>
<td>Dry bags/waterproof bags/containers</td>
<td>Quantity TBD</td>
<td>Quantity TBD</td>
<td>Quantity TBD</td>
</tr>
<tr>
<td>Stove/fuel/pot</td>
<td>1</td>
<td>1</td>
<td>1/boat</td>
</tr>
<tr>
<td>Fuel and fuel bottle for stove</td>
<td>1</td>
<td>1</td>
<td>1/boat</td>
</tr>
<tr>
<td>Emergency water</td>
<td>1 L pp/day</td>
<td>2 L</td>
<td>4 L</td>
</tr>
<tr>
<td>Emergency rations (high calorie)</td>
<td>1 meal pp</td>
<td>1 meal</td>
<td>3 meals</td>
</tr>
<tr>
<td>Emergency shelter/Bivvi bag</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Sleeping bag(4)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sleeping mat</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Group first aid kit (see Annex B to Chapter 15)</td>
<td>1</td>
<td>1</td>
<td>2/boat</td>
</tr>
<tr>
<td>Kayak repair kit (see Annex B and Annex C to Chapter 3)</td>
<td>1</td>
<td>1</td>
<td>1/boat</td>
</tr>
<tr>
<td>Drogue(5)</td>
<td>Optional</td>
<td>Optional</td>
<td>Optional</td>
</tr>
</tbody>
</table>
### Note:

1. Group size – maximum of six boats being a GL and paddlers up to the maximum ratio, excluding additional UATLs.
2. Minimum two forms of communications with coverage of the activity area. VHF should be accessible on the PFD or deck.
3. Throw bag required where likelihood of personnel rescue required, may be combined with towline if line thickness >7 mm.
4. Dependant on risk of hypothermia you may opt to use space blankets only.
5. Drogues are required where rescues may need to be effected in strong currents and winds.

<table>
<thead>
<tr>
<th>Novice</th>
<th>Intermediate</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Group(1)</td>
<td>Individual</td>
</tr>
</tbody>
</table>
CHAPTER 2

SEA KAYAK EQUIPMENT

2.1 This chapter outlines the identification of the equipment that is used for sea kayaking.

SECTION 2-1. TYPES OF KAYAKS

2.2 Kayaks can be constructed from a range of materials and are available in a number of different configurations which makes them suited to different applications. Configurations that are suitable for AT activities are either single-seated or double-seated kayaks as detailed in Figure 2–1 and Figure 2–2.

Figure 2–1: Double Kayak Configuration
2.3 Folding Kayaks. Folding kayaks are a flexible skin on frame craft. These kayaks can be made from various materials, including canvas and hypalon rubber for the outer bag with wood or alloy internal frames. They can be folded easily for transportation. These kayaks can be complex to assemble and require high maintenance. Due to the materials used to construct these types of kayaks, extreme care must be taken when paddling them near reefs and rocky shores. For military sea kayaking they must have internal flotation bags or other bulkhead systems.

2.4 Sectional Kayaks. Sectional kayaks are made in shorter sections that can be secured together by bolts or straps. They are designed for easier transportation and storage. Their sectional design reduces rigidity and performance. Defence does not use any sectional kayaks.

2.5 Fibreglass Composite Kayaks. Fibreglass composite kayaks can be manufactured from fibreglass, carbon fibre or Kevlar® materials. They have large sealed storage areas built into the hull which provide good watertight storage space and additional buoyancy. These kayaks are lightweight, durable and fast, which makes them suitable for long sea kayaking activities. Fibreglass is brittle and is prone to damage from impact, but repairs are simple and can be conducted during expeditions with minimum equipment and tooling. Heat, UV rays and weather may adversely affect sea kayaks; however,
fibreglass kayaks are relatively durable compared to other materials. This makes them a suitable kayak for use in tropical areas.

2.6 Plastic Kayaks. Plastic kayaks are generally manufactured from roto-moulded polyethylene. These kayaks have large sealed waterproof storage areas. Plastic kayaks are remarkably durable and can withstand more impact damage than folding and fibreglass kayaks. These kayaks are heavier than fibreglass, but have good speed and can negotiate rocky areas and shallow waters with minimal damage from light impact. Major repairs to plastic kayaks can be complex and may require special tooling.

SECTION 2-2. HULL DESIGN AND DESCRIPTION

2.7 Figure 2–3 illustrates various aspects of a sea kayak.
2.8 The description of the hull of a sea kayak is as follows:

a. **Hull.** The hull is the part of the kayak from the seamline to the keel.

b. **Hull Design.** Hull design affects performance of the kayak. A V-shaped hull will track straight while a round or U-shaped hull will turn more easily but have less lateral stability.

c. **Forms.** Form is the name given to the hull form shape which has a greater underwater volume forward of the maximum width. Three forms are symmetrical, Swede and fish form (see Figure 2–4).

![Figure 2–4: Sea Kayak Forms](image)

- Symmetrical
- Swede Form
- Fish Form

d. **Volume.** Sea kayaks are classified as low, medium or high volume. Volume is calculated as a total volume of the cockpit and bulkhead compartments. High volume kayaks are appropriate for expedition use.

e. **Stability.** Stability is referred to as primary or secondary stability. Primary stability is the stability of the kayak when it is stationary. Secondary stability refers to the stability of the kayak when it is in motion. Hull design and
the seat height above waterline are the primary contributing factors.

f. **Chine.** The change of angle on the side of the kayak’s hull when looking at a longitudinal view is known as chine. Modern sea kayaks may have hard (sharp) or soft (round) chine (see Figure 2–5).

![Figure 2–5: Hull Shapes](image)

g. **Rocker.** The upward curve built into the keel line at both the bow and stern of the kayak.

h. **Waterline.** The area on the side of the kayak that the water is designed to be level with, when in use.

i. **Freeboard.** The dynamic measure of the vertical distance from the waterline to the deck. The amount of freeboard decreases as weight increases.

j. **Deck.** The area on top of the kayak. The foredeck is part forward of the cockpit and aft deck is the part to the rear of the cockpit.

k. **Bow.** The front of the kayak.

---

I. **Stern.** The rear of the kayak.

m. **Coaming.** The top outer edge of the cockpit.

n. **Cockpit.** The open area of the kayak where the paddler enters the kayak to sit.

o. **Hatches.** Hatches are access holes for the stowage areas in the kayak. They are generally located on the foredeck and the aft deck. Some kayaks are additionally fitted with a day hatch, which is a smaller hatch located directly behind the cockpit. Due to the large volume of the foredeck and aft bulkhead compartments, they should not be opened while at sea. All hatches must be sealed with a watertight cover while at sea. Both external and internal hatch covers are to be tethered to the kayak to prevent loss.

p. **Bulkhead.** Bulkheads are sealed walls on the inside of the kayak that provide strength for the body of the kayak and assist in flotation. Depending on the material they are constructed from, they may also provide additional buoyancy. Bulkheads are normally located immediately behind the cockpit and forward of the footrest.

2.9 To be considered safe to use in an AT activity, a kayak must have the following:

a. sufficient strength to withstand the pressures and bending forces associated with waves

b. seating with adequate leg and foot room

c. adjustable footrests

d. a deck line that is a minimum of 6 mm in diameter

e. end toggles

f. sufficient fixed buoyancy to remain afloat if the cockpit is swamped

g. a bilge pump or hand pump
2-7

h. directional stability so that it is controllable in adverse conditions without the use of a rudder or skeg.

SECTION 2-3. KAYAK FITTINGS

2.10 The purpose of this section is to discuss the different types of fitting to kayaks. Not all kayak fittings are used by Defence given the nature of activities undertaken. Their function, safety and maintenance aspects are detailed in the following paragraphs.

2.11 End Toggles. End toggles are fitted to the bow and stern of the kayak, and may be used to lift and carry an empty kayak. The end toggles may be used to: hold onto the kayak in water, to swim it, or to remain in contact prior to a rescue or recovery. They consist of a plastic handle secured to the kayak by an accessory cord loop. The loop in the accessory cord must be large enough to allow ease of grabbing, but small enough to prevent the paddler from fitting a hand through it due to the dangers of a crush injury if the kayak rolls.

2.12 Deck Lines. Deck lines are essential on all sea kayaks. They must be a minimum of 6 mm cordage to avoid causing injuries to hands. Deck lines are to be attached to the sea kayak at fixed points no more than 800 mm apart. Deck lines are used to assist in rescues and towing, not for carriage of a loaded kayak. The normal position for the deck line is directly above the gunwale. These deck lines should be kept tightly secured because a loose deck line may become tangled with a paddler.

2.13 Deck Elastics. Deck elastics are elastic cords that are 6 to 8 mm in diameter and are positioned on the foredeck and aft deck to secure charts or equipment that requires frequent access. Deck elastics need to be assessed for strength and all equipment secured under them must be secure enough to prevent loss. Additional deck elastics may be fitted to kayaks to secure paddles or other equipment so long as there is no modification to the hull of the kayak. Items placed on the deck will impact on rescues, wind, loss of equipment, paddle stroke and stability and should be minimised. Only lightweight and
essential equipment should be stowed under deck elastics (such as helmet, split paddles, paddle leash, map case, hand pump and deck compass).

2.14 **Hatch Covers.** Hatch covers can be made from various materials such as rubber, fibreglass, plastic or neoprene. The composite rubber hatch covers are the most durable. All hatch covers are to be secured to the deck line or internal fixing point for security. If the hatch has a neoprene cover, it must be additionally fitted with a hard cover to provide extra protection against implosion from external water pressure (eg, from waves).

2.15 **Seat.** Comfortable and adjustable seating with adequate leg and foot room will provide the paddler with better control of the kayak and enhance the paddler’s endurance.

2.16 **Thigh Braces.** Many sea kayaks are fitted with thigh braces that can be fixed or adjusted to fit the paddler. They are designed to assist the paddler with stability and maneuverability of the kayak and to brace in the kayak during eskimo rolls. It is important that paddlers do not hold themselves into the braced position for extended periods of time as this may lead to fatigue or injury.

2.17 **Footrests.** Rail-mounted adjustable footrests are used by paddlers to assist in the stabilisation of the kayak, to conduct eskimo rolls and act as a base from which to drive your paddling stroke.

2.18 **Steering Controls.** Steering controls are pedals fitted to the footrest of the kayak and they activate the rudder using cords or cables. Details are as follows:

a. **Rudder.** A rudder is a device that is used to assist with the steering of the kayak. They can be made of various materials and are available in a variety of configurations and sizes. The main types of rudder configurations are fixed and retractable:

   (1) **Fixed.** A fixed rudder is a rudder that is fixed to the stern of the kayak. These rudders are designed so
that they cannot be adjusted or removed from the kayak while paddling.

(2) **Retractable.** A retractable rudder is fixed to the stern of a kayak and can be retracted out of and extended back into the water by a rudder-lifting device (see Figure 2–6).

![Figure 2–6: Retractable Rudder](image)

b. **Skeg.** A skeg is a retractable keel extension that is used to provide stability and assists in maintaining a course. The skeg is deployed through a rigid cable allowing pivoting height adjustment. The skeg height is required to be adjusted to match the boat’s hydrodynamics against weathercocking. Care is to be taken to minimise sand or rocks jamming the skeg against the housing.

2.19 **Fixed Bilge Pumps.** Bilge pumps are used to remove water from the cockpit of the kayak. The two most common types of bilge pumps are electric and foot-operated. These types of bilge pumps are preferred as paddlers are then able to use their hands for other tasks, such as paddling. Details of the types of bilge pumps are as follows:

a. **Electric Bilge Pumps.** Sea kayaks can be fitted with electric bilge pumps, which are available in different sizes with a range of pumping capacities. Electric bilge pumps require either a manual or float switch to activate
the pump, generally a 12 V battery provides the power to run it. These pumps offer an excellent ‘hands-free’ method of removing water from the cockpit of the kayak; however, they require a high level of maintenance to remain serviceable and require an alternate to be available.

b. **Foot-operated Bilge Pumps.** Foot-operated bilge pumps are low maintenance, hands-free pumps fitted to the inside of the cockpit. The foot pump’s mounting position is to be adjustable to allow for the length of the paddler’s legs.

### 2.20 Anchor/Towing Point

An anchor point is a structural fitting used to anchor a towline for assisted recues and securing a kayak in adverse conditions. In addition, the anchor point may be used as a means of securing a kayak to prevent theft.

#### SECTION 2-4. KAYAK EQUIPMENT

2.21 **Paddles.** There are many types of paddles available. Paddle types include touring, play, racing (wing blades) and white water.

2.22 Sea kayaking requires a paddle that is strong, light and ergonomic. Typically, sea kayaking uses asymmetrical plastic/resin blades with a fiberglass reinforced shaft.
The process for fitting paddles to paddlers is detailed in Chapter 5. Paddles are designed for either left-handed or right-handed paddlers and all paddles consist of two main parts, the blade and the shaft, both of which can be constructed out of various materials to suit specific applications such as enclosed waters, open waters and surf. The main parts of a paddle are shown in Figure 2–7 and a description is as follows:

a. **Blade.** A sea kayaking paddle is fitted with two asymmetrically shaped blades that have a power face. The blade can be manufactured with various materials; however, it should be lightweight and strong. Parts of the blade are:

   (1) **Feather.** The offset between the two blades is known as the feather.

   (2) **Power Face.** The concave face of the paddle blade is known as the power face.

   (3) **Back Face.** The back face is the opposite side of the power face.

b. **Shaft.** A paddle shaft is a tubular length that can be fitted with paddle blades, drip rings and an indicator. Paddle shafts can be manufactured from a variety of materials but ideally should be lightweight and strong. They are available in different shapes and sizes and can be fitted to suit individual paddlers and different kayaking conditions. Shaft types include straight shaft, split shaft, crankshaft, and elliptical shafts. A standard shaft will have:

   (1) **Drip Rings.** Drip rings assist with preventing water dripping from the blade onto the paddler; they are fitted to the paddle shaft near each blade.

   (2) **Indicator.** The indicator is a raised section of the shaft that allows the paddler to locate their hands in the correct position on the paddle shaft. The knuckles of the master hand should be in line with
the edge of the paddle blade on the same side. The indicator is usually held in the master hand.

(3) **Naming.** To minimise injury through the use of paddles with different length and feather, names should be affixed using cloth tape so paddlers may maintain the use of their paddle.

![Figure 2–7: Main Parts of the Paddle](image)

**2.24 Paddle Leash.** A paddle leash is an elasticised strap that connects the paddle to the kayak. Paddle leashes can be fabricated out of 5 to 6 mm bungee cord. It is fastened to the deck line or the foredeck elastic using a cat’s paw knot, and is fastened to the paddle with a Velcro® strap. A paddle leash connected to a paddle and a kayak is detailed in **Figure 2–8.**
2.25 **Split Paddle.** Split paddles (see Figure 2–9) have the ability to separate the paddle shaft into two or more pieces. These paddles are normally carried during sea kayaking activities as spare paddles. They have adjustable feather, some being variable and some being incremental. Smart shaft connectors are also adjustable in length. Split paddles must float and should be able to be easily connected.
Figure 2–9: Split Paddle Locking Mechanisms

Cam lock split paddle

Smart shaft split paddle
2.26 **Paddle Float.** A paddle float is an inflatable device that can be attached to a paddle blade (see Figure 2–10) to assist the paddler to re-enter the sea kayak from the water.

![Paddle Float](image)

**Figure 2–10: Paddle Float**

2.27 **Spray Deck.** A spray deck is a neoprene or nylon seal that prevents water from entering into the cockpit of the kayak (see Figure 2–11). It is worn around the paddler’s waist and is fitted to the coaming of the cockpit when the paddler is seated in the kayak. Spray decks are available in different sizes to suit the
paddler and different sized cockpits. Spray decks have a release tag attached to them that is used by the paddler to remove the spray deck from the kayak. This loop must be positioned on the outside at all times.

Figure 2–11: Neoprene Spray Deck

2.28 Helmets. Helmets are worn when sea kayaking in order to protect the paddler’s head from collisions with submerged objects and other kayaks, as well as paddles and equipment that may be dislodged in rough conditions. Light, tough helmets that can drain water quickly are used for sea kayaking. Ideally, the helmet should be brightly coloured and have reflective material. A correctly labelled, suitable helmet is shown in Figure 2–12. Paddlers are required to wear helmets at the following times:

a. when paddling at night
b. when launching or landing in surf
c. when paddling in dangerous environments.
2.29 Using tape to temporarily affix a participant’s name on the front and rear of the helmet allows them to be identified. Using their name in emergency situations improves response. The tape should be removed at the end of the activity.

2.30 Helmets are fitted correctly when the following has been checked:
   a. the helmet fits firmly around the paddler’s head
   b. the helmet does not impair the paddler’s vision
   c. the chinstrap is adjusted so as it is positioned firmly under the paddler’s chin and adjusted to be tight around the ears
   d. the helmet is comfortable.

Figure 2–12: Helmets

2.31 **Life Jackets/Personal Flotation Devices.** Personal flotation devices (PFDs) are primarily designed to aid buoyancy. Additionally, PFDs provide extra insulation on cold days as well as extra body protection in the event of a swim. PFDs used in an AT environment are to meet the requirements of *AS 4758.1: Lifejackets – General requirements*. Participant life jackets are to meet Level 50 and rescue life jackets are to meet the same level of floatation but classified as restricted used life jackets and
When fitting a PFD, it is important to ensure that it is tight in order to prevent the PFD riding up the body when in the water. Care must be taken not to cause rubbing under the arms when adjusting the PFD. The UATL is responsible for ensuring that all participants are wearing their PFD correctly. Whenever on water, whether moving or not, PFDs must be worn. On completion of an activity, the PFDs are to be washed in clean water and allowed to dry in a well-ventilated area away from UV light. PFDs must never be used as a seat or be compressed. They must also be kept clean and dry when not in use, and must never be exposed to petroleum-based products. Examples of PFDs are shown in Figure 2–13.

2.33 Signal Mirror. Signal mirrors are reflective mirrors that are used to attract attention during the day. By day they can be used to signal by reflecting sunlight onto a target aircraft or vessel by using your fingers as a simple V-sight.
2.34 **Pealess Whistles.** Whistles are used for attracting the attention of rescue teams or to aid the communication between sea kayaking groups. The only type of whistle that is suitable for sea kayaking is a pealess whistle to ensure that it never has the pea jam, stick or fail.

2.35 **Rescue Knife.** Rescue knives are used to cut a paddler free of entanglements. Rescue knives can either be folding blade knives or fitted with a holster, as in the case of a small diving knife. A knife that is made of rust-resistant materials with a serrated edge and rounded blade end (see Figure 2–14) is recommended for sea kayaking.

![Figure 2–14: Rescue Knife](image)

2.36 **Consideration for Clothing.** Consideration must be given to appropriate clothing to protect participants from wind, hypothermia, insects and sun exposure. Bright colours are preferred because they are easier to see from a distance and in poor conditions. Cotton should never be worn as it wicks moisture and can cause chafing and could lead to hypothermia. Incorrectly fitting clothes can cause skin irritation or blisters.

2.37 **Clothing for Hot Conditions.** Lightweight clothing that offers full sun protection is suitable for hot conditions; this may consist of shorts and lightweight, long-sleeve tops.

2.38 **Clothing for Cold Conditions.** For cold conditions, it is best to wear two layers of clothing. The inner layer should be a thermal one (see Figure 2–15), such as polypropylene, and the outer layer should be made of waterproof material.
2.39 **Paddling Shirt.** A long-sleeve paddling shirt is a lightweight, close fitting shirt that offers good UV protection and moisture wicking. These include rashies, technical paddling shirts, thermal shirts or quick drying fishing shirts.

2.40 **Paddling Shorts.** Shorts that are recommended for paddling are lightweight, loose fitting and have the ability to dry quickly.

2.41 **Hats.** Hats are worn to provide sun protection and/or warmth, as required. Hats are to be secured to the paddler so that they can be retrieved easily if blown off.

2.42 **Footwear.** Paddlers are required to wear lightweight footwear that covers their entire feet without risk of entanglement when exiting the kayak. This footwear protects the paddler’s feet if the paddler is separated from the kayak and is required to walk on rocks or coral, or walk for a long distance. Footwear also
helps to keep the paddler's feet warm in cold conditions. Wetsuit booties (see Figure 2–16) are an ideal type of footwear.

Figure 2–16: Wetsuit Booties

2.43 **Cag/Paddle Jacket.** A cag/paddle jacket (see Figure 2–17) is a foul weather jacket that is worn under a PFD. A cag generally is a lightweight waterproof and windproof jacket. Consideration needs to be given as to paddling conditions as to change in or out of it on the water requires removal of your PFD. The cag must be easily accessible on water and is to be carried in the cockpit or day hatch.
2.44 **Sunglasses.** Paddlers wear sunglasses to protect their eyes from sun damage. Sunglasses are to be secured to the paddler’s body or a float with a strap or cord to prevent them from being damaged or lost if dislodged while paddling. Polarised lenses provide the best protection when working on the water.

2.45 **Thermals.** Thermal underwear should have the ability to dry quickly and retain body heat when wet. It is recommended that materials such as polypropylene and a merino wool mix are used. Cotton thermals are not to be used in sea kayaking activities.

2.46 **Wetsuit.** A sleeveless wetsuit can be used as a base layer in cold conditions (see Figure 2–18).
Figure 2–18: Wetsuit

2.47 **Dry Suits.** Dry suits are overalls that have seals at the wrists, ankles and neck. They are made from waterproof materials such as GORE-TEX® and have a waterproof zip. They are used for paddling in cold environments or where there is the potential for spending a lot of time in the water.

2.48 **Gloves.** Gloves that are lightweight, can dry quickly and which protect the paddler’s hands from blisters and the weather are recommended for sea kayaking. Care must be taken not to place pressure on the wrists when tightening gloves that have adjustment. Pressure on the wrists from gloves or watches can cause serious internal wrist injuries through the repetitive
2.49 Getaway Bag. A get away bag (see Figure 2–19) is used to store emergency equipment while on sea kayaking activities. Its purpose is specifically for immediate signaling of the need for assistance where a person or the group is in grave and imminent danger, and requires immediate assistance. Contents of the get away bag are detailed in the equipment list at Annex A to Chapter 1.

Figure 2–19: Getaway Bag

2.50 Personal Locating Beacons. Personal locator beacons (PLBs) in Australia are required to meet AS/NZS 4280.2: 406 MHz satellite distress beacons – Personal locator beacons (PLBs) and must operate for a minimum of 24 hours. They can be used on land, in the air and on water. Although they are required to float, PLBs do not have to conform to emergency position indicating radio beacon (EPIRB) regulations. In a marine environment, a survivor would need to ensure that the beacon antenna is supported clear of the water, so that it can operate effectively.
2.51 Activation requires extension of the antenna and generally a long press of the power button. Instructions will be written on the (PLB) (see Figure 2–20). The GL is required to explain how to use the PLB if carried.

![Personal Locator Beacon](image)

Figure 2–20: Personal Locator Beacon

2.52 The technology of distress beacons is so advanced that the location of the boat, aircraft or individual in distress can be calculated to a search area of as little as 110 m² with a digital 406 MHz beacon, if encoded with GPS.

2.53 A digital 406 MHz distress beacon can relay much more information than simply the distress location. When registered properly with the Australian Maritime Safety Authority (AMSA), 406 MHz distress beacons can provide the rescue coordination centre with information such as the registration details of the
aircraft, vessel or vehicle as well as emergency contact names and contact phone numbers. This may allow further information to be gathered relating to the type of craft, survival gear carried and the number of people on board, and so on. Registration with this service is free.

2.54 After defining the search area, aircraft or other rescue craft rely on homing equipment to locate the beacon’s exact position. It is important that once a beacon is switched on in a distress situation you should not switch it off until rescue has been effected or you are advised to do so by the rescue authority. Deactivation is generally by a very long press of the power button and requires that you contact AMSA Australian Rescue Coordination Centre to confirm the deactivation. The phone number for the maritime branch of the Australian Rescue Coordination Centre, is 1800 641 792 or +61 2 6230 6811.

2.55 Emergency Position indicating Radio Beacon. State and territory marine authorities’ regulations generally require carriage of an EPIRB (see Figure 2–21) when proceeding more than 2 NM into open water. EPIRBs are required to meet AS/NZ 4280.1: 406 MHz satellite distress beacons – Marine emergency position-indicating radio beacons (EPIRBs) (IEC 61097-2, Ed. 3 (2008), MOD). EPIRBs are required to operate for a minimum of 48 hours, and float upright with the antenna clear of the water, when deployed. AT leader instructors leading advanced paddles are required to check with their local state or territory authority to ensure compliance.
2.56 **SPOT Tracker.** SPOT trackers (current model SPOT Gen 3®) (see Figure 2–22) are a type of GPS messenger that use the global star satellite network. It is a subscription-based messaging and tracking system. SPOT trackers are robust and waterproof and have less restricted coverage limitations compared to mobile phones. Users can:

a. store and send pre-set messages to their contacts
b. transmit a breadcrumb trail of GPS points to designated contacts on a chart or map
c. send SOS emergency transmissions (equivalent to a PLB) to emergency services.
2.57 Very High Frequency Marine Radios. VHF marine radios (see Figure 2–23) are an effective line of sight communication device that can be used to communicate between UATLs and emergency services, other craft in the area and the SOA. Their features, including being waterproof, make them ideal for sea kayaking activities. Given the high rate of failure of waterproof devices, waterproof dry bags should be used for additional protection.
2.58 **Digital Selective Calling.** Digital selective calling is a standard for sending pre-defined digital messages via the radio spectrum. Modern VHF marine radios generally have digital selective calling. The Australian Maritime College produces training material in relation to Marine VHF radio operations.

2.59 **Mobile Telephone.** A mobile telephone uses ground station transmitters to send and receive calls. Where wireless internet is available they are also commonly used to verify weather forecasts. Where a mobile phone is used for safety it must be made waterproof and be able to be used on the water.
2.60 Satellite Telephone. A satellite telephone is a mobile telephone that operates via satellite and can provide communication in some areas where there are no mobile telephone services. Satellite phones are generally not waterproof and used through a series of scheduled reports and returns.

2.61 Flares. Flares are handheld emergency signalling devices. The three common types of flares available are light emitting, smoke emitting and the rocket/parachute. There are two different colours used to signal an emergency in Australian waters. Orange smoke emitting flares are used for day, and red light emitting and rocket/parachute flares are used for poor light and night conditions. Flares are only to be used in emergency situations. However, they may be used for training purposes where approved by AMSA and the local authorities. Within Defence they may be ordered through standard ammunition protocols. The current in service flare is the Distress Signal Day and Night No. 1 Mk 5 (TSN 01152) (see Figure 2–24). More information on this flare is available in DEOP 800.030.F1.10, Topic – 010, Descriptive Data, Signal Distress Day Night No 1 Mk 5. GLs are required to conduct familiarisation training as part of their initial safety brief on the use and function of the flares. State laws dictate how many and what type of flares are to be carried.
2.62 **Waterproof Matches.** Waterproof matches or reliable fire lighting tools are to be carried to enable a fire to be lit in the case of an emergency.

2.63 **Cyalume Sticks.** Cyalume sticks are flexible plastic sticks that contain two different chemicals. One chemical is encased in a glass tube that is sealed inside of the plastic stick and is designed to prevent the two chemicals from mixing. Bending the plastic stick breaks the glass tube and allows the two chemicals to mix together, resulting in the stick glowing. These sticks are available in a range of different colours and with different glowing times, some of which can last for several hours.

2.64 **Strobe Light.** A strobe light (see Figure 2–25) is a handheld emergency signalling device that emits a high-powered flashing light. This light is secured to the shoulder or helmet at night and can be observed via line of sight. The in service strobe light is susceptible to damage, particularly corrosion. Care should be taken to ensure a proper seal when fitting batteries.
2.65 **V-sheet.** A V-sheet (see Figure 2–26) is a fluorescent orange plastic sheet with a V emblazoned on it, which is used as an emergency signaling device. A V-sheet is not to be used as a general shelter as this may lead to a false emergency activation occurring.
2.66 **Marker Sea Dyes.** Marker sea dye (see Figure 2–27) is in the form of a powder or granules that are to be used as an effective day time emergency signalling device. Marker sea dye works by discolouring the water and is ideal for indicating the position of personnel to aircraft in good visibility. Duration will vary dependant on dispersal due to current and waves.

![Marker Sea Dye](image)

**Figure 2–27: Marker Sea Dye**

2.67 **Waterproof Head Torch.** Waterproof head torches are used as a light source and can be used to attract the attention of other craft. Maritime laws dictate the need for personal watercraft to be able to illuminate themselves with white light.
when required; therefore, all participants and UATLs must carry a waterproof torch when paddling at night.

2.68 Individual First Aid Kit. Individual first aid kits are tailored to suit an individual. The required content of these first aid kits is detailed in the medical stores checklist in Annex B to Chapter 15.

2.69 Portable Hand-operated Bilge Pumps. Portable hand-operated bilge pumps are not fitted to the kayak and are operated by a paddler’s hand. They are lightweight, durable and can be used to remove water from hatches as well as the cockpit. These pumps can be stored on the deck while paddling.

2.70 Sponge. A sponge can be carried to soak up water to remove it from the kayak.

2.71 Towline. A towline is a length of cord that is used to tow kayaks. This cord should be a minimum of 10 m in length and of sufficient strength to tow a kayak in rough conditions. Towlines must be secured in such a manner that they can be released quickly, if required. Towlines must float when in the water. Flotation can be achieved by either using a floating cord or by attaching a float to a non-floating cord. Towlines are to be stowed in a bag so that they will deploy without becoming entangled. The end of the towline with the float should be fitted with a clip to attach to other kayaks when towing (see Figure 2–28 and Figure 2–29).
Figure 2–28: Towline
2.72 **Throw Bag.** A throw bag (see Figure 2–30) is a rescue device with a length of rope stuffed loosely into a bag so it can payout through the top when it is thrown to a swimmer. Throw bags are used in sea kayaking for rescue near rocks. Throw bags can also be used as short distance tow ropes but will create more drag than the thinner towlines in the water.
Figure 2–30: Throw Bag (Waist Mounted) and Daisy Chained Throw Bag
2.73 Contact or Short Towline. A contact or short towline is a length of cord that is used to tow kayaks in a close rescue situation to remove a kayak from immediate danger. They usually involve a method of shock absorption as they are often attached to the rescuer. Connection is made whilst in contact with the rescued kayak so they do not involve any means of flotation. They are unsuitable for towing extended distances. Three common variation exist:

a. Cows Tail. The cows tail is an elasticised section of webbing. Generally with a wide-mouthed carabiner to be clipped to the rescued object on one end and a large stainless steel ring on the other that is generally attached to a rescue swimmer or guide life jacket by a quick release webbing strap.

b. Short Tow. A short tow is similar to a cows tail in its use and attachment to a life jacket, with the main difference being that it is generally long enough to allow the towed kayak’s bow to swing free of the stern of the rescuer’s kayak and allow better mobility (see Figure 2–31).

Figure 2–31: Short Tow
c. **Paynter Line.** Is approximately equivalent in length and use to a short tow, with the main difference being it is attached in a V-shape from either side and just forward of the cockpit to the bow and back again. To engage, the rescuer unclips one of the lines near the rescued kayaks' cockpit and clips it behind them to commence a short tow.

### SECTION 2-5. NAVIGATION EQUIPMENT

**2.74 Navigation.** Navigational equipment is required to assist paddlers to navigate during kayaking activities. The equipment that can be used includes:

a. **Float Plan.** A float plan as per Annex C to Chapter 15 is to document all pertinent navigation safety and planning data.

b. **Charts.** A chart is a map of the sea, drawn to scale, depicting water depth, coastlines, the direction of water flow and the location of navigational aids. Charts are also used as an aid for nautical navigation.

c. **Maps.** A map is a portion of the Earth’s surface drawn to scale depicting artificial and natural features. Topographical maps are used in sea kayaking to gain information about the land in the area that the activity is conducted in and to assist with navigation.

d. **Tide Tables.** A tide table details the time that the ocean will ebb and flood in a known location. Tide tables are used during the route planning phase of a sea kayaking activity.

e. **Handheld Compass.** A compass is a handheld navigation device that is aligned with the Earth’s magnetic field and orientated to the northern magnetic pole. Handheld compasses are used to determine and maintain a heading.
f. **Deck Compass.** A deck compass is a compass that is fitted to the craft and provides the paddler with a hands-free navigational aid. These compasses can be either permanently or temporarily fitted to the craft in a position where the paddler can easily read them. They are used to determine and maintain a heading. The two different types of deck compasses are shown in Figure 2–32.

![Deck Compasses](image)

**Figure 2–32: Deck Compasses**

- g. **Global Positioning System.** A GPS is a satellite-based navigational aid used to identify your position.

- h. **Map Case.** Map cases are used to protect charts and maps from water and the weather. They are made of clear waterproof plastic and are stored on the foredeck.
i. **Protractor.** A protractor is a scale representing the increments of a circle. It can be used to calculate bearings on a map or chart.

j. **Course Plotter.** A course plotter or Portland plotter is a protractor attached to a ruler and is used to assist in calculating and splitting bearings on a chart.

k. **Parallel and Rolling Rulers.** A parallel ruler (see Figure 2–33) is a tool that consists of two interconnected rulers that remain parallel to each other. This ruler is used to measure grid bearings on a chart containing a compass rose. Rolling rulers (see Figure 2–33) perform the same function and maintain parallel by a long cylindrical roller mechanism.

![Figure 2–33: Parallel and Rolling Rulers](image)

l. **Dividers.** A set of dividers (see Figure 2–34) are used for measuring distances on a map or chart. They have two adjustable legs that can be set to a measured distance, from the scale of the chart or map being used.
2.75 **Dry Bags.** Dry bags are available in various sizes and shapes, and are suited to different stowage compartments when packed. Some of the larger dry bags may need to be placed into the stowage area of the hull before being packed because the opening of the hatches are too small for a loaded dry bag to pass through. Air filled dry bags in the hatches will reduce movement of stores and provide additional flotation should the hatch be flooded. Dry bags are to be folded so that the risk of water entering the bag is reduced.

2.76 **Stoves.** The types of stoves recommended for sea kayaking activities are LPG burners and white fuel stoves (methylated spirits); these are the only two cooking fuels to be used. Stoves utilising unleaded petrol (or other like fuels) are not to be used as these fuels, if spilt, can damage some plastics and may erode sealants and glues used in the manufacture of the kayak.

**WARNING**

Stoves should not be used inside of tents due to the emission of carbon-dioxide which may lead to unconsciousness and death.

2.77 **Fuel Bottles.** Fuel bottles must have the o-ring and seal inspected to ensure that they do not leak. Carriage of methylated spirits in retail bottles is also suitable.

2.78 **Emergency Rations.** Emergency rations that suit the activity should be carried on sea kayaking activities. It is important to ensure that sufficient ration quantities are carried to cater for
the number of people within the group in accordance with Table 1–3. These rations should be stored in a sealed bag inside a watertight container to prevent deterioration. The amount of emergency rations needed for an activity depends on the size of the group participating, the environment and the weather. Further information on emergency rations can be found in LWP-G 7-6-1, Experiential Learning and Adventurous Training.

2.79 Emergency Shelters. Emergency shelters are carried to protect the members of the group from exposure to extreme weather conditions. It is recommended that enough emergency shelters be carried to provide shelter for all members in the group.

2.80 Bivvi Bag. Bivvi bags are lightweight and waterproof sleeping bags that are carried during sea kayaking activities to protect group members from the weather.

2.81 Space Blanket. A space blanket, survival or emergency thermal blanket is a lightweight metallised plastic sheet that reflects a significant proportion of body heat. They are used in emergency situations and as part of anti-shock treatment. In warmer climates where the risk of hypothermia is low they may be carried in lieu of a sleeping bag.

2.82 Sleeping Bags. Sleeping bags are carried on short sea kayaking activities to assist in the treatment of casualties, if required. They are carried on overnight trips or expeditions for group members to sleep in.

2.83 Sleeping Mats. Sleeping mats are carried to insulate members from the ground. These mats are also used to comfort patients when receiving first aid. It is recommended that all members in the group carry at least one sleeping mat on overnight or expeditionary activities.

2.84 Group First Aid Kit. Each group is required to carry a group first aid kit that is equipped with suitable stores to allow them to treat themselves for common ailments associated with sea kayaking. Annex B to Chapter 15 contains a proforma example of first aid supplies required for expeditions.
2.85 Repair Kits. Repair kits for fibreglass and plastic kayaks are listed in Annex B and Annex C to Chapter 3. All repair kits are required to be stored in a watertight container during sea kayaking activities, and refurbished at the end of each activity to ensure that sufficient resources are available for the next repair.

2.86 Drogue. A drogue (see Figure 2–35) is a heavy-duty nylon parachute sea anchor that is used to slow down the drifting of a kayak, and is attached to the deck line by a long length of cord. When drogues are employed they keep a kayak pointing into the prevailing conditions to make rescues and repairs feasible in high seas.

![Figure 2–35: Drogue](image)

2.87 Sails. Sails are available in different sizes and configurations. They are fitted to the kayak to assist the paddler’s forward momentum with trailing winds. Sails must be fitted with a quick release system to stop the forward momentum and release the boom if the kayak becomes capsized or in emergency
situations. Sails are not held in army stores. They are of benefit on long range expeditions to reduce fatigue or when conducting tows.

2.88 Use of sails requires introductory training which is to include impact on rescues and operations. Installation of sails will require permanent modification of a kayak and drilling into the hull and should be undertaken with professional advice to ensure that no damage is done.

2.89 A sail fitted to a kayak is shown in Figure 2–36.

Figure 2–36: Sail

2.90 **Deck Bag.** A deck bag is a sturdy bag made specifically to be attached to the deck of a kayak. They are used to store lightweight equipment that requires easy or frequent access. Mesh deck bags (see Figure 2–37) are also available. The use of a deck bag may impede assisted rescues and paddle strokes; therefore they are not regularly used.
2.91 **Solar Panel.** Solar panels are used to recharge batteries when on land. If used correctly, they can reduce the amount of spare batteries that are carried during a sea kayaking activity.

2.92 **Radio Receiver.** Radio receivers are used during sea kayaking activities to obtain weather reports from radio stations. These receivers are available in AM/FM and short-wave bandwidths. Schedules are available for marine forecasts on single side band for short-wave radios which can be accessed in areas with no mobile coverage. Given their reliability they are highly desirable for use in remote wilderness areas. An understanding of schedules and antenna length is required before reliance can be placed on their use.

2.93 **Stirrup.** A stirrup (see Figure 2–38) is a length of accessory cord with a loop tied in it that is used as a footstep by paddlers in rescues. This cord assists paddlers to re-enter the kayak from water that is too deep to stand up in. The length of the stirrup will determine the type of stirrup rescue able to be conducted. Throw ropes can be tied into a loop and used as a makeshift stirrup where required.
Figure 2–38: Stirrup
CHAPTER 3

MAINTENANCE

3.1 Sea kayaks can be maintenance intensive if not cared for correctly. Correct daily inspection and servicing will identify faults with sea kayaking equipment. This chapter outlines the maintenance requirements for sea kayaks, kayak fittings and sea kayaking equipment.

SECTION 3-1. GENERAL MAINTENANCE

3.2 Maintenance Periods. Maintenance periods are dedicated times during the kayaking activity for the maintenance of equipment. These periods should be identified and factored in to the activity during the planning phase, and are to include:

a. Initial Servicing. Initial servicing is conducted at the point of issue in order to identify faulty equipment. All faulty equipment is to be either repaired or replaced before the commencement of the activity. The UATL is responsible for inspection on collection from the AT store.

b. Daily Servicing. Daily servicing is the daily maintenance required to keep sea kayaking equipment serviceable during an activity, and to prevent minor problems becoming major faults. This service includes:

(1) using fresh water for flushing waterproof electronic equipment and corrosive metal items such as rescue knives
(2) the removal of any sand, dirt or grit from the cockpit
(3) checking security of fasteners and kayak fittings
(4) functionally testing all moving components and cleaning if required; moving parts include rudders,
(5) establishing clothes lines and drying PFDs, spraydeck and other equipment where possible.

c. **Repair Periods.** The daily servicing may result in the identification of repairs that are required for sea kayaking equipment. Dedicated periods of time are to be allocated during the activity for the conduct of these repairs.

d. **Post-activity Servicing.** Post-activity servicing is conducted on all sea kayaking equipment that was used on the activity, at the point of issue prior to it being returned. All equipment exposed to salt water must be thoroughly cleaned in fresh water. Items used that had direct contact with skin or food such as cags, wetsuit booties and dry bags should be washed in an antibacterial solution and dried in the sun. Residual salt through hygroscopy (attracting water) will destroy equipment through a cycle of constantly drying and attracting water as humidity levels change. Any equipment that cannot be repaired by the UATL is to be identified, tagged and reported to the store manager.

**SECTION 3-2. MAINTENANCE OF SEA KAYAKS**

3.3 **Inspections.** Kayaks and their components are to be serviced as detailed in paragraph 3.2. Inspecting kayaks is the first step in maintaining them; inspections identify any faults. These inspections are most effective if they are conducted in a logical sequence which creates a routine for the paddlers. A proforma for these inspections appears in Annex A.

3.4 One factor that may impact the success of an activity is the UATL’s ability to repair kayaks when they become unserviceable, especially in remote, inaccessible locations. In many cases, there will be a combination of both plastic and fibreglass kayaks on the same activity; therefore, it is wise to carry the equipment required to repair both types of kayaks.
3.5 **Sea Kayak Body.** The bodies of sea kayaks are made of plastic or fibreglass. These materials require different repair methods to maintain them. The sea kayak body must be inspected for holes, cracks, split seams, deep gouges and deformity which are to be repaired or grounded. The repair methods are detailed in Annex B and Annex C.

3.6 **End Toggles.** End toggle accessory cord loops or the toggle handles are to be replaced if they are sun damaged, frayed or broken.

3.7 **Deck Lines.** These are to be replaced or repaired if sun damaged, frayed or broken. To minimise wear on the deck line, the cordage should be repositioned around the kayak, as required. When deck lines have stretched, they need to be tightened to maintain functionality.

3.8 **Deck Elastics.** Tighten where required. These are to be replaced when they have lost their elasticity, are sun damaged, broken or frayed.

3.9 **Hatch Covers.** These will require replacement if they are sun damaged, split or when they have lost their ability to seal the hatch.

3.10 **Bulkheads.** These are to be repaired if they have a failed seal or are holed. If using silicone to repair the bulkhead seal, the correct sealant must be used as per the manufacturer’s specifications.

3.11 **Seats.** Seats are to be repaired when any of their straps, cordage or clips break. Seat padding may require regluing using contact cement or replacing if it has separated from the seat base.

3.12 **Thigh Braces.** These are to be replaced if cracked or broken.

3.13 **Footrests.** Footrests are to be washed clean of sand and tested for function. They are to be replaced if the locking mechanism on the adjusting rail fails to lock into position.

3.14 **Steering Controls.** Steering controls include the adjustable pedal straps, pedals and the cables that attach the controls to
the rudder. These components must be repaired when any straps or cables break, or the cable crimps fail.

3.15 **Retractable Rudders.** The rudders must be repaired or replaced if they fail to function correctly. Components within the rudder system prone to breaking include the rudder blade, the rudder pivot pin and the rudder mounting block.

3.16 **Bilge Pumps.** Foot-operated bilge pumps usually require very little maintenance. These pumps are to be repaired or replaced if they fail to function correctly. Electric bilge pumps require care to ensure that the batteries are protected from salt water and all terminals and joins are covered. Small stones caught in the impeller can stop function.

3.17 **Towlines.** The cordage on the towlines is to be replaced if it is damaged or broken. The clip on the towline is to be replaced if it fails to function correctly and the paddler cannot fix the problem. If the clip cannot be replaced or repaired, the complete towline is to be replaced. If the towline is tied in or utilises another form of quick release, that function should be tested.

3.18 **Helmets.** Helmets are to be replaced (not repaired) if cracked. Damaged helmets must be removed from the activity. All broken, frayed or damaged straps and clips are to be replaced before commencing an activity. If the individual items cannot be replaced, the helmet is to be exchanged.

3.19 **Distress Flares.** These are issued in a range of different types of packaging. Prior to commencing an activity, all flares are to be inspected for signs of water damage or water on the flare. All flares identified as wet or water damaged are to be returned to the point of issue and are not to be taken onto the activity. Flares are to be stored and transported in accordance with the *Defence Security Manual*. UATLs are to inspect the condition of the distress flares and the expiry date when they are being issued.
3.20 Personal Locator Beacons and Emergency Position Indicating Radio Beacons. PLBs and EPIRBs are to be tested for functionality in accordance with the manufacturer’s instructions and must have the battery’s expiry date checked prior to the commencement of an activity.

**CAUTION**

UATLs are to note that most PLBs and EPIRBs have testing schedules of no more than once per month or in some cases no more than once per year. Any excessive testing will result in flashing lights but NO TEST OF FUNCTIONALLITY.

UATLs must work with regional loan stores to confirm manufacturers’ instructions and establish a register for testing.

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**SECTION 3-3. MAINTENANCE OF SEA KAYAK EQUIPMENT**

3.21 All sea kayaking equipment, including individual equipment, clothing, group equipment and rescue equipment, is to be inspected for serviceability, washed in fresh water and dried away from direct sunlight at the completion of all activities. All metal, hinged or moving parts are to be lightly lubricated with a spray lubricant and tested for functionality before being placed back into storage.

3.22 The sea kayaking items and equipment that require additional maintenance are the following:

a. **Clothing.** All items of clothing are to be washed in warm, soapy, fresh water and rinsed with clean water.

b. **Neoprene Equipment.** All neoprene equipment, including wetsuits and spray decks, should be washed in hot water using specific neoprene detergents. If this type
of detergent is unavailable, any non-abrasive liquid detergent can be used.

c. **Battery-powered Equipment.** Batteries are to be removed from all battery-powered equipment after each activity. Silicone grease should be applied to the battery compartment seals to prevent water ingress and corrosion.

d. **Waterproof Electronic Equipment.** All waterproof electronic equipment should be soaked in fresh water to allow crystalised salt to dissolve before opening recharge ports or removing batteries and other connections.

e. **Dry Bags.** Dry bags are to be inflated with air when being washed, and inspected for holes by holding the inflated bag under water and checking for bubbles.

f. **Paddles.** Paddles are to be repaired or replaced if the shaft is bent or fractured. The blades are to be replaced if cracked, and are to be reattached to the shaft if they come loose. Rough spots on the shaft where it is held must be sanded smooth to ensure that the next user does not damage their hands during use.

**Annexes:**

A. Inspection Checklist Proforma
B. Fibreglass Repair Kits
C. Repairing Plastic Kayaks
ANNEX A TO CHAPTER 3

INSPECTION CHECKLIST PROFORMA
<table>
<thead>
<tr>
<th>Interval</th>
<th>Component</th>
<th>Check</th>
<th>Code</th>
</tr>
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<tbody>
<tr>
<td>I D R</td>
<td>Kayak body</td>
<td>Cracks, Holes, Deep scratches</td>
<td></td>
</tr>
<tr>
<td>I R</td>
<td>End toggles</td>
<td>Condition, Security</td>
<td></td>
</tr>
<tr>
<td>I D R</td>
<td>Deck line</td>
<td>Cordage condition, Security</td>
<td></td>
</tr>
<tr>
<td>I D R</td>
<td>Forward hatch covers</td>
<td>Condition, Correct fit, Secured to a deck line</td>
<td></td>
</tr>
<tr>
<td>I R</td>
<td>Forward stowage area/forward bulkhead</td>
<td>Leaks, Cracks, Holes</td>
<td></td>
</tr>
<tr>
<td>I R</td>
<td>Deck elastic</td>
<td>Condition, Security</td>
<td></td>
</tr>
<tr>
<td>I R</td>
<td>Cockpit coaming</td>
<td>Cracks, Deformation</td>
<td></td>
</tr>
<tr>
<td>I D R</td>
<td>Thigh braces</td>
<td>Condition, Security</td>
<td></td>
</tr>
<tr>
<td>I D R</td>
<td>Seat</td>
<td>Condition, Security</td>
<td></td>
</tr>
<tr>
<td>I D R</td>
<td>Footrest/rail</td>
<td>Operation, Cleanliness, Condition</td>
<td></td>
</tr>
<tr>
<td>I D R</td>
<td>Steering mechanism/cables, straps</td>
<td>Operation</td>
<td></td>
</tr>
<tr>
<td>I D R</td>
<td>Day hatch covers</td>
<td>Condition, Correct fit, Secured to a deck line</td>
<td></td>
</tr>
<tr>
<td>I R</td>
<td>Day stowage area/seat bulkhead</td>
<td>Leaks, Cracks, Holes</td>
<td></td>
</tr>
<tr>
<td>I D R</td>
<td>Fitting – anchor point, and quick release cleat</td>
<td>Security, Condition</td>
<td></td>
</tr>
<tr>
<td>Interval</td>
<td>Component</td>
<td>Check</td>
<td>Code</td>
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<td>--------------------------------------------------------</td>
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</tr>
<tr>
<td>I</td>
<td>Bilge pump and battery (if fitted)</td>
<td>Check for charge</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Fitted correctly</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Rust protection on terminals</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Fitted in waterproof container</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Aft hatch covers</td>
<td>Condition</td>
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<td></td>
<td></td>
<td>Correct fit</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Secured to a deck line</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Aft stowage area/aft bulkhead</td>
<td>Leaks</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cracks</td>
<td></td>
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<td></td>
<td></td>
<td>Holes</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Rudder system/skeg</td>
<td>Operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Security</td>
<td></td>
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<td></td>
<td></td>
<td>Cracks</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Bends</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Locking device</td>
<td></td>
</tr>
</tbody>
</table>

**Key:**
- I – Initial inspection
- D – Daily servicing
- R – On return to point of issue
- S – Serviceable
- U – Requires repair
- XX – Do not use
ANNEX B TO CHAPTER 3

FIBREGLASS REPAIR KITS

1. Contents of a Fibreglass Repair Kit. The contents of fibreglass repairs kits (see Figure 3–1) can be tailored to suit the number of kayaks on an activity. A comprehensive repair kit will help to manage the severity of damage to the kayaks during the activity. Some suggestions for the content of these kits are as follows:
   a. a roll of heavy-duty duct tape
   b. gloves and a face mask
   c. sandpaper
   d. resin
   e. a catalyst
   f. a fibreglass mat
   g. a stirring stick
   h. a mixing pot
   i. a small roller or spoon
   j. filler
   k. pliers with a wire cutter
   l. an adjustable spanner
   m. screwdrivers, flat-tipped and Phillips head
   n. a small tube of silicone
   o. a hand drill
   p. a small can of spray lubricant.
2. **Central Fibreglass Repair Kit.** A more elaborate repair kit should be carried in the safety vehicle or kept in a central location during the course of the activity. This kit, in addition to the items already listed, may include:

a. an electric drill
b. an electric sander
c. personal protective equipment
d. acetone
3B-3
e. scissors
f. a spoon
g. a roller
h. sandpaper
i. methylated spirits
j. a hacksaw.

3. Fibreglass repairs should be conducted, where possible, in warm, dry areas that are not in direct sunlight. These conditions will improve the time that the resin takes to cure and allow for an even curing rate.

4. Fibreglass field repairs are conducted as follows:
   a. wash the area clean of sand and dirt
   b. dry the area thoroughly with a cloth
   c. mark the area that requires the repair
   d. sand an area three times larger than the repair site on the inside and outside of the kayak, until the existing gel coat at the repair site is removed and the rest of the area is rough in texture
   e. remove any pieces of damaged fibreglass from the repair site
   f. cut a minimum of three pieces of fibreglass mat to the same size as the area prepared
   g. mix a small amount of resin and catalyst as per the manufacturer’s directions
   h. clean both sides of the repair site with acetone, or with clean water, and dry it
   i. apply a coat of resin mix to the inside of the kayak and apply a piece of matting
Contents

3B-4

j. using a spoon or a roller, the mat should have any air bubbles removed by rolling the mat into the resin from the centre to the outer edge of the repair site

k. the inside repair should be allowed to cure prior to repairing the outside of the kayak

l. if the hole is large and requires filling, a filler mix should be made up as per the manufacturer’s specifications

m. this filler is applied to the site and should be shaped to match the repair site and allowed to cure

n. once the filler has cured, it is sanded to match the original shape of the kayak and is cleaned

o. another batch of resin and catalyst is mixed and applied to the repair site

p. fibreglass matting and resin mix should be applied and rolled alternatively

q. once the resin has cured, the matting can be sanded to a smooth surface and a final resin coat can be applied.

5. **Conduct of Repairs.** All fibreglass repairs are to be conducted in accordance with the manufacturer’s instructions. On return to a central location the repair should be professionally checked and the gel-coat repaired.

6. **Safety.** All personnel involved in the conduct of fibreglass repairs are to wear personal protective equipment in accordance with the manufacturer's instructions.
ANNEX C TO CHAPTER 3

REPAIRING PLASTIC KAYAKS

1. **Contents of a Plastic Repair Kit.** The contents of plastic repair kits can be tailored to suit the number of kayaks on an activity. A comprehensive repair kit will help to manage the severity of damage to the kayaks during the activity. The following kit is required (additional items may be added based on duration, planned activities and accessibility for support vehicles to repair or extract kayaks):
   a. heavy-duty cloth tape
   b. foam
   c. 200 mm zip ties
   d. Spectraspeed™ cordage suitable for replacing one rudder cable
   e. a combo pliers/multi-tool
   f. a small tube of polyurethane sealant and adhesive.

2. **Central Repair Kit.** A more elaborate repair kit should be carried in the safety vehicle or kept in a central location during the course of the activity. This kit may include, but should not be limited to, the following:
   a. pliers with a wire cutter
   b. an adjustable spanner
   c. screwdrivers, flat-tipped and Phillips head
   d. a portable soldering iron
   e. a rounded metal scraping tool (or spoon)
   f. a cordless drill
   g. safety glasses
   h. foam
3. **Conduct of Plastic Repairs.** There are no manufacturer's instructions for the conduct of plastic repairs, so the following suggestions are offered to assist paddlers:

a. **Plastic Kayak Repair.** If a hull of a plastic kayak becomes holed during an activity, it may be repaired by:

(1) **Quick Repair.** A quick repair at sea utilises repair items that are close at hand, such as cloth tape (‘100 mph tape’) and silicone. The damaged compartment will need to be emptied of equipment to allow access to the damaged site. Cloth tape should then be applied to the site in a large X-pattern on the inside of the damaged compartment in order to give the damaged area additional strength. The kayak should then be upturned and the hole filled with either silicone or a piece of foam larger than the hole, and the area taped in a large X-pattern. To tape in place, wrap more tape around the whole craft until the repair site is covered. The equipment is then repacked into the stowage area of the sea kayak. This equipment is to be packed so that it applies as much pressure as possible to the repair site.

(2) **Advanced Repair.** If the hole has a jagged edge or is a deformed shape that will prevent a quick fix from being effective, an advanced repair will have to be conducted. A steel object, preferably a rounded object such as a spoon, can be heated over a flame and used to push the material back into shape. To assist in this repair, a solid object should be placed on the opposite side, on which to push against. This will assist the plastic in
forming into the desired shape. A naked flame should never be applied directly to plastic material as it will destroy the properties of the plastic. Once the plastic is formed into a manageable shape, a quick repair can be conducted.

b. **Plastic Stitch Welding.** If the kayak has a split in the hull or a straight crack that may deteriorate with further use of the kayak, a more complicated repair will have to be conducted. This type of damage is more prevalent along casting seams made during manufacture. It may be necessary to use a portable soldering iron to ‘stitch weld’ the ends of the splits to prevent further spreading of the crack. The soldering iron is used to melt small amounts of material in ‘stitches’ 90° to the direction of the crack. The material should be melted approximately 1 cm either side of the crack in small parallel lines. The soldering iron should be pushed into the material at a 45° angle, creating small shallow trenches. This pushes excess melted material forward. Once the crack has been covered with stitches, the excess material should be smoothed over with a hot steel spoon in small figure eight patterns. This will strengthen the repair by blending the excess over the crack site. The damaged area should then be taped to form a seal.

c. **Plastic Filler Welding.** If the crack is too large to stitch weld, a ‘filler’ may be required to close the hole. Filler rods or pieces have to be made of the same material as the kayak. If no filler rods are available, a piece of plastic may be shaved from the kayak from a position that will not compromise the kayak’s strength, such as the lip of the cockpit coaming or the back of the seat. The filler is used to provide extra plastic material to the repair site. The damaged area is heated using a soldering iron until it starts to melt. The filler is then applied to the damaged area. This will increase the amount of melted material at the site, allowing larger holes to be repaired. It is important not to apply excessive heat to the hull, as it may be damaged beyond repair. A solid object should be
placed on the inside of the repair to aid in retaining the original shape. The damaged area should be repaired in small sections, allowing one area to cool as another section is heated.

d. **Major Repairs.** If the hull of the kayak is damaged to the extent that the UATL is not able to repair it, the kayak is to be removed from the activity. On return to the point of issue, the kayak is to be tagged and reported to the store manager.
CHAPTER 4

STORAGE AND HANDLING

4.1 This chapter details the requirements for lifting, carrying, transporting, packing and storing a sea kayak during an AT activity.

SECTION 4-1. LIFTING AND LOWERING

4.2 Techniques. To minimise injuries to personnel and damage to equipment, safe lifting and lowering techniques are to be used at all times when handling sea kayaks and sea kayaking equipment. Where possible, two or more people are to be employed to lift kayaks, regardless of whether the kayak being lifted is empty or loaded.

4.3 Principles. The principles for lifting and lowering kayaks are the same, but are done in reverse order to each other. Before lifting or lowering a kayak, the lifters are to carry out the following:

a. position their torsos so that they are facing the kayak
b. place their feet shoulder width apart
c. straighten their backs and maintain this position while bearing the weight of the kayak
d. squat to lift or lower the kayak.

4.4 Lifters are able to hold the kayak by its carry handles or end toggles (only if unladen) when lifting or lowering it. Kayaks can also be lifted by the bottom of the kayak at both ends; this is the preferred method.
SECTION 4-2. CARRYING KAYAKS

4.5 Carrying a Kayak. Kayaks are to be carried by two or more participants. The number of people used to carry a kayak is dependent on the weight of the kayak and the strength of the people carrying it. As a general rule, two participants can carry either one or two empty kayaks by holding on to the kayak’s end toggles. Laden and double kayaks may require three, four or more participants due to their size and weight. Participants can carry kayaks in the following ways:

a. under their arms holding the bow or stern
b. by holding under the inside of the coaming
c. on one of their shoulders
d. by the end toggle for carrying, but only where unladen.

4.6 UATLs who have been training in lifting and carrying a kayak may lift, load or carry a single unladen kayak if capable of doing so (this should not be ordered).

SECTION 4-3. KNOT CRAFT

4.7 Knots and hitches are used during sea kayaking activities for a range of purposes, including securing kayaks to objects and securing items to kayaks and vehicles. The knots and hitches listed in Table 4–1 are required to be learnt.
### Table 4–1: Sea Kayaking Knots and Hitches

<table>
<thead>
<tr>
<th>Description</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bowline.</strong> Makes a secure loop in the end of a piece of cordage that is relatively easy to untie when not under load (eg, improvised bungee paddle leash loop).</td>
<td>![Image of Bowline Knot]</td>
</tr>
<tr>
<td><strong>Cat’s Paw.</strong> Used to attach a fixed loop to a line or narrow object (eg, paddle leash to deck line). It may also be referred to as a cow hitch.</td>
<td>![Image of Cat’s Paw Knot]</td>
</tr>
<tr>
<td>Description</td>
<td>Image</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td><em>Highwayman’s Hitch.</em> Used as a quick tie off to a bar or rail when temporarily securing a kayak at a jetty or wharf.</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td><em>Reef Knot.</em> Used as a temporary means of securing two ropes together such as tying a sail cover. It must not be used in any safety-critical area as it can fail under load.</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td><em>Sheet Bend.</em> Used for joining two lengths of cordage of different sizes as may be required for temporary repairs to rudders or deck lines.</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>Description</td>
<td>Image</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>Clove Hitch.</strong> Used as a starting hitch to secure a rope to a narrow object. It can both bind and slip and should only be used as a means of securing the end of a rope in conjunction with other knots to secure it fully.</td>
<td><img src="image1.png" alt="Clove Hitch Image" /></td>
</tr>
<tr>
<td><strong>Tape Knot.</strong> Used to join two equal-sized sections of tape to form a loop such as that required for a rescue stirrup.</td>
<td><img src="image2.png" alt="Tape Knot Image" /></td>
</tr>
<tr>
<td><strong>Double Fisherman’s Knot.</strong> Joins two ropes of equal size in a knot that is difficult to undo. Can be used to tension deck lines, join fishing line and form permanent loops such as a rescue stirrup in rope.</td>
<td><img src="image3.png" alt="Double Fisherman’s Knot Image" /></td>
</tr>
</tbody>
</table>
SECTION 4-4. TRANSPORT

4.8 Kayaks. Kayaks can be transported on the roof of a vehicle using roof-racks, in the cargo space of trucks, or on purpose-built trailers (see Figure 4–1). It is highly recommended that all kayaks be transported in slings to reduce the risk of being damaged in transit. The drivers of the vehicles transporting kayaks are to ensure that they comply with current national road laws. It is suggested that when loading kayaks for transportation, the heavier kayaks are loaded closest to the ground to avoid unnecessary lifting, in addition to maintaining a low centre of gravity for the vehicle. Regardless of how kayaks are loaded for transportation, they must be firmly secured using adequate padding and straps to prevent them from being damaged in transit. During transportation, kayaks are to have all fittings secured in order to prevent them from being lost or damaged. Kayaks are not to be transported if loaded with stores or equipment, and the decks of the kayaks are to be free of all items and equipment that could dislodge while in transit.

Figure 4–1: Kayaks Secured on a Trailer
4.9 **Kayak Accessories.** Damage to kayak equipment can be minimised by storing it in trunks during transit.

4.10 **Flares.** Flares must be transported in accordance with state and territory marine regulations and the *Defence Road Transport Manual*.

### SECTION 4-5. PACKING A KAYAK

4.11 Considerations for packing items into a sea kayak should include:

a. **Heavy Items.** Heavy items should be stored along the centre-line of the kayak and close to the cockpit.

b. **Balance.** To avoid the craft from becoming unbalanced and creating excessive rolling from side to side when on the water, equipment should be packed evenly on both sides of the kayak.

c. **Weight Shifting.** Loose items can shift in rough seas and cause the kayak to become unstable. Packing all items of equipment tightly into the stowage compartments will minimise the risk of weight shifting while paddling. Dry bags can be partially inflated and other buoyant items can be used to fill excess space in stowage compartments.

d. **Access to Emergency Equipment.** Emergency equipment must be readily accessible at all times during sea kayaking activities. A knife, whistle and mirror must be secured to the paddler’s PFD for the duration of the activity.

e. **Getaway Bags.** Contents of the getaway bag are detailed in the equipment list at Table 1–3. Where a suitable PFD with multiple pockets or storage is available key items should always be carried. Getaway bags should be:

(1) readily available at all times and secured behind the seat in the cockpit in calm seas
f. Safety Equipment. Safety equipment is to be readily accessible:

(1) It is recommended that this equipment, if carried, be stored behind the seat or in the day hatch in easy reach:

   (a) sunscreen and lipbalm
   (b) cag
   (c) paddle float
   (d) stirrup
   (e) individual first aid kit
   (f) water and food for consumption on water
   (g) repair kit
   (h) sponge
   (i) group first aid kit
   (j) kayak repair kit.

(2) It is recommended that this equipment is stored on the foredeck of the kayak:

   (a) throw line (required when preparing for possible activity requiring rescue)
   (b) hand-operated bilge pump (tied to the foredeck elastic or deck lines with a bowline)
   (c) navigation aids
   (d) the group GPS from the getaway bag may also be used for navigation
(e) deck compass
(f) paddle leash (tied to the foredeck elastic or deck line with a cat’s paw)
(g) drogue (tied to a front anchor point with highwayman’s hitch, if carried)
(h) VHF marine radio (is to be secured to PFD or carried readily accessible on deck).

(3) It is recommended that this equipment is stored on the aft deck of the kayak:
(a) helmet (readily accessible)
(b) towline (tied to anchor point with highwayman’s hitch)
(c) split paddle (ensuring that it is appropriately secured).

(4) It is recommended that this equipment is stored in the front or rear hatches of the kayak in a readily accessible position:
(a) emergency shelter/bivvi bag
(b) spare warm clothes
(c) stove, fuel and pot
(d) emergency water
(e) emergency rations
(f) sleeping bag (or space blanket)
(g) sleeping mat.

g. Hatch Access. Due to the danger of flooding, large hatches should not be opened while at sea in adverse conditions.

h. Keeping Items Dry. All items that need to be kept dry should be packed in sealed plastic bags and placed inside dry bags.
i. **Dry Bags.** Dry bags should be the last item placed into stowage areas. Smaller dry bags are easier to pack and adjust for kayak trim.

j. **Carriage of Fuels.** As some petroleum products may damage plastic or fibreglass material, it is recommended that only white fuel stoves or portable gas stoves be used during sea kayaking activities. Liquid fuels are to be carried and stored in an approved fuel container, which is secured inside a dry bag, to prevent fuel contamination to other equipment if the container leaks. Fuel containers are to be clearly labelled with their contents.

k. **Securing Accessories.** Any equipment not stored in a hatch is to be secured to the deck line and stored under a deck elastic. Any equipment stored in the cockpit is to be secured behind the seat to prevent possible interference with the paddler during a wet exit. The amount of equipment stored on the decks of the kayak is to be minimised to reduce the risk of entanglements in emergency situations.

**SECTION 4-6. STORAGE**

4.12 **Base Camps.** The base camp should be suitable to house all participants where necessary. Where a base camp is established for an activity, all equipment not being used is to be stored at the base camp. The characteristics of a suitable base camp are as follows:

a. where possible a military or cadet depot should be used in the first instance

b. adequate security to minimise theft

c. adjacent to water suitable for the activity

d. central to the activity area

e. shelter to protect equipment from the weather.
4.13 Returning Stores. On completion of the activity, all equipment used on the activity is to be cleaned, dried, inspected and repaired, and returned to the point of issue in accordance with Chapter 3. All sea kayaking stores are susceptible to UV rays and the weather, and should be stored indoors away from direct sunlight.
CHAPTER 5

LAUNCHING AND LANDING

5.1 This chapter outlines the procedures used for launching and landing sea kayaks.

SECTION 5-1. PREPARATION

5.2 Prior to each activity, paddlers must select a paddle and have their seating position in the kayak adjusted to suit them, as follows:

a. **Paddle Selection.** Left-handed and right-handed paddles are available in different lengths. The considerations for selecting a paddle are:

   (1) **Paddle Length.** Paddlers are required to select a paddle length that suits their height. The process for selecting a suitable paddle length is:

      (a) Place a blade of the paddle next to your feet when standing.

      (b) Reach up with one hand, without stretching, and place your fingers onto the top of the other blade.

      (c) A suitable paddle length is identified if the paddler’s raised arm is straight and the knuckles on that hand can be curled over the edge of the top blade (see Figure 5–1).

   (2) **Orientation.** Paddles are available for left-handed and right-handed people. The procedure for correctly fitting a correctly oriented paddle to a person is:

      (a) The paddle is held vertically with the power face of the lower blade facing towards the paddler’s feet.
(b) A left-handed paddle has the power face of the top blade facing to the left and a right-handed paddle has the power face of the top blade facing to the right.

Figure 5–1: Paddle Selection

b. *Paddle Position*. To test that the paddle is held in the correct position, the paddler must raise the paddle horizontally above their head with their arms bent at 90° and the master hand is placed on the paddle indicator (see Figure 5–2). This position is referred to as the paddlers box.
c. **Kayak Adjustment.** To adjust the kayak to suit the individual, the paddler must be seated comfortably in the cockpit with their knees slightly bent, and must be able to straighten their legs when required. The footrests are then adjusted so that the paddler's feet can touch them and operate the steering controls, if fitted. The paddler's legs are to be in a position where they can be secured in the thigh braces quickly, without changing the position of their body. The seat back is adjusted to provide support to the lower back of the paddler. Where kayakers are trained to conduct rolls the hips should be packed out to ensure contact and transfer of forces during the hip flick.

d. **Paddling Position.** The paddling position should have the hips slightly pronated (leaning forward) and the back straight to ensure engagement of the core muscles. Correct paddling position will minimise the risk of injury.
SECTION 5-2. KAYAK ENTRY AND EXIT METHODS

5.3 There are two methods used by paddlers to enter and exit their kayaks. They are the individual and the assisted methods. These methods reduce the possibility of damage to kayaks and injury to the paddlers.

Entry Methods

5.4 Individual Entry Method. Individual paddlers can use the individual entry method to enter their kayak, without assistance, from launching sites that enable them to stand next to their kayaks (e.g., beaches and boat ramps). To use this method, the paddler carries out the following:

a. secures the paddle shaft along the rear coaming of the cockpit in the extended paddle position with a hand, taking note of the following:
   (1) the power face of the blade on the extended end of the paddle must be facing upwards
   (2) in shallow water, the blade on the extended end of the paddle is rested on the shore

b. positions the paddle leash around the cockpit coaming

c. places a foot on the centre-line of the kayak

d. squats and transfers their weight onto the edge of the cockpit using their hands and the paddle to support them while they place the other leg into the kayak

e. slides into the cockpit with their legs straight

f. fits the spray deck to the cockpit, ensuring that the release tag remains accessible

g. brings the paddle to the front of the kayak, removing the paddle leash from the cockpit coaming.
WARNING

The release tag of the spray deck, when fitted to a kayak, is to always be accessible to prevent entrapment on capsize.

5.5 Assisted Entry Method. Paddlers, working in pairs, either in single or double kayaks, can use the assisted entry method to enter their kayaks from launching sites where they cannot stand in the water next to their kayaks, such as rocks and jetties. To complete this method a paddler must carry out the following:

a. post a sentry (if required)

b. position the kayak at the launching site

c. secure the paddle shaft along the rear coaming of the cockpit in the extended paddle position with their hand and position their paddle leash around the cockpit coaming, taking note that:

   (1) the power face of the blade on the extended end of the paddle must be facing upwards

   (2) in shallow water, the blade on the extended end of the paddle is supported either on the shore, rocks or jetty

d. enter the cockpit by applying weight onto the paddle shaft for support, while another paddler supports the kayak from the shore, rocks or jetty, taking note that if in a double kayak, one paddler enters the kayak at a time while the other supports the kayak

e. fit the spray deck to the cockpit.
Exit Methods

5.6 Individual Exit Method. Individual exit methods are used when the paddler can exit the kayak without assistance and stand in the water next to the kayak. To complete this method, the paddler carries out the following:

a. positions the kayak at the landing site
b. removes the spray deck
c. secures the paddle shaft along the rear coaming of the cockpit in the extended paddle position with a hand, taking note of the following:
   (1) the power-face of the blade on the extended end of the paddle must be facing upwards
   (2) in shallow water, the blade on the extended end of the paddle is rested on the shore
d. exits the kayak
e. holds the kayak by its bow toggle.

5.7 Assisted Exit Method. Paddlers working in pairs or small groups can use the assisted exit method from landing sites where they cannot stand in the water next to their kayaks, such as rocks and jetties. To complete this method, the paddler carries out the following:

a. posts a sentry (if required)
b. positions a kayak at the landing site
c. positions another kayak next to the first kayak to protect it from the weather
d. the second paddler supports the first kayak while the first paddler exits the kayak
e. the first kayak is secured to the shore or jetty using a rope that is secured to its deck line
f. the first paddler then supports the second kayak while the second paddler exits the kayak taking note, if in a
double kayak, one paddler exits the kayak at a time while the other supports the kayak

both paddlers can then remove the kayaks from the water

paragraph 5.7f and paragraph 5.7g can be repeated for subsequent kayaks.

SECTION 5-3. LAUNCHING AND LANDING

5.8 Kayaks can be launched and landed from numerous types of sites. Regardless of the site type, there are a number of tasks that need to be completed in order to conduct the activity safely. These tasks are as follows:

a. **Reconnaissance.** A reconnaissance is to be conducted on all launching and landing sites by the GL. This reconnaissance is carried out in order to identify the safest site for the group to launch from or at which to land. The reconnaissance may require the use of signals to manoeuvre the paddlers safely to the preferred launching or landing approach. The GL uses the reconnaissance to formulate a launching or landing plan, which is then briefed to the group. It is vital the GL identifies any hazards that may affect the group’s launching and landing. These hazards include:

   1. rocks
   2. rips
   3. marine dangers
   4. sea conditions
   5. other craft.

b. **Briefs.** The GL is to brief the group before launching and landing any kayaks. The briefs cannot be given until after the GL has completed a reconnaissance of the launching or landing site. The briefs are known as pre-launching and pre-landing briefs. These briefs are to
include the issuing of appointments such as the GM, assistant swimmers, 2IC and sentries. Additionally, the briefs will include details of the launching or landing site, boundaries, dangers and the order of march, including:

1. a description of the launching or landing site, including reference points
2. a description of the hazards present and their likely effect on the launching or landing
3. the issuing of appointments, if different to those already detailed in the initial safety brief
4. the confirmation of the responsibilities of the appointees
5. the preferred method of launching or landing
6. the order of march
7. the identification of boundaries
8. the confirmation of the signals that will be used
9. the rendezvous location
10. details of the actions on that are applicable.

c. Equipment Check. Before committing to the launching or landing of kayaks, the GL is to conduct an equipment check to ensure that all equipment is correctly stowed beneath decks or secured correctly on top of the decks.

d. Assistance. All paddlers, who are waiting to launch or land their kayaks, are to assist other paddlers as directed by the GL or as required. Assistants are always to wear a PFD and a helmet when entering the water or working on the shore, and they must never position themselves between a kayak and the shore or an obstacle.
To conduct a safe and efficient launch procedure, the following considerations are important:

a. **Group Launching Order.** The order of launching for key personnel in the group is as follows:
   
   (1) The first person to launch their kayak is normally the most capable paddler other than the GL.
   
   (2) The second last person to launch their kayak is the GM.
   
   (3) The last person to launch their kayak is the GL.

b. **Individual Launching.** Paddlers who launch from locations where they can stand in the water next to their kayaks can use the individual launching method. This method is ideal for launching a kayak from beaches or boat ramps. To complete this method:
   
   (1) The paddler floats a kayak into the water. If the launching of the kayak is being affected by the weather, the kayak needs to be positioned so that its bow is facing into the wind or waves.
   
   (2) The paddler enters the kayak.
   
   (3) The paddler moves the kayak into deeper water. If the weight of the kayak forces it to be grounded on a sandy or soft surface, the paddler needs to push the kayak into deeper water by using the knuckles of their hands. The paddle should not be used for this purpose.

c. **Assisted Launching.** Paddlers working in pairs, or small groups, can launch their kayaks using the assisted launching method from launching sites where they cannot stand in the water next to their kayaks. This method is ideal for launching sites such as rocks and jetties. Paddlers complete this method by:
   
   (1) Posting a sentry (if required).
5-10

(2) Two or more paddlers float a kayak into the water. If the launching of the kayak is being affected by the weather, the kayak needs to be positioned so that its bow is facing into the wind or waves.

(3) One paddler supports a kayak while another paddler enters the kayak using the assisted entry method.

(4) Paddlers who have already launched their kayaks can assist launching other kayaks by providing support, while other paddlers enter their kayak using the assisted entry method.

(5) paragraph 5.9c(1) to paragraph 5.9c(4) can be repeated for additional kayaks.

(6) All kayaks can be moved away from the launching site after launching.

d. **Seal Launch.** A seal launch can be used in areas where a kayak can be positioned at the water’s edge, and be picked up by a wave and taken into deeper water. To complete this method, the paddler:

   (1) positions the kayak at the water’s edge with the bow of the kayak facing into the approaching path of the wave

   (2) enters the kayak between the waves and waits for the kayak to be picked up by a wave

   (3) manoeuvres the kayak into deeper water.

**Landing**

5.10 **Group Landing Order.** The order of landing for key personnel in the group is as follows:

a. the first person to land their kayak is the GL

b. the second person to land their kayak is the GM, if this person is not the GL or 2IC

c. the last person to land their kayak is the 2IC.
5.11 **Individual Landing.** This method is used to land a kayak in an area where the paddler can land their kayak and exit it using the individual exit method. This method is ideal for sandy and soft banks, but is not suitable for rocky banks. To complete this method, the paddler carries out the following:

a. Lands the kayak with its bow as far up on the shore as possible or parallel to the shore if no surf exists. If landing the kayak is being affected by the weather, the kayak is to be beached so the craft’s stern is facing into the wind or waves.

b. The paddler exits the kayak.

5.12 **Assisted Landing.** This method is used to land a kayak at a landing site where the paddler is required to exit the kayak using the assisted exit method. To complete this method, the paddler carries out the following:

a. posts a sentry (if required)

b. positions the kayak at the landing site

c. positions the next kayak beside the first kayak to protect it from the weather and to support it while the first paddler exits the kayak

d. paddlers who have exited their kayaks, and are positioned on the shore, can support other kayaks while other paddlers exit their kayaks.
CHAPTER 6

STROKES AND TECHNIQUES

6.1 This chapter outlines the strokes and techniques used in AT sea kayak activities.

SECTION 6-1. CAPSIZE DRILL AND WET EXIT

6.2 Prior to commencing a sea kayaking activity, all paddlers are to be able to extract themselves from an upturned kayak. To do this, the paddler completes the Capsize drill and then a wet exit. This section details these procedures.

6.3 Capsize Drill. When a kayak capsizes and the paddler is unable to right the kayak using an Eskimo roll (see Chapter 9), the paddler is to conduct the Capsize drill. The Capsize drill is conducted to attract attention and await an assisted rescue. The Capsize drill is conducted as follows:

a. When the paddler is unable to keep the kayak upright they are to quickly bend forward with head and chest as close to the deck as possible.

b. Once the situation has stabilised, the arms are extended as far upwards beyond the waterline as possible with the paddle positioned between the arm and the kayak.

c. The paddler slaps the hull of the kayak three times with both hands simultaneously to gain the attention of other paddlers.

d. The paddler then moves their hands back and forth parallel to the side of the hull in a slow scissor action with their hands and arms away from the hull. This action enables the paddler to locate the bow of the rescuer’s kayak while minimising the risk of crush injury from approaching rescuer’s kayak.
e. The paddler is to remain in the upturned kayak for a minimum of 15 seconds, up to the maximum limit they can hold their breath while waiting to be rescued. If no rescuer arrives during this time period, they are to conduct a wet exit.

6.4 Wet Exit. A wet exit is the method of exiting the kayak after the completion of the Capsize drill, and is as follows:

a. *Locating the Release Tag*. The paddler is to run their hands down the side of their body to their hips. Once the paddler’s hands are on their hips they locate the coaming of the cockpit. From this position, the paddler traces the outside edge of the coaming with their hands forward (see Figure 6–1) until the spray deck release tag is located. This drill ensures that even in low visibility situations the release tag will be located. The release tag may be central or offset.

![Figure 6–1: Wet Exit – Locating the Release Tag](image-url)
b. *Holding the Release Tag.* The release tag is held with both hands (see Figure 6–2).

![Figure 6–2: Wet Exit – Holding the Release Tag](image)

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c. *Releasing the Spray Deck.* The release tag is pulled away from the body at 45° until the hands are above the head, in one smooth motion, to release the spray deck from the cockpit coaming (see Figure 6–3).
WARNING

Entrapment and subsequent drowning can occur if a release tag is not outside of the cockpit on capsize.

The immediate action to be taken if this occurs uses one or a combination of the following processes:

1. punch down and implode the spray deck
2. grab the side of the spray deck at the coaming and lift to break the seal
3. grab a handful of spray deck and lift to break the seal
4. use the map strap if fitted to break the spray deck seal.

Figure 6–3: Wet Exit – Releasing the Spray Deck
d. **Exiting the Kayak.** Once the spray deck has been released, the paddler relocates their hands on the cockpit coaming next to their hips and exits the kayak by simultaneously pushing down and forwards with both arms, pointing their toes to release their legs and conducting a forward roll out of the cockpit (see Figure 6–4).

![Wet Exit – Exiting the Kayak](image)

Figure 6–4: Wet Exit – Exiting the Kayak

e. **Signal ‘OK’**. Once out of the kayak they are to signal OK, if OK, by placing their fist on top of their head. If not OK they are to wave their fist to attract attention.
6.5 Craft Separation. To avoid becoming separated from the kayak in windy conditions, the paddler is to immediately locate and hold onto a toggle or the deck line until assistance arrives.

**WARNING**

The paddler is to maintain a hold on the coaming or deck line when exiting the kayak to minimise the risk of separation.

6.6 Wet Exit in Surf, Shallow Conditions or Near Rocks. In surf, shallow water or near rocks, where injury is possible, the paddler should exit the kayak as quickly as possible by bending forward and conducting an immediate wet exit and then move away from the shore side of the kayak.

6.7 Paddlers must move away from the danger side of the kayak. They should not position themselves between the kayak and the area of danger. The paddler is to retain hold of the paddle unless to do so becomes life threatening.

6.8 The Wet Exit in Double Kayaks. Once the wet exit has been conducted in a double kayak, the paddlers are to locate each other by calling out ‘NUMBER ONE OK (front paddler)’, the reply to which is ‘NUMBER TWO OK (rear paddler)’.

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*LWP-G 7-6-5, Adventurous Training – Sea Kayaking, 2019*
SECTION 6-2. STROKES

The Forward Stroke

6.9 The forward stroke is the primary method of paddling, requiring a balance of conserving energy and producing forward speed. A common fault when paddling is gripping the paddle too tightly, resulting in fatigue, cramping and tendonitis. To engage all muscle groups when forward paddling, a push-pull action with the arms is required in conjunction with torso rotation. The forward paddling stroke is broken down into four phases, which are as follows:

a. The Entry Phase. The paddler sits upright with a slight forward lean. The paddler’s torso and shoulders are rotated with the forward arm straight and the rear arm bent at 90°. The forward blade of the paddle is fully submerged into the water, level with the paddler’s toes (see Figure 6–5).

b. The Power Phase. The power phase commences when the blade is fully submerged. The paddler rotates their torso and shoulders rearwards to draw the paddle blade through the water (see Figure 6–6). The paddle blade remains parallel to the side of the kayak. The paddler transfers their weight to the same side of the kayak as the submerged paddle blade, which transfers the power that is generated by the torso into the stroke. The height
of the paddler’s top hand should remain between the height of the paddler’s chin and forehead.

Figure 6–6: Forward Stroke – Power Phase

c. *The Exit Phase.* The exit phase begins when the length of the pull cannot be continued without bending the lower arm. The blade will be between the mid-thigh and the hips. The blade is removed from the water by rotating the paddle for the next stroke and slicing the side of the blade out of the water (see Figure 6–7).

Figure 6–7: Forward Stroke – Exit Phase

d. *The Recovery Phase.* On completion of the exit, the paddle shaft is in a horizontal position ready to commence the next stroke on the opposite side. The wrist of the paddler’s dominant hand will rotate the paddle around until the blade of the paddle is in the correct position for entry. There is a slight pause in this
position, which allows the kayak to glide on its own. This process is continued on both sides (see Figure 6–8).

Figure 6–8: Forward Stroke – Recovery Phase

6.10 Forward Stroke in Ocean Conditions. Paddlers must be able to change their stroke to suit the constantly changing conditions. Paddlers may be required to combine forward paddle strokes with low bracing to increase stability. In windy conditions the positioning of the paddle is lowered to reduce the effects of the wind. A high angle, high tempo paddle stroke delivered while leaning forward is used to increase power of stroke in surf.

6.11 Paddling in a Double Kayak. In a double kayak, the paddler seated in the front cockpit sets and maintains the cadence when using the forward stroke, and the rear paddler when using the reverse stroke. Depending on the type of steering system fitted to the kayak, either the front or rear paddler may be responsible for steering the craft.

The Reverse Stroke

6.12 The reverse stroke is used to propel the kayak in a rearward direction. This stroke enables a paddler to reverse their course if danger exists in front of them. The reverse stroke is most effective with the kayak’s rudder raised. This stroke is broken down into four phases, as follows:

a. The Entry Phase. The paddler’s torso and head is rotated rearwards (see Figure 6–9) to see where you are going. The back face of the blade is placed fully
submerged in the water with the power face towards the rear, approximately half a metre behind the paddler. The uppermost paddle blade is positioned on the same side of the kayak with the paddler's upper forearm in a horizontal position.

Figure 6–9: Reverse Stroke – Entry Phase

b. The Power Phase. The paddler’s torso is rotated forwards with both arms bent at 90°. The lower paddle blade is pushed through the water parallel to the kayak’s side until it reaches a position level with the paddler’s knees (see Figure 6–10). The paddler’s head remains looking over the shoulder of the side that the stroke is being conducted on, until the exit phase.

Figure 6–10: Reverse Stroke – Power Phase
c. **The Exit Phase.** The paddler’s head is rotated to the opposite side in preparation to reposition the paddle, every third stroke the paddler should look rearward. The lower blade is then lifted out of the water (see Figure 6–11).

![Figure 6–11: Reverse Stroke – Exit Phase](image)

Figure 6–11: Reverse Stroke – Exit Phase

d. **The Recovery Phase.** The paddle is transferred to the other side of the kayak and the lower blade is rotated into the correct position to enter the water. The paddler’s torso is fully rotated towards the rear of the kayak on the opposite side (see Figure 6–12), and the process continues.

![Figure 6–12: Reverse Stroke – Recovery Phase](image)

Figure 6–12: Reverse Stroke – Recovery Phase
The Emergency Stop

6.13 The emergency stop is used to avoid colliding with obstacles. The emergency stop is a series of quick, short reverse/forward strokes. This process is continued until the kayak has stopped and is under control.

The Forward Sweep Stroke

6.14 The forward sweep stroke is used to turn the kayak when moving forward or when stationary. The sweep stroke is conducted in three phases, as follows:

a. **The Set-up.** The paddler’s torso is rotated forward on the opposite side to that the sweep is to be conducted on. The most forward paddle blade is placed into the water in the position of the paddler’s feet (see Figure 6–13), with the power face outwards. The knee on the opposite side is raised to expose the hull of the kayak in the direction that it will turn.

![Figure 6–13: Sweep Stroke – Set-up Phase](image)

b. **The Sweep.** The paddler’s torso is rotated towards the rear of the kayak (see Figure 6–14). The most forward paddle blade is swept in a wide arc just beneath the water’s surface until approximately 45° to the stern. The power created by rotating the torso is transferred to the kayak through the foot on the same side. The paddler watches the blade until the paddle exits the water.
c. **The Exit.** The blade is lifted out of the water (see Figure 6–15) and placed into the set-up position if required.

![Figure 6–14: Sweep Stroke – Sweep Phase](image1)

**Figure 6–14: Sweep Stroke – Sweep Phase**

**The Reverse Sweep Stroke**

6.15 The reverse sweep stroke is used in conjunction with the forward sweep stroke to turn the kayak in a full stationary circle. The reverse sweep stroke is conducted in three phases, as follows:

a. **The Set-up.** The paddler’s torso is rotated rearward on the side that the sweep is to be conducted on. The rearmost paddle blade is placed into the water approximately half a metre behind the cockpit, with the power face facing the kayak. The knee on the same side as the sweep is raised to expose the hull of the kayak in

![Figure 6–15: Sweep Stroke – Exit Phase](image2)

**Figure 6–15: Sweep Stroke – Exit Phase**
the direction that it will turn. The paddler's head should be facing the direction in which the kayak is to be turned.

b. The Sweep. The paddler's torso is rotated towards the front of the kayak. The rearmost paddle blade is swept in a wide arc just beneath the water's surface and once the blade is approximately 45° from the bow, the sweep is complete. The paddler's head remains facing the direction in which the kayak is to be turned.

c. The Exit. The blade is lifted out of the water and placed back into the set-up position, if required.

The Sweep Stroke in a Double Kayak

6.16 To enable the double kayak to be turned efficiently, the front and rear paddlers conduct sweep strokes on opposite sides of the kayak in the opposite direction to each other. This can be a combination of both forward and reverse sweep strokes.

The Draw Stroke

6.17 The draw stroke allows the kayak to move sideways a short distance, from a stationary position. Three draw strokes are used in Defence:

a. simple draw

b. feather draw

c. sculling draw.

6.18 Simple Draw. The simple draw stroke is broken down into three phases:

a. The Set-up. The paddle is reached out at 90° to the side of the kayak, with the power face of the lower blade fully submerged in the water and facing the paddler (see Figure 6–16). The paddler's lower arm is outstretched and the upper forearm is positioned horizontally in front of the face. The paddler's knee is raised on the same side as the draw stroke is being conducted on to expose the hull of the kayak. The paddler's head and eyes are facing the direction in which they are paddling.
b. *The Draw.* The paddle is drawn into the side of the kayak with the lower arm (see Figure 6–17). The upper arm of the paddler remains in the same vertical position and allows the paddle shaft to pivot in the hand. The paddler’s head and eyes remain facing the direction in which they are paddling.

c. *The Recovery.* The paddle is lifted from the water. This process is repeated until the target has been reached.

6.19 **Feather Draw.** The feather draw stroke is broken down into three phases, as follows:

a. *The Set-up.* The paddle is reached out at 90° to the side of the kayak, with the power face of the lower blade fully submerged in the water and facing the paddler (see Figure 6–16). The paddler’s lower arm is outstretched and the upper forearm is positioned horizontally in front of the face. The paddler’s knee is raised on the same side as the draw stroke is being conducted on to expose the hull of the kayak. The paddler’s head and eyes are facing the direction in which they are paddling.

![Figure 6–16: Draw Stroke – Set-up Phase](image-url)
b. *The Draw*. The paddle is drawn into the side of the kayak with the lower arm (see Figure 6–17). The upper arm of the paddler remains in the same position and allows the paddle shaft to pivot in the hand. The paddler’s head and eyes remain facing the direction in which they are paddling.

![Figure 6–17: Draw Stroke – Draw Phase](image)

Figure 6–17: Draw Stroke – Draw Phase

c. *The Recovery*. The paddle shaft is rotated with the upper hand until the power face of the lower blade is facing 90° to the side of the kayak (see Figure 6–18). The paddle blade remains in the water and is pushed by the lower arm back to the original set-up position, and rotated until the power face is facing the kayak again. This process is repeated until the target has been reached.
6.20 **Sculling Draw.** The sculling draw stroke is broken down into two phases, as follows:

a. *The Set-up.* The paddle is reached out at 90° to the side of the kayak, with the power face of the lower blade fully submerged in the water and facing the paddler (see Figure 6–16). The paddler’s lower arm is outstretched and the upper forearm is positioned horizontally in front of the face. The paddler’s knee is raised on the same side as the draw stroke is being conducted on to expose...
the hull of the kayak. The paddler’s head and eyes are facing the direction in which they are paddling.

b. **The Draw.** The paddle is moved with the blade at 45° to the kayak and the direction of movement. A figure eight pattern is drawn alongside with the blade angle providing draw power. The upper arm of the paddler remains in the same position and allows the paddle shaft to pivot in the hand. The paddler’s head and eyes remain facing the direction in which they are paddling.

### SECTION 6-3. RECOVERY STROKES

#### 6.21 The Low Brace.** The low brace is used to stabilise the kayak laterally in rough sea conditions. As the kayak tips to one side, the stationary low brace is conducted, as follows:

a. the paddle is held low across the waist of the paddler, with the back face of the blade being used to support the paddler upright

b. the paddler’s upper arms are raised, forearms bent down at 90°, with knuckles facing the surface of the water to allow their bodyweight to be transferred over the paddle shaft and onto the spray deck; the offside hand is brought close to the hip

c. the paddler’s head and eyes are facing the blade being used for support

d. as the paddle blade reaches the water, the paddler slaps the flat of the back face of the blade onto the surface of the water and flicks their hips to right the kayak

e. the paddler’s head should be the last part of the body to come to the upright position (see Figure 6–19)

f. bring the leading edge of the blade forward and up to exit the water – lifting the blade straight up may result in capsize.
6.22 The Low Brace in Surf. The low brace is used to stabilise the kayak laterally in low surf (see Figure 6–20). As the kayak broaches, the paddler conducts a low brace, as follows:

a. the paddler uses the back face of the supporting paddle blade to rest on top of the wave
b. the paddler leans the kayak edge into the wave so that the exposed hull is facing the shore, supporting the weight on the paddle shaft and lifts the edge of the kayak when on the wave
c. the paddler may steer off the wave or may continue paddling normally once the power of the wave has passed underneath the kayak.

Figure 6–19: Low Brace

Figure 6–20: Low Brace in Surf
6.23 The High Brace. The high brace is used to right a tipping craft prior to it becoming capsized. The high brace is conducted as follows:

a. the paddler quickly places the forward paddle blade into the forward stroke set-up position on the side that the kayak is tipping over on (see Figure 6–21)

![Figure 6–21: High Brace – Step 1](image1)

b. the paddler then leans forward and begins a sweep stroke across the surface of the water (see Figure 6–22)

![Figure 6–22: High Brace – Step 2](image2)

c. once the paddle has been swept in an arc of 45°, the paddler conducts a hip flick in order to right the craft, the chin maintains contact with the shoulder closest to the water until the craft is righted (see Figure 6–23)
d. the paddle is now in a position to continue forward paddling.

**WARNING**

To reduce shoulder injuries, the paddle sweep is not to exceed 90° to the paddler’s body, nor is the paddle shaft to rise above the paddler’s head. The high brace is an advanced technique and should not be practiced by novice sea kayakers.

6.24 **The High Brace in Surf.** The high brace in surf is used to stabilise the kayak laterally in large surf (see Figure 6–24). As the kayak broaches in large surf, the paddler conducts a high brace as follows:

a. the paddle is placed into a horizontal position with the paddle shaft level with the chin and extended out to the side that the surf is on

b. the power face of the extended paddle blade is forced into the face or over the lip of the wave

c. elbows should be locked in tight against the torso and this position maintained as long as possible

d. the paddler leans the kayak into the wave, supporting the weight on the paddle shaft with the head positioned on the chest
the paddler will have to remain in this position until the wave loses its height; they then may change position to a low brace or conduct a hip flick to right the kayak.

**WARNING**

To reduce shoulder injuries the paddle shaft is not to rise above the paddler’s head or be positioned behind the paddler’s body.

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**SECTION 6-4. STROKES AND TURNS ON THE MOVE**

**6.25 The Stern Rudder.** The stern rudder (see Figure 6–25) is used to steer the kayak in following seas and surf. The stern rudder position provides the paddler with support while steering the kayak and is conducted as follows:

- a. using torso rotation, the paddle blade is placed vertically in the water and positioned close to the side of the kayak, approximately half a metre to the rear of the cockpit. The power face is facing towards the kayak. The paddler’s head is facing forward
- b. the kayak is manoeuvred by either pushing away or drawing the blade to the kayak.
6.26 The Bow Rudder. The bow rudder (see Figure 6–26) is used to make small adjustments to direction while in forward motion. The bow rudder can be used during the forward paddle without washing off forward speed. The bow rudder manoeuvre is conducted as follows:

a. The blade of the forward paddle is rotated 90° with the power face of the blade facing the kayak, then the paddler places the forward blade into the water. The angle that the blade is rotated to is used to steer the craft.

b. Once the kayak has reached the desired course, or the kayak is beginning to wash off forward speed, the paddler continues to paddle forward by rotating the blade until the power face is rearward and continues a forward stroke.
6.27 Edging. A kayak is placed on its edge by raising a knee, pushing down on the toes of the opposite foot and tilting the hips. This is called edging. The paddler’s body remains upright over the centre of the kayak. Edging is used to alter direction, side surf, traverse and ferry glide.

6.28 Ferry Gliding. Ferry gliding is used to cross fast flowing water or channels without travelling rearwards (see Figure 6–27) and is achieved by carrying out the following:

a. Setting the Angle. The paddler must position the kayak, with the bow facing the current and the opposite shore, on such an angle that the kayak will not travel rearwards.

b. Setting the Edge. The paddler must then lean the kayak towards the opposite shore to set the edge and expose the hull towards the oncoming water.

c. Traversing the Current. The paddler then paddles forward, retaining the edge and the angles set. They are
to focus on the landing point on the opposite shore, and alter either the edge or the angle if travelling in a rearwards direction from it.

Figure 6–27: Ferry Glide
CHAPTER 7

ROCK NEGOTIATION

7.1 This chapter details procedures for the safe conduct of sea kayaking activities in rocky environments.

Definitions

7.2 Rock formations are openings in ocean-facing rock formed primarily by erosion. Sea caves are found throughout the world, actively forming along coastlines.

7.3 In Australia, most ocean rock formations are a result of volcanisms, generally in basaltic rock which has then been subject to wave action.

7.4 The following rock formations may be paddled into or through. For Defence rock negotiations the following definitions apply:
   a. Gauntlets. Gauntlets are groups of rocks that have gaps that may be paddled through.
   b. Paddle Overs. A paddle over is a flat, isolated rock which may be paddled onto or over assisted by wave action that will always drain.
   c. Shelf. A shelf is a horizontal rock formation which may be used for seal landings assisted by wave action.
   d. Bombora. A bombora is an Australian Aboriginal word for a dangerous current over a hidden reef. It has come to mean a submerged rock or reef and is colloquially known as a bommie.
   e. Overflow. An overflow occurs when a volume of water is forced up onto a rock shelf or ledge by wave action and recedes draining to a lower plane causing an overflow into the sea.
   f. Cuttings. A cutting is a small, eroded fissure which has no ceiling and may have multiple openings.
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g. **Crevice.** A crevice is a larger or longer eroded fissure which has no ceiling and may have multiple openings.

h. **Chute.** A chute is when a body of water is forced through a smaller passage which results in an increase velocity.

i. **Arch.** An arch is natural rock formation where an arch is formed with an opening underneath.

j. **Sea Caves.** Sea caves have a ceiling and may have multiple openings.

**General Considerations**

7.5 At all times when sea kayaking in the vicinity of rocks, all kayakers are required to wear helmets.

7.6 Rocky landings are prohibited for initial training.

7.7 Paddling in rocky environments is not to be conducted at night as full situational awareness cannot be achieved.

7.8 UATLs must conduct a reconnaissance and assess each rock obstacle prior to participants negotiating the obstacle.

7.9 Sentries are required to be set by the UATL where there are possible risks arising from sea and swell. The sentry is to watch for swell and rogue waves and provide warning to paddlers in obstacles.

7.10 The shape of the walls are to be considered when negotiating rock formations. The types of walls that are found in rock formations are as follows:

a. **Straight/Sheer.** Straight walls are the safest type of walls within a rock formation. The swell will generally rise and fall evenly up and down the wall.

b. **Steep Slopes.** Steep sloped walls are generally safe. A kayak will usually float with the water away from the side walls.

c. **Gentle Slopes.** Rock formations with gentle sloping walls require more caution. Kayaks have the potential of being
caught on a ledge before being rolled and/or sliding onto other rocks.

d. Overhang. Kayakers that are negotiating rock formations with large overhangs must proceed with caution. If kayakers are moving under overhangs, there is potential for kayakers to be pressed up against the overhang when the swell rises.

**WARNING**

Overhangs and undercut ledges may cause entrapment resulting in death.

e. Mixed. Rock formations have potential to have mixed types of walls.

**CAUTION**

Caution is required when conducting a reconnaissance of an unfamiliar rock formation.

f. Rear of Rock Formations. At the rear of rock formations, the following may be encountered:

1. beach – most likely pebble or gravel beaches
2. rocks
3. rock platform
4. overhang
5. sheers walls
6. narrow crack – unknown end location.

**Sea Caves**

7.11 Under certain conditions, sea caves can quickly change from awe-inspiring to terrifying. As waves roll into and reflect off the cave walls, they can intensify and capsize even experienced kayakers.
There are three general types of caves (see Figure 7–1), they are as follows:

a. **Straight.** A straight cave is relatively safe with generally a consistent width. Swell and waves in a straight cave are normally the same height as outside of the cave.

b. **Funnel.** The funnel cave generally has a wide open entrance and then tapers to a point towards the rear of the cave. When negotiating funnel caves, caution is required as waves will increase in magnitude as they pass through the funnel. Generally, waves are larger in the cave than the outside. It is important that participants do not move beyond any regular wave break formed, due to the risk of impacting a paddler or their kayak onto rock in a dangerous manner.

c. **Small Entrance.** A small entrance or mushroom cave will have a smaller entrance before opening up to a larger area. Generally, the small entrance cave is the safest type of cave as waves will dissipate in the larger space beyond the entrance. Waves are smaller in the cave than the outside.

![Figure 7–1: Sea Cave Types](image-url)
7.13 **Unit Adventurous Training Leader Conduct.** The following is a guide on the process of entering rock formations:

a. The GL conducts a reconnaissance.

b. The 2IC conducts concurrent activity.

c. The GL briefs participants in a raft away from the entrance.

d. The GL positions a sentry to observe for danger and provide warning by use of whistle or yelling.

e. The GL positions themselves to control the participants’ movements within the rock formation and to be best positioned to undertake any rescue where a participant is at genuine risk.

f. Visibility is to be maintained onto the participants.

g. The 2IC controls the group and order of march.

h. The GL stops at a safe point and signals for one participant to move in and advises actions on.

i. The GL coordinates rescue as required.

j. The 2IC sends in participants.

k. The GL guides the participants, preferably to level with the GL, depending on rock formation width.

l. The GL controls participants in and out of the rock formation.

m. Participants move in and out of raft area under control of the 2IC.

7.14 It is important to keep the activity moving to avoid boredom and sea sickness, especially with large groups. This should be managed by the GL.

7.15 If the rock formation is wide and safe enough, allowing more than one participant in the rock formation may be considered.
Rescues

7.16 Before conducting any activities in rock formations, rescue equipment is to be prepared and the UATL best positioned to undertake any rescue where a participant is at genuine risk. The following equipment is required:

a. two throw bags per group ready, on deck and tied off and mouth open
b. towline daisy chained to approximately one kayak length
c. fins may be used by rescue swimmers.

7.17 When conducting a rescue, GL judgment is to be applied to the type of rescue to be conducted. The preferences for the conduct of rescue options are as follows:

a. self-rescue (swim out)
b. assisted rescue under tow clear of the danger area
c. swim rescue.

7.18 Rescue Processes. The following details are suggested rescue drills to conduct rescues:

a. Simple Rescue. Participant wet exits on ocean (safe) side of rock formation and attempts to retain contact with the kayak:

(1) participant gives 'I am OK' signal if they are OK
(2) participant rights kayak where possible
(3) GL coordinates appropriate type of rescue, as follows:

(a) Self-rescue. The participant conducts a self-rescue to re-enter the kayak and paddles out, or swims the kayak out holding an end toggle. If they are a weak swimmer they may need to be directed to swim out and the kayak recovered separately.
(b) Assisted Rescue under Tow. The GL determines the appropriate method of tow and executes. Once the participant and kayak are clear an appropriate assisted rescue is conducted to drain the kayak and ensure that the participant is ready to continue. An assisted rescue under tow can be a complex rescue if the person or kayak is in a position not easily able to be rescued.

**WARNING**

The kayak must not be placed between the waves and participant.

The participant must not be placed in a position where the kayak may crush against rocks due to wave action.

Do not use hands to push off rocks. Use your paddle.

Use of towlines and throw bags create entanglement hazards. Where used, all participants are to carry rescue knives.

b. Complex Rescue. A swim rescue is a complex rescue, where a participant is not OK or in a position where rescue by kayak or throw rope is not possible. Considerations for a rescue swimmer are:

(1) swimming in a complex environment is a last resort only

(2) detailed plan including control measures, actions on and communications

(3) spray deck may be removed and fins used if available

(4) use of throw bag and towline, noting risk of entanglement with people, other ropes and
equipment when in use; when using towlines they may be gradually let out to minimise this risk, throw bags may also be thrown from land which may increase accuracy and distance

(5) minimise people in the danger area

(6) first aid may need to be applied to the rescuee immediately and possibly throughout the rescue

(7) complexity, depth and shape of rock formation from which the participant must be rescued or equipment recovered

(8) whether or not the rescue swimmer should be tethered to a kayak, ready to tow the rescue swimmer and/or rescuee away from danger

(9) whether or not the rescue swimmer uses the rescued kayak to assist with the rescue, with either themselves or the rescuee paddling.

7.19 Conduct. The reconnaissance and assessment of rock formations is paramount in determining whether they are safe to negotiate. The mnemonic DRSABCD as applied here is used to structure this process:

a. **Dynamics.** Dynamics of water are impacted by the volume of water and how it flows into or through the rock formation. Sea conditions and the direction and timing of swell sets need to be understood before assessing impact on the rock formation. Rock formations directly facing into swell pose the greatest risk. Changing shape of the rock formation will generally cause observable patterns of water movement and assist in determining the shape of rock formation and structure beneath. Of particular note, the direction a rock formation will drain needs to be assessed to ensure that participants and kayaks will be safely flushed out from the rock formation.
WARNING

The rock formation must be able to be swum safely. This is one measure that may be used in assessing an obstacle.

b. *Risks.* The primary assessment is to ensure that a rescue is feasible and the risks of injury on capsize or error are within acceptable limits. The UATL is only to conduct the activity if they are prepared and capable of conducting the rescue. Sufficient room is required in order to conduct a rescue with another kayak. Reconnaissance of a cave is generally done by paddling backwards. This ensures visibility of incoming waves and maximum power and control with forward paddling to exit. To control entry, paddle backwards on the back of the waves.

c. *Smash.* Smash is the assessment of the impact of formed waves within the rock formation and the risk they generate of impacting a paddler or their kayak onto rock in a dangerous manner. If a safe re-launch area exists inside the rock formation smash must have no effect.

d. *Above.* Above is a cue to check for hazards above the waterline of the kayak. Hazards include the roof of caves, overhangs, inclined walls and sharp rocks. Consideration needs to be given to the maximum rise and fall of water due to wave action and changing tides.

e. *Below.* Below is a cue to check for hazards below the waterline of the kayak. Hazards include the depth, submerged and dangerous objects such as rocks, oysters, barnacles and sea urchins. Consideration needs to be given to the maximum rise and fall of water due to wave action and tides and the resultant exposure of rocks.

f. *Controls.* A frontload is the method used to communicate the control measures and processes used while
conducting rock negotiation. The frontload is described using the mnemonic SAPQ (see paragraph 7.20).

g. **Debrief.** Provides feedback to individuals and the group on performance and improvements that could be made.

### 7.20 The mnemonic SAPQ as related to frontload is as follows:

a. **S** = *Situation.* Situation describes the current status and objectives of the group. The UATL is to explain the rock formation, the dangers and endstate to be achieved.

b. **A** = *Anxieties.* Participants are to be informed of the anxieties that may be felt.

c. **P** = *Processes.* Process is used to describe the execution of specific tasks and skills required to achieve the objective.

(1) **Route.** The route defines the staging area and direction of travel into and out of the rock formation.

(2) **Groupings and Tasks.** These are as follows:

(a) **Sentry.** The UATL will direct the location of sentries to provide warning of dangers using whistle, voice or other signal.

(b) **Second-in-Command.** The 2IC controls the participants through gating of entry and exit from the rock formation.

(c) **Unit Adventurous Training Leader.** The UATL will position themselves to control the participants’ movements within the rock formation and to be best positioned to undertake any rescue where a participant is at genuine risk.

(d) **Actions On.** Actions on capsize and who is to undertake rescues must be defined.

(e) **Order of March.** Defines the sequence participants are to undertake execution.
(f) **Equipment.** Confirm helmets worn, throw bag ready; on deck and tied off and mouth open, fins accessible if available.

(g) **Command and Signals.** The UATL is to brief all participants on the communications to be used during the conduct. Whistle, paddle signals and voice will generally be used.

d. **Q = Qualities.** Defines the qualities required to be demonstrated by the participants to achieve the objective.

7.21 **Seal Landing.** Rocky landings and launches (also known as seal landings [see Figure 7–2]) are permitted by all participants after the GL has assessed the area feasible. This method is used to land a kayak onto the shore using the water’s surge. This method is commonly used to land on rocks and is not recommended for fibreglass kayaks. To complete this method, the paddler rides the surge onto the rocks and quickly exits the kayak before the water has a chance to recede, as detailed in Figure 7–2 and Figure 7–3.

7.22 Paddlers must maintain situational awareness, including the awareness of incoming waves and other kayaks. They should maintain a grip on the kayak after they have exited to prevent the kayak from being swept back into the water by the receding surge.
Figure 7–2: Seal Landing – Start

Figure 7–3: Seal Landing – Finish
The following factors are to be considered:

a. **Platform Surface.** The surface of where the seal landing is to occur should ideally be a flat, smooth surface that is free from sharp objects such as jagged rocks, oysters and barnacles that may cause injury to paddlers and or unnecessary damage to equipment.

b. **Water Volume.** There is to be enough water volume within the swell or waves to ensure that kayaks will reach the landing platform. Ideally, spilling waves should be used to perform the landing in place of plunging waves which may prevent the landing platform from being reached.

c. **Wave Period.** The wave period needs to be assessed to ensure that sufficient times are available to land and exit the cockpit.
CHAPTER 8

SURF

8.1 This chapter details procedures for the safe conduct of sea kayaking activities in surf environments:

a. Novice participants are permitted to negotiate surf up to 1 m in height and advanced participants can negotiate surf up to 1.5 m. Where there are no other suitable landing sites, surf landings may be conducted in observed surf up to 2 m. The GL is required to consider all options including evacuation from water or waiting out for more favorable conditions.

b. During specified surf landings, a shore party should consist of a GM and one strong swimmer who is to be nominated as a rescue swimmer. The rescue swimmer is to assist participants in the water and in the retrieval of equipment. All personnel, including the rescue swimmers, are to wear helmets and PFDs when negotiating surf until the whole group has landed safely.

c. A group surf launch and landing is a controlled activity where greater supervision is required due to the risk of injury where the following procedure is to be adhered to in waves greater than 0.5 m or where greater control is required.

d. Surf launch and landings should be conducted quickly to minimise the risk of sea sickness.

e. Use of a VHF marine radio in conjunction with other signalling methods is recommended where a significant distance is between the BM and 2IC.

f. The SOA may act as BM in low light and night conditions.
8.2 **Appointments and Duties.** To conduct a safe and efficient surf launch or landing, the following appointments are required:

a. **Beachmaster.** The BM is responsible for the safe conduct and control of the group during launching and landing.

b. **Second-in-Command.** The 2IC is generally a strong paddler within the group and assists the BM in the conduct of launches and landings. The 2IC is responsible to the BM for guiding participants through the surf zone and assisting in rescues on water.

c. **Group Medic.** The GM is responsible for providing medical support on the beach, if required.

d. **Rescue Swimmer.** The rescue swimmer is responsible for assisting the BM by assisting the paddler with launching or landing their kayak, personnel rescue and in recovery of equipment. The rescue swimmer is to be capable of swimming within and potentially beyond the primary break. Where the rescue swimmer is incapable of achieving this requirement, they are restricted to shallow waters.

8.3 **Equipment.** All personnel involved in surf launches and landings are to wear a helmet and PFD for safety to the individual, in addition to assisting in the recovery of a kayak. While acting as a rescue swimmer, the member may remove their spraydeck.

### Launching a Kayak into Surf

8.4 **Surf Launch Procedure.** The procedure for surf launching is as follows:

a. **Reconnaissance.** The BM conducts a thorough search of the launch site to identify the safest route through the surf, where the following aspects are to be considered:

   (1) orientation of beach to prevailing conditions
(2) bank steepness
(3) avoidance of areas such as exposed, semi-submerged and submerged rock or reef, and swimmers
(4) sand bars
(5) tidal flow
(6) rips should be identified and used to assist in paddling out through the surf zone, and/or flush a capsized paddler and kayak beyond the primary break
(7) currents
(8) number and depth of breaks
(9) wave type, period and height.

b. *Brief.* The BM gives a launch plan brief to all paddlers:
   (1) The frontload is the method used to communicate the control measures and processes used while conducting surf launching. The frontload is described using the mnemonic SAPQ (see paragraph 8.5).
   (2) *Debrief.* Provides feedback to individuals and the group on performance and improvements that could be made.

c. *Second-in-Command to Safe Area.* The 2IC negotiates the surf zone and maintains a static position as close as practicable behind the primary break to reduce the distance if a rescue is required and quicken the time to launch all participants. The 2IC identifies a safe location for the raft up position.

d. *Deploy the Group.* The group deploys to the 2IC under the control of the BM on launch and under the control of the 2IC from launch through the surf zone using paddle signals by day and cyalume or white light by night. The second last person to deploy should be the GM, if this
person is not the GL or 2IC. The BM and 2IC are to ensure that a paddler is beyond the primary break before launching a further paddler. Either the BM or 2IC may halt a surf launch until conditions are safe to proceed.

e. **Beachmaster to Join Group.** The BM as the last paddler to launch paddles to the raft up position, conducts facilitation if applicable and continues with the activity.

8.5 The mnemonic SAPQ as related to frontload is as follows:

a. **S = Situation.** Situation describes the current status and objectives of the group. The UATL is to explain the surf conditions, the danger and endstate to be achieved.

b. **A = Anxieties.** Participants are to be informed of the anxieties that may be felt.

c. **P = Processes.** Process is used to describe the execution of specific tasks and skills required to achieve the objective:

(1) **Route.** The route defines the staging area and direction of travel through the surf zone.

(2) **Groupings and Tasks.** These are as follows:

   (a) **Rescue Swimmer.** The GL will direct the actions on for the rescue swimmer.

   (b) **Sentry.** The GL will direct the location of sentries to provide warning of dangers using whistle, voice or other signal.

   (c) **Second-in-Command.** The 2IC controls the participants from entry into surf onwards.

   (d) **Group Leader.** The GL controls the gating of entry into surf and will position themselves to control the participants’ movements within the surf and to be best positioned to undertake any rescue where a participant is at genuine risk.
8.6 Surf Launch Conduct. All paddlers launching their kayaks into surf are to use an assistant, if available, to assist with the positioning of the kayak while waiting to launch. Paddlers complete this method by carrying out the following:

a. To prepare, position the kayak onshore above the water mark with rudder or skeg retracted, if fitted. Check that individual equipment on each person is fitted correctly. Check that hatches are correctly fitted, that only essential items on are deck and these are secured, and all other items are to be secured in the cockpit or placed into the day hatch.

b. Enter the kayak, securing the spray deck and with paddle unleashed at hand.

c. To launch, position the kayak into the water using one or two assistants, if available, to assist at the bow and/or stern so that the bow remains perpendicular to wave action. If unassisted, the repositioning of a kayak on sand may require the individual to move the kayak forward using the ‘monkey crawl’ method or rotate the kayak by tilting the kayak on its chine.
d. Monitor the surf and identify a set of waves suitable for launching, where direction will be provided by the BM to launch (unless directed otherwise).

e. Use the assistant to assist in providing stability, forward momentum and direction on launch while maintaining an awareness of the assistant’s position when completing the first paddle strokes.

f. Negotiate the surf breaking zone where constant forward momentum in line with the 2IC is required unless directed otherwise by the 2IC.

g. Paddle to the 2IC for further direction, this is likely to include:
   (1) maintaining a static position at a specific spacing and direction from the 2IC as a loose or tight raft
   (2) relaying 2IC directions to other participants within the raft
   (3) re-stowing of displaced items and refurbishment of accessible items onto the deck
   (4) assisting in assisted rescues and/or stabilisation of other kayaks in assisting injured paddlers or in the emptying of excess water from kayaks beyond the surf zone
   (5) maintaining sentry for the 2IC as early warning on approaching rogue waves.

h. Repeat paragraph 8.4a to paragraph 8.4e until all kayaks in the group are free of the surf conditions

i. In the event of capsiz e, the paddler is to:
   (1) immediately wet exit while holding onto the coaming of the kayak and the paddle
   (2) communicate that the paddler is ‘OK’ or otherwise

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(3) follow direction from the BM or 2IC; if unable to observe either, then the paddler is to swim beyond the break or to the shore, whichever is easiest

(4) the BM may direct a rescue swimmer to assist as required.

**WARNING**

When wet exiting a kayak, the paddler is to hold the coaming or deckline and the paddle on exit and remain on the seaward side of the kayak.

### Landing a Kayak from the Surf

**8.7 Surf Landing Procedure.** The procedure for landing a kayak from surf is as follows:

a. **Raft Up.** The group paddles to a raft up position beyond the primary break where they can observe the surf zone and proposed landing site.

b. **Reconnaissance.** The BM conducts a reconnaissance of the landing site to identify the safest routes through the surf, where the following aspects are to be considered:

   (1) orientation of beach to prevailing conditions
   (2) bank steepness
   (3) avoidance areas such as exposed, semi-submerged and submerged rock or reef, and swimmers
   (4) sand bars
   (5) tidal flow
   (6) rips
   (7) currents
   (8) number and depth of breaks
   (9) wave type, period and height.
8.8 The mnemonic SAPQ as related to frontload is as follows:

a. **S** = *Situation*. Situation describes the current status and objectives of the group. The UATL is to explain the surf conditions, the danger and endstate to be achieved.
b. **A = Anxieties.** Participants are to be informed of the anxieties that may be felt.

c. **P = Processes.** Process is used to describe the execution of specific tasks and skills required to achieve the objective.

   (1) **Route.** The route defines the staging area and direction of travel through the surf zone.

   (2) **Groupings and Tasks.** These are as follows:

      (a) **Rescue Swimmer.** The GL will direct the actions on for the rescue swimmer.

      (b) **Sentry.** The GL will direct the location of sentries to provide warning of dangers using whistle, voice or other signal.

      (c) **Second-in-Command.** The 2IC controls the gating of entry into surf and will position themselves to control the participants.

      (d) **Group Leader.** The GL lands first, confirms the landing location and undertakes the role of BM.

   (3) **Actions On.** Actions on capsize and who is to undertake rescues must be defined.

   (4) **Order of March.** Defines the sequence participants are to undertake execution.

   (5) **Equipment.** Confirm fitting of individual equipment including that helmets worn and that kayaks are ready for launch.

   (6) **Command and Signals.** The GL is to brief all participants on the communications to be used during the conduct. Whistle, paddle signals and voice will generally be used.

d. **Q = Qualities.** Defines the qualities required to be demonstrated by the participants to achieve the objective.
8.9 Surf Landing Conduct. Paddlers complete this method by carrying out the following:

a. To prepare, check that individual equipment on person is fitted correctly. Check that the rudder or skeg is retracted, if fitted. Check hatches are correctly fitted, only essential items on deck are secured and any items in the cockpit are secured or placed into the day hatch.

b. Unleash the paddle and stow the paddle leash so that it is not an entanglement hazard.

c. When paddling in to shore, paddlers are to monitor any breaking waves in front of them and stay aware of the waves building up behind them. Paddlers are to wait until an unbroken wave has passed underneath them before moving into the primary break area; this will enable them to paddle safely behind the wave. It is important for paddlers to be cautious when attempting to correct the position and direction of their kayak on the back of the wave, and not be drawn into the vacuum caused as the wave breaks. Once the wave has broken, kayakers must paddle hard and attempt to remain in front of the next wave. The BM is to direct the landing of all paddlers.

d. Paddlers are to avoid surfing in laden kayaks. Novice paddlers may find it difficult to avoid surfing their kayaks as they have not developed the skills that are required to paddle a sea kayak on the back of a wave. When the kayak is surfing down the face of a wave, it may be forced to broach left or right. A stern rudder can be used to maintain the forward direction of the kayak. If the kayak is broached too far, the paddler will be side on to the wave. If a paddler is side on to the wave they are to lean into the wave with the outside knee engaged upwards, forcing the hull of the kayak to be exposed to the shore. For support, the paddler then places the paddle into the wave for a high and/or low brace and holds this position until the wave has passed underneath. The kayak is then to be paddled directly to the beach.
WARNING

The paddler is to capsize the kayak if moving in an uncontrolled manner towards other people or vessels to prevent injury or damage to equipment.

e. The shore procedures are that once the paddlers have reached the shore, they are to exit the kayak as quickly as possible, drag their kayaks from the water mark and provide assistance to other paddlers landing when directed by the BM.

f. In the event of capsize, the paddler is to:

1. immediately wet exit while holding onto the coaming of the kayak and paddle
2. communicate that the paddler is ‘OK’ or otherwise
3. follow direction from the BM or 2IC, if unable to observe either, then the paddler is to swim beyond the break or to the shore, which ever is easiest
4. the BM may direct a rescue swimmer to assist as required.

Techniques

8.10 In order to move a kayak forward using the monkey crawl method, use the outside of the fist to lift your weight and slide the kayak forward, this may take several increments. Using the palm of the hand may result in a cut or injury impacting the ability to paddle.

8.11 In order to rotate a kayak, the member – with the weight of upper torso leaning to one side – is to brace and use hips to tilt the kayak on its chine, and with upper body rotate the kayak in the desired direction.
When transiting through the front of a surf zone, paddle with a constant forward momentum, perpendicular to the breaking wave is generally applied. In paddling through plunging waves, the following actions should occur:

- paddle at maximum stroke rate forward perpendicular to wave
- on approach to crest of wave, lean forward into the roll set-up position
- on reaching the crest of the wave, initiate a high angle (explosive) forward stroke to anchor and provide forward momentum over the crest of the wave; the set-up position provides for unobstructed forward momentum to occur, assists in secondary stability due to lowering the centre of gravity, in addition to being able to react quickly in the event of capsise.

**WARNING**

An upright paddling position and/or holding the paddle in a horizontal position when paddling through plunging waves and soup will substantially increase the risk of spinal hyper-extension, facial lacerations and/or shoulder dislocation. UATLs must mitigate against this common fault.

When approaching multiple breaks, the paddler should assess each break independently; this may require the paddler to halt in position to be able to observe the wave type, period and height. It is not uncommon for a paddler to wait for a prolonged period between a primary and secondary break.

Kayaks when moving down the face of a wave will broach at an angle greater than 15°. When a paddler is side on to the wave they are to lean into the wave with the outside knee engaged upwards and the inside knee downwards, forcing the hull of the kayak to be exposed to the shore (see Figure 8–1). For support, the paddler then places the paddle into the wave for a high and/or low brace and holds this position until the wave has...
passed underneath. This action can be conducted in advance of broaching if anticipated.

Figure 8–1: Holding Brace Position
CHAPTER 9

RESCUE AND RECOVERY

9.1 This chapter details drills and techniques used in rescues and recoveries.

9.2 As you approach a rescuee and while still out of reach, assess to see if the rescuee is panicking. Reassure the rescuee and confirm that they respond to instructions before committing to the rescue.

9.3 Non-response and panic are common in high stress situations. If the rescuee reaches for your kayak they may capsize you as they seek to exit the water.

9.4 Communication is the key to an effective rescue. It will reassure the rescuee, and will ensure coordination of the efforts of both rescuee and rescuer. Take charge! Assess the situation. Observe the position of your boat with respect to the rescuee, their boat, their paddle, the conditions of wind, water, proximity to shore or potentially dangerous objects.

9.5 Decide what you will do and tell the rescuee what to do. At each step, be specific in your instructions. When the rescuee is back in their kayak the rescue is not complete until their paddle is in hand and they are ready to paddle.

SECTION 9-1. SELF-RESCUE

9.6 Cowboy Rescue. The cowboy rescue is a self-rescue attempted when a paddler has wet exited from the kayak and is not in immediate danger. This rescue is detailed as follows:

a. The kayak is positioned with the bow facing into either the wind or waves.

b. With the paddler at the bow and with the hull facing upwards, the kayak is lifted by the bow as far out of the water as possible and then immediately righted in order
to remove water from the cockpit. This action occurs through one of two methods:

(1) with both hands lift the bow while delivering a egg beater kick

(2) place the paddle under a armpit, with downward force on the paddle with one hand, lift the bow using the other hand.

c. An alternate method to removing water from the cockpit is by pushing down on the stern in an attempt to raise the bow prior to righting the kayak.

d. With paddler positioned centre of the cockpit and holding the coaming or deck lines, the paddler’s legs are kicked to the surface, then the paddler straddles the kayak (see Figure 9–1). The paddle may either be held, floating on leash or stowed on the foredeck in order to be easily accessible. An alternate method to straddling the kayak from the cockpit is to climb onto the aft deck from the stern, which is known as a ladder rescue (see Figure 9–2).
e. Keeping a low profile, the paddler positions the lower torso into the seat.

f. The paddle is used as for bracing or stability if required.

g. Excess water is removed from the cockpit prior to placing on the spray deck.

9.7 Paddle Float Rescue. The paddle float rescue is used when a paddler has wet exited from kayak and is not in immediate danger, is incapacitated or does not have the stability to climb back into the kayak using either the cowboy or ladder rescue method of entry. This rescue can also be conducted as an assisted rescue with the assistant helping to support the kayak as the capsized paddler climbs in. This rescue is detailed as follows:

a. The kayak is positioned with the bow facing into either the wind or waves.

b. With the paddler at the bow and with the hull facing upwards, the kayak is lifted by the bow as far out of the
water as possible and then immediately righted in order to remove water from the cockpit.

(1) The paddle float is attached to the blade of the paddle and inflated. The paddle is placed at 90° and secured to the rear of the cockpit by placing it under the deck lines or straps if fitted, with the paddle float outermost (see Figure 9–3).

(2) The paddler positions themselves where they can hold both the coaming or deck line and the paddle shaft while facing the aft deck of the kayak.

Figure 9–3: Paddle Float Rescue – Positioning the Equipment

(3) Keeping a low profile, the paddler climbs facedown onto the aft deck, assisted by supporting the outside leg using the shaft of the paddle (see Figure 9–4).

(4) With weight distributed onto the side of the paddle float, the paddler rotates the lower torso into the cockpit.
c. With weight evenly distributed, the paddle is removed from the deck line and is used for bracing or stability, while excess water is removed from the cockpit prior to placing on the spray deck.

d. The paddle float may be removed and stowed immediately following entry into cockpit.

9.8 Eskimo Roll. Eskimo roll is a generic term used to describe several different methods of self-recovery rolling. Rolling is the primary means of self-rescue. The most common Eskimo rolls in sea kayaking are:

a. The Pawlata Roll. The Pawlata roll is the most reliable rolling technique for stability in heavy seas or with a laden kayak. The paddle is held in the extended paddle position, which creates the maximum amount of leverage for the paddler to use.

b. The Screw Roll. The screw roll is the most commonly used roll in paddling as it is quick as the hand position does not change from the forward stroke position.

c. The C-to-C Roll. The C-to-C roll is conducted when unable to sweep the blade in an arc such as when within a confined space and may assist in leveraging off a
The C-to-C roll provides greater protection of the face than the Pawlata or screw roll.

9.9 A roll can be conducted on either side of the paddler known as the ‘on side’ and ‘off side’, where the ‘on side’ is the favoured side. A paddler who is right-handed will generally have an ‘onside’ roll to the right. Conditions may prevent a paddler from rolling to the on side; therefore a paddler should endeavour to learn how to roll effectively off side.

9.10 The fundamental aspects of being able to effectively roll include having flexibility, calmness and understanding that rolling is a whole of body process, where form rather than strength is required. The individual’s influence on the centre of gravity of the kayak is a pivotal component. For ease of learning, rolls are broken down into three phases; the set-up, sweep and recovery phase:

a. **Set-up.** The positioning of the paddle and upper body of the paddler on capsize or prior to the capsize. The set-up is essential to an effective sweep. The position of set-up may differ depending on the roll.

b. **Sweep Phase.** The positioning of the whole of body and paddle in rolling a kayak upright. The action of the sweep may differ depending on the roll.

c. **Recovery.** The positioning of the head and paddle in providing secondary stability and bracing if required.

9.11 **Pawlata Roll.** The Pawlata roll is executed as follows:

a. **Set-up.** The set-up phase (see Figure 9–5) includes three steps described for rolling on the right side, these steps may be mirrored for rolling on the left side:

   (1) The body is positioned leaning forward with the paddler’s face as close to the foredeck and the torso slightly twisted towards the left.

   (2) The paddle is placed into the extended paddle position by grasping the bottom edge of the left blade with the left hand at the hip and the right
hand extended down the shaft as far as possible in an over hand grasp.

(3) The forward blade with power face of the blade upwards, is positioned against the hull at a positive angle by over rotating the wrist to improve the blade’s ability to skim across the surface.

(4) Hint: to ensure that the blade is in the correct position, tap the power-face two to three times against the surface to feel for resistance.

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Figure 9–5: Pawlata Roll – Set-up Phase

b. **Sweep Phase.** The sweep phase (see Figure 9–6) includes three steps (for right on side):

   (1) The blade is swept in a wide arc across the surface of the water using the extended paddle to increase the leverage of the sweep (see Figure 9–6). The sweep is achieved through rotating the torso to the right, keeping the right arm extended and gradually under-rotating the right wrist. The left blade does not move from the set-up position.
Figure 9–6: Pawlata Roll – Sweep Phase

(2) On initiating the sweep, the paddler conducts a hip flick (see Figure 9–7) where the kayak will right itself. The hip flick is a dynamic action; with feet firmly braced against the footrest, the hip is engaged, the right knee is thrusted upwards into the thigh brace and the left knee is forced downwards.

(3) As the paddle sweeps aft ward, the paddler exits the water hips first, shoulders second and head last. The upper torso is arching back with the head as close to the aft deck as possible.

(4) Hint: correct positioning of the upper body and, in particular the head, may be achieved by observing the forward blade throughout the sweep.

c. Recovery. With the head down on the shoulder that is towards the side of the sweeping blade, a sculling brace maybe necessary if unstable. The paddler repositions hands into a forward stroke position.
9.12 Screw Roll. The screw roll is executed as follows:

a. **Set-up.** The set-up phase (see Figure 9–8) is the same as the Pawlata roll, except that the hands remain in the forward stroke position.
b. **Sweep Phase.** The sweep phase is the same as in the Pawlata roll.

c. **Recovery.** The recovery phase is the same as in the Pawlata roll (see **Figure 9–9**).
9.13 **C-to-C Roll.** The C-to-C roll is executed as follows:

a. **Set-up.** The set-up phase includes two steps:

   (1) The body and paddle are positioned in the screw roll set-up position (see Figure 9–10).

   (2) The paddle is then repositioned upwards out of the water with both hands. The forward blade is then rotated rearward so that the shaft is perpendicular to the kayak, the rearward blade is on the hull and the forward blade is as close to the surface as possible. (see Figure 9–11).
Figure 9–10: C-to-C Roll – Set-up Step 1

Figure 9–11: C-to-C Roll – Set-up Step 2

b. **Sweep Phase.** The sweep phase consists of a pull down motion on the power face of the forward blade. This action is performed in conjunction with the hip-flick.

c. **Recovery.** The recovery phase is the same as in the Pawlata roll.
9.14 **Re-enter and Roll.** The re-enter and roll is used to roll a kayak when a paddler has wet exited a kayak. A re-enter and roll is practical when a paddler does not have the stability to conduct a cowboy rescue or when immediate action is required to re-enter due to dangerous conditions. The re-enter and roll is conducted as follows:

a. The kayak is positioned with the bow facing into either the wind or waves.

b. The paddle is positioned on the side of the kayak on which the roll will be attempted. The paddle leash is to be positioned around the cockpit’s coaming.

c. The paddler faces the bow of the upturned kayak and reaches under the water to grasp both sides of the coaming (see Figure 9–12):

![Figure 9–12: Re-enter and Roll – Positioning Equipment](image.png)

(1) Keeping their face above water, the paddler places both feet into the cockpit as far as possible.

(2) While holding their breath, the paddler is seated within the cockpit with thighs engaged into the thigh brace and paddle regained (see Figure 9–13).
d. The paddler conducts a roll, removes excess water from cockpit and places on spray deck (see Figure 9–14).

Figure 9–13: Re-enter and Roll – Re-entering the Kayak

Figure 9–14: Re-enter and Roll – the Roll

e. An alternate method of re-enter and roll is with paddle float, where a Pawlata roll is recommended.

SECTION 9-2. ASSISTED RESCUES

9.15 If the paddler is unable to carry out an Eskimo roll to right the kayak, an assisted rescue should be attempted prior to
conducing the wet exit. If an assisted rescue is required, the paddler is to conduct the Capsize drill.

9.16 Use of Throw Bags. When throw bags are used the following needs to be considered:

a. The running end of the rope needs to be secured to the towing point with a type of quick release.

b. When thrown, underarm, sidearm or overarm action may be used, with the mouth of the throw bag opened to ensure that the rope feeds out.

c. Gain attention of the rescuee to ensure that they are aware in order to manage entanglement risk.

d. When thrown, aim to throw over the kayak or past the person.

e. A standard 15 m throw bag can have its length reduced by two-thirds by daisy chaining. The daisy chain should be locked off with a removable quick release such as a karabiner.

f. Throw rope is required to be of a large enough diameter and soft enough sheath as to not risk damage to a person holding on while being rescued.

g. If the first throw is ineffective then the rope is to be coiled or flaked in the hands and thrown again.

Toggle Rescue

9.17 The toggle rescue is a quick rescue where the rescuee has wet exited from the kayak. The rescuee holds onto the bow or stern toggle or deck line and is pulled clear of the danger area. This rescue may be conducted for a rescuee or a rescuee holding onto their kayak’s toggle enabling the kayak to be recovered concurrently. The rescuee should assist by swimming and have their body as horizontal in the water as possible.
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WARNING

Injury risk to the rescuee from hyperextension of the shoulder during the recovery is increased where they hold onto their kayak to attempt concurrent recovery.

Koala Rescue

9.18 The koala rescue (see Figure 9–15) is a quick rescue where the rescuee has wet exited and been separated from their kayak. The rescuee holds on with arms and legs wrapped around the bow or stern dependant on direction of travel. This rescue is used in cold conditions as it minimises heat loss of the rescuee and the rescuee has a better grasp on the kayak. The rescuer has better observation and communication with the rescuee as they are conducting the rescue.

Figure 9–15: Koala Rescue

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Deck Carry Rescue

9.19 The deck carry rescue can be a quick rescue or a means to transport a rescuee over a short or long distance where the rescuee's kayak may be lost. The rescue is conducted where a rescuee has wet exited and separated from the kayak.

9.20 The rescuee climbs onto the aft deck of the rescuer's kayak and maintains a low profile with their head directly behind the paddler and flush with the deck to assist in maintaining balance. The rescuee's legs may need to trail in the water on either side of the kayak for stability.

9.21 The rescuee must be briefed to let go of the kayak or dismount immediately if directed or if the rescuer capsizes to allow the rescuer to conduct a self rescue.

9.22 The deck carry rescue can be used in surf if the rescuee is unable to swim.

Bow Rescue

9.23 The bow rescue is used when the capsized paddler is conducting the Capsize drill and the rescuer's quickest approach to the capsized kayak is from 90°. The rescue is executed as follows:

a. Rescuer Approach. The rescuer approaches the capsized kayak at 90° to the cockpit area. To avoid damage to the kayaks or injury to the rescuee, the rescuer is to wash off excess speed prior to contacting the capsized kayak.

b. Making Contact. The bow of the rescuer's kayak is positioned at the centre of the capsized kayak's cockpit (see Figure 9–16).
c. **Righting the Kayak.** Once the capsized paddler has made contact with the rescuer’s bow they are to place both hands onto the bow and conduct a hip flick to right the capsized kayak (see Figure 9–17).

Figure 9–16: Bow Rescue – Making Contact

Figure 9–17: Bow Rescue – Righting the Kayak
Side Rescue

9.24 The side rescue is used when the capsized paddler is conducting the Capsize drill and the rescuer is positioned directly behind or in front of the capsized kayak. The rescue is executed as follows:

a. *Rescuer Approach*. The rescuer approaches parallel to the capsized kayak from either in front or from the rear, leaving a gap between the two kayaks for the capsized paddler to conduct a hip flick in (see Figure 9–18).

![Figure 9–18: Side Rescue – Rescuer Approaches](image)

b. *Making Contact*. The procedure used by rescuers to make contact (see Figure 9–19) with the capsized paddler is as follows:

1. paddle alongside the capsized kayak
2. slap the hull of the capsized kayak with a paddle to alert the rescuee
3. use a paddle to bridge the gap between the two kayaks and slide the shaft of the paddle along the capsized paddler’s hull until the cockpits of both kayaks are level
4. grab one of the rescuee’s hands and place it onto the bridged shaft of the paddle
(5) assist the capsized paddler to hold the bridged paddle with both hands.

Figure 9–19: Side Rescue – Making Contact

c. **Righting the Kayak.** The rescuee then rights the kayak using the hip flick method (see Figure 9–20).

Figure 9–20: Side Rescue – Righting the Kayak
Quick Rescue

9.25 The quick rescue is used when the rescuee has conducted a wet exit and is in dangerous conditions. The quick rescue is executed as follows:

a. **Rescuer Approach.** The procedure is:
   
   (1) the rescuer approaches the capsized kayak from any angle
   
   (2) the capsized kayak is righted by either the capsized rescuee or the rescuer
   
   (3) the rescuer leans over and braces the rescued kayak
   
   (4) if the kayak is fitted with an electric pump, it is switched on prior to the capsized paddler climbing into the cockpit.

b. **Re-entry.** The rescuee climbs onto the aft deck, face down, and enters the cockpit. If in immediate danger, the rescuee paddles away from danger before removing excess water from the cockpit and placing on the spray deck.

X Rescue

9.26 The X rescue is used in any condition when a paddler has wet exited, one or more bulkheads are flooded and/or the kayak is unable to be lifted above waist height by the rescuer. The X rescue is conducted as follows:

a. **Rescuer Approach.** The rescuer’s kayak is positioned facing into either the wind or the waves. The rescuee moves to the stern of the kayak and assists the rescuer to place the bow of the capsized kayak onto the foredeck of the rescuee’s kayak by pushing down and forward on the stern. A capsized kayak positioned on the bow of a rescue kayak is shown in Figure 9–21.
b. **Righting the Kayak.** With the cockpit of the capsized kayak centrally over the rescuer’s kayak, water will drain from the capsized cockpit (see Figure 9–22). The capsized kayak is then rotated away from the rescuer into the upright position back onto the rescuer’s deck, as shown in Figure 9–23.

c. **Alternate Methods.** There are three alternate methods:

   (1) **T Rescue.** If unladen, the rescuer may lift the upturned kayak out of the water no more than head height with elbows tight against torso while the rescuee pushes down and forward on the stern to drain the kayak.

   (2) **Chine Rescue.** The rescuer, using the chine of their kayak, may effect lifting if the T or X rescues are unviable due to weight or sea conditions. The rescuee’s kayak is turned on its side and the rescuer’s kayak edged to use its chine to provide the maximum lift and drainage of the rescuee’s kayak. Once some water is drained from the
rescuee's kayak it may be possible to continue with a T or X rescue.

(3) **Wedge Rescue.** The wedge rescue is used where the rescuee has wet exited and the rescuee’s kayak cockpit is fully flooded with a heavily laden boat. Unable to utilise the T or X rescues due to weight, this rescue uses the rocker of the rescuee’s kayak to gain initial leverage by pulling it onto the foredeck along its keel. The rescuer’s kayak is then tipped to the side to drain the cockpit and completed with a T or X rescue.

![Figure 9–22: X Rescue – Righting the Kayak](image)

**CAUTION**

Damage to the rescuer’s spray deck may occur when sliding the capsized kayak across the foredeck.
WARNING

Incorrect lifting of a capsized kayak may dislocate the rescuer’s shoulder.

d. Re-entry. The kayaks are positioned bow to stern, and the rescuee climbs back into the cockpit facing aftwards, while the rescuer maintains a secure grip on the coaming of the empty kayak (see Figure 9–23 and Figure 9–24).

Figure 9–23: X Rescue – Assisted Entry Step 1
e. **Reorganisation of the Paddler.** The rescuer maintains the physical support to the rescued kayak and, if required, assists with the refitting of the spray deck. The rescue is complete once the rescued paddler is ready to paddle (see Figure 9–25).

Figure 9–25: X Rescue – Reorganisation of the Paddler
Stirrup Re-entry Rescue

9.27 The stirrup re-entry rescue is used if a paddler is unable to climb back into the cockpit on an assisted rescue without additional assistance due to incapacitation, generally due to fatigue. Either a purpose-made stirrup, a length of tape or cordage can be used to create a stirrup. The stirrup re-entry rescue is as follows:

a. **Rescuer Approach.** The kayaks are positioned bow to stern alongside one another, with the rescuer’s kayak facing into the wind or waves.

b. **Re-entry.** The re-entry occurs as follows:

   (1) The stirrup is placed over one end of a paddle and the paddle is positioned under the hull bridging the gap between the two kayaks as detailed in Figure 9–26.

   (2) The stirrup is then positioned around the rear coaming of the capsized kayak and placed into the water for the rescuee to place their foot into.
(3) The rescuee is positioned facing the cockpit; the foot that is closer to the stern of the kayak is the foot to be placed into the stirrup, as shown in Figure 9–26. The rescuee climbs onto the aft deck by stepping down on the stirrup and hauling themselves upwards onto the aft deck. The rescuer then stabilises the capsized kayak and assists the rescuee to re-enter the kayak, as shown in Figure 9–27 and Figure 9–28.
c. Reorganisation of the Paddler. The rescuer maintains the physical support to the rescued kayak and, if required, assists with the refitting of the spray deck. The rescue is complete once the rescued paddler is ready to paddle.
Scoop Rescue

9.28  The scoop rescue is used if a paddler is unable to climb back into the cockpit on an assisted rescue without additional assistance due to incapacitation:

a.  Rescuer Approach. The kayaks are positioned bow to stern alongside one another, with the rescuer's kayak facing into the wind or waves.

b.  Re-entry. This is carried out as follows:

   (1)  The capsized kayak is placed onto its chine with the cockpit facing away from the rescuer.

   (2)  With the rescuer supporting the kayak firmly by the coaming, the rescue, with face above water, places both feet into the cockpit as far as possible.

   (3)  While holding breath, the rescuee is seated within the cockpit with thighs engaged into the thigh brace and with the rescuee leaning forward as close to the foredeck as possible, the rescuer uprights the kayak.

c.  Reorganisation of the Paddler. The rescuer maintains the physical support to the rescued kayak and, if required, assists with the refitting of the spray deck. The rescue is complete once the rescued paddler is ready to paddle.

d.  Consideration for Rescue. Consideration should be given as to which side the rescue occurs on if injury is the reason for conducting the scoop rescue.

Curl Rescue

9.29  The curl rescue is used if one or more compartments are flooded where the rescuer is unable to raise the capsized kayak above the waterline, as follows:

a.  Rescuer Approach. The kayaks are positioned bow to stern alongside one another, with the rescuer's kayak facing into the wind or waves.
b. Re-entry. The steps for re-entry are as follows:

(1) The rescuee moves to directly behind the cockpit of the rescuer.

(2) With both arms extended over the rescuer's aft deck, the rescuee holding onto the coaming of the capsized kayak, bicep curls the capsized kayak upwards to drain the cockpit and compartments sufficiently to then conduct an X rescue.

(3) If a curl rescue is unable to be conducted, the following action is to immediately occur:

   (a) The capsized kayak is turned upright.

   (b) If available, a kayak either side of the flooded kayak is secured to the kayak using carabinas to prevent the kayak from sinking.

   (c) The rescuee re-enters the cockpit of the flooded kayak, placing the spraydeck onto the coaming and with a portable bilge pump inserted through the waist of the spraydeck, the rescuee drains the water from the cockpit until empty.

   (d) The capsized paddler may need to exit the cockpit prior to pumping out other bulkheads if flooded. Paddle floats, bladders and dry bags maybe used to assist in displacement of water and/or flotation through an improvised air sponson.

   (e) If overladen, jettisoning or transfer of items to other kayaks may need to occur.

   (f) Note: the capsized paddler will be physically exhausted following this action where rate of forward stroke will be reduced.
WARNING

Refloating a flooded kayak, in particular in adverse conditions, is extremely dangerous due to the high volume of water within the kayak, where shoulder dislocation and/or crush injuries are likely. The wearing of helmets in this instance should be considered.

Hand of God

9.30 The hand of god rescue is used when a capsized paddler has not conducted the Capsize drill or wet exited as follows:

a. **Rescuer Approach.** The rescuer approaches parallel to the capsized kayak from either in front or from the rear.

b. **Rescue.** The rescuer leans centrally over the hull of the capsized kayak. Grabbing the deck lines, the rescuer uprights the capsized kayak where the capsized paddler’s helmet or PFD maybe used to assist in this action. If unable to upright the kayak, the rescuer will have to wet exit and release the spray deck of the capsized paddler.

c. **First Aid.** Assess the capsized paddler for initial first aid.

SECTION 9-3. RECOVERY

9.31 **Rafting Up.** Rafting up is the process of kayaks in a group coming alongside one another. The raft is positioned facing into either the wind or the waves; use of a sail or drogue if available will maintain direction. Rafting is generally conducted for group control for briefs, assisting other group members for stability, accessing contents of hatches and monitoring participants during breaks on water. Rafting up can be conducted by either of the following methods:

a. **Loose Raft.** The loose raft is conducted when all paddlers within the group move alongside each other but do not secure their kayaks together. This is to get the
attention of all paddlers within the group, or when sea conditions do not allow the group to conduct a tight raft.

b. **Tight Raft.** A tight raft is conducted when control of the group or the construction of a stable platform is required. A tight raft is when all kayaks in the group are positioned next to each other. The kayaks can be secured into position by the paddlers holding the deck lines of the kayaks next to them or by using a device, such as a karabiner or clip, to hold the deck lines of two kayaks together. A stable platform may be required to assist in first aid emergencies and to conduct repairs to equipment at sea.

**WARNING**

Injuries may occur where hands are crushed between two rafted kayaks.

9.32 **Towing.** Towing a kayak may be required if a member of the group has become incapacitated and cannot continue paddling. In all cases a serviceable quick release mechanism is required.

9.33 The different methods of towing are as follows:

a. **Contact Tow.** This method of quick tow generally uses a karabiner on a short strap (cowstail) of 450 to 700 mm (see Figure 9–29) attached to the rescuer’s PFD or kayak. The rescuer paddles to the kayak, connects the karabiner to the rescuee’s kayak toggle or deck lines and effects a tow. The following applies:

(1) Due to the very short length of towline, turning away from the side the rescuee’s kayak is on will be difficult. Consideration must be given to the planned exit route to avoid this.

(2) The contact tow is conducted where a very quick short tow is required to move a kayak to safety; this also enables the incapacitated paddler to lean on the stern of the supporting paddler’s kayak.
The supporting paddler may now monitor and assist the incapacitated paddler and still be able to paddle, although not as effectively as normal.

(3) This rescue can be conducted with a single karabiner or loop of bungee cord attaching the deck line of the rescuer’s kayak just behind the cockpit to the bow of the rescuee’s kayak.

Figure 9–29: Cowstail with Paddle Karabiner

b. **The Short Tow.** This method is used to tow another kayak a short distance, to recover equipment or to provide assistance and support to a paddler who has become incapacitated. The difference between a contact tow and short tow is the minimum length of rope used should be enough to allow the towing kayak to turn freely with the rescuee’s kayak trailing behind. This is often achieved through daisy chaining (see Figure 9–30). The short tow is conducted as follows:

1. The rescuer paddles alongside the rescuee’s kayak and secures their towline to the bow or stern.

2. The rescuer then tows the kayak to a safe location. The rescuee having wet exited can either
hold the toggle of their kayak and be towed out, or
swim out to safety.

Figure 9–30: Throw Bag Daisy Chained for Short Rescue

c. The Single Tow. The single tow is used to move a
kayaker clear of immediate danger, prior to undertaking
a more efficient tow:

(1) The single tow is a way to:

(a) Move a stricken kayaker or recover a kayak
from impending danger where it is not safe
to paddle close to the kayak in order to
connect. A throw bag can be used and the
rescuer directed to attach it to the bow of
their kayak.

(b) Assist a partially incapacitated kayaker
maintain direction or speed as part of a
group. It is not recommended for lengthy
tows as the rescuer’s speed is normally
halved.
The single tow is conducted as follows:

(a) A towline can be thrown to the rescuee or attached by the rescuer to the bow of the kayak to be towed. The towline is run out to full length. If the tow is not in a danger area the towline length should be adjusted to wave length so both kayaks move simultaneously on wave.

(b) The rescuer paddles slowly forward until the slack is removed from the towline, and the tow commences.

**WARNING**

At all times tow ropes are used there is an increased risk of entanglement or being tied into a kayak. These events increase the risk of strangulation and drowning. All tows must be closely supervised and the UATL not involved unless necessary.

Another member of the group may be required to position their kayak alongside the rescuee to monitor them. If the rescuee requires physical support a rafted tow is required and other more efficient tows are preferred.

d. **V-Tow.** The V-tow is suitable for towing a kayak for a considerable length of time or distance. To execute the V-tow:

1. On transitioning from a single tow, a second rescuer attaches their towline to the bow (see Figure 9–31) and the tow continues.

2. Separate towlines each allow for independent quick release and ensure that the two rescuers can deliver independent power and not acting against each other.
(3) If the rescuee requires physical support, a support person will come alongside and raft together. The support person can then connect the kayaks, monitor the rescuee, provide first aid and stability. The tow can then continue as a rafted tow of the two kayaks.

(4) Considerations for V-tows are:
   (a) improved communication and C2
   (b) easier transition or changes of towers
   (c) evenly-distributed workload
   (d) more control for landings.
e. **Husky Tow.** This method is suitable for towing a kayak for a considerable length of time or distance. To execute the husky tow:

1. On transitioning from a single tow, a second rescuer attaches their towline to the bow of the rescuer and the tow continues.
2. The rescuers attach their kayaks together as per Figure 9–32, with towlines adjusted to wavelength.
3. If the rescuee’s kayak or rafted tow weathercocks or fails to maintain direction, an additional kayak may be tied to the rear of the rescuee’s kayak.
4. The rescuers then apply tension to the towline one at a time until a single line is formed.
5. The husky tow is less efficient than the tandem tow method as it is difficult for all paddlers to maintain even tension on the towlines unless the towlines have been adjusted to wavelength.
6. Considerations for husky-tows are:
   
   (a) linear formation complicates communication and C2
   
   (b) changes of towers is more difficult
   
   (c) linear formation is more efficient in water.
Figure 9–32: Husky Tow
CHAPTER 10

SEA CONDITIONS

10.1 This chapter details sea conditions and weather and their effects on sea kayaking activities. Before and during the conduct of activities weather checks must be conducted. For sea kayaking the five key forecasts and warnings to check are:

a. marine warnings
b. changing weather
c. wind conditions
d. wave conditions
e. tide times.

SECTION 10-1. CURRENTS

10.2 Currents are seasonal flows of water that flow at different rates in different seasons. These currents generally flow in the same direction in all seasons.

Ocean Current

10.3 Ocean currents are bodies of water that permanently travel around the Earth’s oceans (see Figure 10–1). These currents are produced by thermal and climatic changes and are instrumental in controlling the world’s climate. Currents travelling in different directions around Australia control the flow of water locally.
Ocean currents may be classified as tidal and non-tidal, as follows:

a. **Tidal Currents.** These are caused by gravitational interactions between the sun, moon and Earth, and are part of the same general movement as the tide.

b. **Non-tidal Currents.** These currents include the permanent currents in the general circulatory systems of the sea, as well as temporary currents arising from major climatic disturbances.

Ocean currents impact on water temperatures. Water temperatures impact on survival time in water and need to be understood to ensure that participants are appropriately dressed and appropriate safety equipment carried. The BOM forecasts provide detailed maps of sea temperatures and currents.

**SECTION 10-2. TIDES**

**Origins**

Tides are the alternating rise and fall of water levels in the ocean. This is caused by the combined gravitational attraction of the sun and moon (see Figure 10–2). The moon, and to a...
lesser extent, the sun, attracts the ocean (not unlike a magnetic field) causing the ocean to bulge towards the moon and a smaller amount towards the sun.

10.7 At any given time, there are two high tides (tidal bulges) on the Earth: the direct tide on the side facing the moon and the indirect tide on the opposite side of the Earth. As the Earth rotates on its axis, the location of the two opposite tidal bulges varies on the Earth’s surface. It takes the moon 24 hours and 50 minutes to traverse the Earth; therefore, the average interval between direct and indirect high tides is about 12 hours and 25 minutes in any location on the Earth.

Figure 10–2: Tide Origin
10.8 **Tidal Range.** The range of the tides is the difference in sea level between high (flood) and low (ebb) tides. The spring tide has the maximum range, and occurs during the full moon and new moon when the Earth is between the moon and the sun. The neap tide has the minimum range, and occurs during the moon’s first and last quarters when the moon, Earth and sun form a right angle.

10.9 **Local Tides.** Most ports have four tides approximately 6 hours apart (semidiurnal): two high water (HW) and two low water (LW). In some regions there is only one HW and one LW every 24 hours, which means they are about 12 hours apart (diurnal). The interval between an HW and LW is called the ‘duration’ of the tide. The average mean height of a tide is calculated over several years.

10.10 **Tide Times.** Historic data enables the tide heights in different areas to be predicted. Tide time charts, like the one shown in Table 10–1, are printed each year and depict the predicted tide height and time in locations known as standard ports. Areas near these standard ports can calculate the variation in time that it takes for the tides to take effect. Tide times are generally written and interpreted as follows:

a. **Date.** Thursday 17 December.

b. **Low Tide Times.** At 0418 h a low tide of 0.18 m and at 1754 h a tide of 0.39 m.

c. **High Tide Times.** At 1101 h a high tide of 2.63 m and at 2315 h a tide of 1.72 m.

d. **Variation.** As an example of tide time variation, a standard port used in Victoria is Port Phillip Bay. The listed time variation for the neighboring French Island was minus 45 minutes to HW and minus 38 minutes to LW. The high tide at French Island will arrive 45 minutes earlier than at Port Phillip Bay and the water will recede to low tide 38 minutes earlier.
10.11 Tidal Current. The tidal current is the direction that the water moves in an area due to the ebb and flood of the tidal range.

10.12 Tidal Race. Tidal race is the velocity in which seasonal currents flow in relation to any restrictions to flow, such as islands or headlands. The greater the restrictions and the higher the tidal range, the faster the water will flow.

10.13 Slack Water. The time at or around the change from ebb to flood or flood to ebb, where there is little or no flow.

10.14 Crossing Coastal Bars. Coastal bars are dangerous. Where possible bars should be crossed close to high tide:

a. Where the preferred finish location is outside the bar, it is ideally crossed just after the turn of ebb tide (flowing out after high tide). Any participants that capsize should then be washed out of the bar.

b. Where the preferred finish location is inside the bar then it is ideally crossed in the hour before high tide. Any participants that capsize should then be washed into the waterway mouth.

<table>
<thead>
<tr>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>HT</td>
</tr>
</tbody>
</table>

Table 10–1: Example of a Tide Table
10.15 Within the 6 hour cycle from high to low tide, the tide is not at a constant flow and, when flowing at its fastest, the current is at its strongest. The two rules to assist in planning when to cross a channel or river mouth are the 50/90 rule (see Table 10–2) and the rule of twelfths (see Table 10–3).
### Table 10–2: The 50/90 Rule

<table>
<thead>
<tr>
<th>Hours After Slack</th>
<th>Slack Water</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>0825</td>
<td>0925</td>
<td>1025</td>
<td>1125</td>
<td>1225</td>
<td>1325</td>
<td>1425</td>
</tr>
<tr>
<td>Percentage of maximum rate</td>
<td>0%</td>
<td>50%</td>
<td>90%</td>
<td>Maximum rate</td>
<td>90%</td>
<td>50%</td>
<td>0%</td>
</tr>
<tr>
<td>Speed in knots</td>
<td>0</td>
<td>1.0</td>
<td>1.8</td>
<td>2.0</td>
<td>1.8</td>
<td>1.0</td>
<td>0</td>
</tr>
</tbody>
</table>

The preceding information refers to the period after slack water. For the period before slack water, change the top row for the line following this sentence.

<table>
<thead>
<tr>
<th>Hours before slack</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>Slack water</th>
</tr>
</thead>
</table>

The preceding information refers to the period after slack water. For the period before slack water, change the top row for the line following this sentence.
Table 10–3: The Rule of Twelfths

<table>
<thead>
<tr>
<th>Hours</th>
<th>Rule of Twelfths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In the first hour after low tide, the tide will rise one twelfth of its total height.</td>
</tr>
<tr>
<td>2</td>
<td>In the second hour, it will rise two twelfths of the total height.</td>
</tr>
<tr>
<td>3</td>
<td>In the third hour, three twelfths.</td>
</tr>
<tr>
<td>4</td>
<td>In the fourth hour, three twelfths.</td>
</tr>
<tr>
<td>5</td>
<td>In the fifth hour, two twelfths.</td>
</tr>
<tr>
<td>6</td>
<td>In the sixth hour and last hour before HT, one twelfth.</td>
</tr>
</tbody>
</table>

10.16 Direction of Flow. Water within a bay will generally run from the outer edges to a deep point within the centre of the bay prior to draining out of the mouth. This can be identified on a chart as the lowest point in the bay and is where the water will drain.

10.17 Littoral Currents. When a beach is situated within two headlands it will normally drain to the outer edges back to deeper water. This may form a current of water parallel to the beach called a littoral current. Littorial currents may cause rips and create long shore drift which moves sand along beaches over extended periods of time.

10.18 Methods for Crossing Passages. Strong currents may be crossed using different methods. One method is the ‘up and over’ method, which involves using the coast to paddle directly upstream into a current until the target across the body of water is situated downstream. The current flow closer to land is slower than in the centre of a body of water because there is less resistance to the flow in the centre. Also, paddling directly into the current offers less area of resistance on the kayak than paddling side on to it.
10.19 Another method used for crossing currents is to use a vector, and this is completed as follows:

a. estimate the paddler’s speed

b. estimate the current’s speed

c. plot a new heading to paddle, using the following method:

1. plot the intended course from the point of origin (shown as Point A) to the point of destination (shown as Point B)

2. using the tidal chart information, ascertain which direction the tide will be travelling past this line (Point A to Point B), and mark another line in the opposite direction from Point B – this is the variation line

3. the speed of the current past the point of origin (Point A) will be measured onto the variation line; a nautical mile represents each knot of speed at which the current is travelling

4. where the speed is calculated onto the variation line, another line is drawn back to Point A; a course is then plotted from Point A to the variation line mark and becomes the heading to paddle.

SECTION 10-4. RIPS

10.20 Oceans attempt to maintain an average water height and when waves are washed onto the shore, the water will return back to the ocean. A rip can form at the point where the water drains from the beach (see Figure 10–3). Rips can be used to a sea kayaker’s advantage during beach landings or departures as the surf is generally smaller and the water is flowing out to sea.
10.21 Identifying a Rip. To assist in locating a rip on a beach, the following may be identified:

a. foam on the surface that extends beyond the beach
b. the water in the rip is moving at a different direction and speed to water alongside it
c. debris floating seaward
d. water that is discoloured because of sand being stirred up on the bottom
e. waves that break further out on either side of the rip
f. a rippled appearance on generally calm water
g. patrolled beach signs
h. local knowledge.

10.22 Rip Categories. The following are the four categories of rips:

a. Permanent Rip. This refers to a rip that remains in one location anywhere from a few months up to several years. The prevailing conditions and ocean bottom change very little over this time. Other factors that
10.23 Negotiating Rips. Rips may provide a swift means of paddling beyond the break from the shore. However, they do pose a danger to the inexperienced paddler and swimmer. A paddler who has capsized in a rip must act as follows:

a. **Strong Swimmer.** A strong swimmer should attempt to swim parallel to the beach until they are clear of the rip and then swim to shore.

b. **Poor Swimmer.** A poor swimmer should attempt to tread water until washed free of the rip, they should then attempt to swim clear of the rip and return to shore.

SECTION 10-5. WINDS

10.24 Wind Origin. The heating and cooling of the Earth’s surface, in conjunction with high and low pressures from weather patterns, creates air movement and winds that flow across the Earth’s surface from high to low pressure systems. Coastal areas are generally affected by katabatic winds which result from the cooling of the land mass at night and the ability of the ocean to
retain heat. This causes the air to move from the water to the land during the day and the reverse during the night.

10.25 Wind Direction. Winds are forecasted as blowing in either of the following directions:

a. Offshore. An offshore wind is one that blows from the land out onto the water, and is also known as a land breeze. Offshore winds may increase the risk to a sea kayaking trip as when difficulties are experienced the group will be constantly pushed away from shore.

b. Onshore. An onshore wind blows from the sea onto the land, and is also known as a sea breeze. Onshore winds may increase wave height and are generally cooling due to evaporation over the ocean. So long as the surf generated is within limits, and suitable landing sites are available, onshore winds generally increase safety.

10.26 Wind Speed. Winds that blow across the surface of a land mass will increase their speed over water as there is less resistance. This action results in gusts of wind offshore.

10.27 Measuring Wind Speed. Wind speed forecasts are generally available in most coastal weather reports. Forecasted wind speed is measured 10 m above the surface of the sea and averaged over a 10 minute period. To accurately measure wind speed at sea level, a handheld anemometer should be used. Winds can gust up to 40 per cent higher than the forecasted wind speed.

10.28 Squall. A squall is a brief sudden violent windstorm that may be accompanied by wind and rain. Squalls can include a squall line, which is a narrow band or line of active thunderstorms that is not associated with a cold front.

10.29 Sea State. The sea state is the condition of the water surface. Details of the categories of sea states are detailed in Chapter 1.

10.30 The Beaufort Wind Scale. The Beaufort Wind Scale is a worldwide recognised chart providing set information on weather at sea. The wind is measured 10 m above open flat ground at the edge of the ocean. This scale is a guide used to
determine wind speed by the effects that the wind is having on surrounding sea and land objects.

SECTION 10-6. BEAUFORT WIND SCALE

10.31 The Beaufort wind scale (see Table 10–4) measures wind speed according to the impact the wind has on the land and sea. Table 10–4 describes what can be expected for each level of the scale.
<table>
<thead>
<tr>
<th>Beaufort Scale</th>
<th>Descriptive Term</th>
<th>Units (knots)</th>
<th>Description on Land</th>
<th>Description at Sea</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Calm</td>
<td>0</td>
<td>Smoke rises vertically.</td>
<td>Sea like a mirror.</td>
</tr>
<tr>
<td>1 to 3</td>
<td>Light winds</td>
<td>10 or less</td>
<td>Wind felt on face; leaves rustle; ordinary vanes moved by wind.</td>
<td>Small wavelets 0.1 to 0.6 m, ripples formed but do not break: A glassy appearance maintained.</td>
</tr>
<tr>
<td>4</td>
<td>Moderate winds</td>
<td>11 to 16</td>
<td>Raises dust and loose paper; small branches are moved.</td>
<td>Small waves 1 m – becoming longer; fairly frequent white horses.</td>
</tr>
<tr>
<td>5</td>
<td>Fresh winds</td>
<td>17 to 21</td>
<td>Small trees in leaf begin to sway; crested wavelets form on inland waters.</td>
<td>Moderate waves 2 m, taking a more pronounced long form; many white horses are formed – a chance of some spray.</td>
</tr>
<tr>
<td>6</td>
<td>Strong winds</td>
<td>22 to 27</td>
<td>Large branches in motion; whistling heard in telephone wires; umbrellas used with difficulty.</td>
<td>Large waves 3 m, begin to form; the white foam crests are more extensive with probably some spray.</td>
</tr>
<tr>
<td>Beaufort Scale</td>
<td>Descriptive Term</td>
<td>Units (knots)</td>
<td>Description on Land</td>
<td>Description at Sea</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------</td>
<td>--------------</td>
<td>---------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>7</td>
<td>Near gale</td>
<td>28 to 33</td>
<td>Whole trees in motion; inconvenience felt when walking against wind.</td>
<td>Sea heaps up and white foam from breaking waves 4 m, begins to be blown in streaks along direction of wind.</td>
</tr>
<tr>
<td>8</td>
<td>Gale</td>
<td>34 to 40</td>
<td>Twigs break off trees; progress generally impeded.</td>
<td>Moderately high waves up to 5.5 m high, the waves will be of greater length and period; edges of crests begin to break into spindrift; foam is blown in well-marked streaks along the direction of the wind.</td>
</tr>
<tr>
<td>9</td>
<td>Strong gale</td>
<td>41 to 47</td>
<td>Slight structural damage occurs – roofing dislodged; larger branches break off.</td>
<td>High waves 7 m; dense streaks of foam; crests of waves begin to topple, tumble and roll over; spray may affect visibility.</td>
</tr>
<tr>
<td>Beaufort Scale</td>
<td>Descriptive Term</td>
<td>Units (knots)</td>
<td>Description on Land</td>
<td>Description at Sea</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------</td>
<td>---------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>10</td>
<td>Storm</td>
<td>48 to 55</td>
<td>Seldom experienced inland; trees uprooted; considerable structural damage.</td>
<td>Very high waves 9 m with long overhanging crests; the resulting foam in great patches is blown in dense white streaks; the surface of the sea takes on a white appearance; the tumbling of the sea becomes heavy with visibility affected.</td>
</tr>
<tr>
<td>11</td>
<td>Violent storm</td>
<td>56 to 63</td>
<td>Very rarely experienced – widespread damage.</td>
<td>Exceptionally high waves 11.5 m; small and medium sized ships occasionally lost from view behind waves; the sea is completely covered with long white patches of foam; the edges of wave crests are blown into froth.</td>
</tr>
<tr>
<td>12+</td>
<td>Hurricane</td>
<td>64 or more</td>
<td>Very rarely experienced – widespread damage.</td>
<td>&gt;14 m; the air is filled with foam and spray; sea completely white with driving spray; visibility very seriously affected.</td>
</tr>
</tbody>
</table>

Beaufort Scale

<table>
<thead>
<tr>
<th>Beaufort Scale</th>
<th>Descriptive Term</th>
<th>Units (knots)</th>
<th>Description on Land</th>
<th>Description at Sea</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Storm</td>
<td>48 to 55</td>
<td>Seldom experienced</td>
<td>Very high waves</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>inland; trees uprooted;</td>
<td>9 m with long</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>considerable structural</td>
<td>overhanging crests;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>damage.</td>
<td>the resulting</td>
</tr>
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<td>Violent storm</td>
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<td>Very rarely</td>
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<td>high waves 11.5 m;</td>
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<td>edges of wave</td>
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<td>crests are</td>
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<td>blown into froth.</td>
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<td>12+</td>
<td>Hurricane</td>
<td>64 or more</td>
<td>Very rarely</td>
<td>&gt;14 m; the air</td>
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<td>experienced –</td>
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<td>driving spray;</td>
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<td>visibility very</td>
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<td>affected.</td>
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SECTION 10-7. EFFECTS OF WIND

The Effects of Wind on Kayak Speed

10.32 Wind speed and wind direction can often affect kayak speed more than currents do. Even mild winds of 8 to 10 kt will have a significant effect on paddling speed over a long distance. As wind exerts forces, it blows onto the kayak and the paddler. The larger the surface area the wind blows on, the greater the force of resistance. The wind also exerts forces onto the paddle blade.

10.33 There are many factors involved when trying to calculate what effect the wind will have on paddlers; for example, the precise wind direction on the kayak, the sea state, the style, weight and trim of the kayak, and the experience and fitness of the paddler. To accurately gauge the effect wind is having on a kayak, paddlers should log details of the wind daily and use this information to assist in paddling in similar conditions.

10.34 Paddling with the bow of the kayak not facing directly into the wind is usually more difficult than going straight into the wind, as the surface area of the craft is lessened facing directly into the wind. Various boat designs are easier than others to keep headed into the wind. Loaded boats of all designs are usually easier to control in the wind than empty ones.

10.35 Uneven wind pressure on the hull and deck will lead to weathercocking whereby the kayak will constantly twist due to the uneven force of wind on the bow and stern of the kayak. Use of rudders, skegs, adjusting kayak trim and paddling with an offset paddle may be required to maintain direction.

10.36 Wind Forecasts. Local wind forecasts are suitable for protected, inland and enclosed waters. Coastal wind forecasts should be used for all open water activities. These forecasts may be obtained from the BOM and other sources.
10.37 Wave Description. Waves originate from the combination of winds and current patterns (see Figure 10–4). The main components of a wave (see Figure 10–5), with a description of them is as follows:

a. Wave Height. The distance between the trough and the top of the wave is the wave's height.

b. Wave Length. The horizontal length of an uninterrupted wave.

c. Wave Period. The shorter the wave period the less power in the waves. As an example, launching into waves of 1 m with intermediate participants with a wave period of 5 to 7 seconds will be achievable however a long wave period of the same height of >10 seconds may not be achievable.

d. Wave Sections. The sections of a wave are:

   (1) Wall. This is the front face of the wave.
   (2) Shoulder. The top section of the wall.
   (3) Crest. The area where the wave peaks.
   (4) Lip. The area where the wave can no longer support the weight of the water and it begins to crumble.
   (5) Curl. Once the water has reached the lip it spills forward, creating the curl.
   (6) Soup. The white water in front of the wave, created by the force of the water spilling over the curl.
   (7) Trough. The low areas between the crests of two consecutive waves.
10.38 Wave Origins. Waves are generated by swell, local winds and weather patterns. Waves are generally smaller than ocean swells and travel faster. Waves tend to build up and expand themselves in a short period and change as quickly as the local
weather. The forces acting on a wave create a rolling, circular motion within it (see Figure 10–6).

Figure 10–6: Wave Action

10.39 Types of Waves. The various types of waves include:

a. *Plunging Waves.* Waves that break on a steep shore are known as plunging or dumping waves. Plunging waves can also form due to wind and interaction with rock formations.

b. *Rolling Waves (Trailing or Following Seas).* These waves occur where the waves and the wind are travelling in the same direction. They are generally rounder in shape and are observed as being longer, rolling waves.

c. *Standing Waves.* These waves occur where the waves and the wind are travelling in opposite directions. The extra resistance to the wall of the wave causes it to build-up height quickly and break earlier than it normally would.

d. *Spilling Waves.* Waves that break on a shore that is not steep are known as spilling waves. These waves normally break uniformly across a shore from either left to right or right to left.

e. *Clapotis.* Waves that strike cliffs or constructed breaks and rebound back towards oncoming waves (see Figure 10–7). The waves crash together causing high vertical broken water.
10.40 Fetch. Fetch is the distance and time that wind blows unobstructed across water. The longer that a wind of considerable strength blows over water, the larger the waves will be.

10.41 Wave Height. It is normal for waves to vary in height from one to the next. The BOM provides the significant wave height in its marine forecast. The most frequent wave height will be about half the height of the significant wave. About 14 per cent of waves will be higher than the significant wave height (about one in every seven waves). It is also normal to expect a wave of twice the height of the significant wave about three times in 24 hours, these are commonly referred to as rogue waves.

10.42 Particularly when assessing rock formations, consideration must be given for sentries to be clearly briefed and actively watching far enough out to identify rogue waves in time to allow participants to clear the danger area.
SECTION 10-9. SWELL

10.43 A swell is generated from distant weather patterns such as storms. The waves generated by local storms will continue to travel vast distances over the ocean, around the world, creating large swells on other locations. The size and direction of swell directly dictates the shape and size of local waves. Swell can be described either by the distance it travels or by its height. Table 10–5 provides the different descriptions of swell.

Table 10–5: Swell Chart

<table>
<thead>
<tr>
<th>Description of Swell</th>
<th>Distance of Swell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short</td>
<td>0 to 100 m</td>
</tr>
<tr>
<td>Average</td>
<td>100 to 200 m</td>
</tr>
<tr>
<td>Long</td>
<td>Over 200 m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description of Swell</th>
<th>Height of Swell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0 to 2 m</td>
</tr>
<tr>
<td>Moderate</td>
<td>2 to 4 m</td>
</tr>
<tr>
<td>Heavy</td>
<td>Over 4 m</td>
</tr>
</tbody>
</table>

SECTION 10-10. GAINING WEATHER INFORMATION

10.44 The mandatory requirements for gaining weather information are detailed in Annex A to Chapter 1. The GL for sea kayaking activities is responsible for gaining the weather information requirements, including the garnering of forecasts 36, 24 and 6 hours prior to the commencement of sea kayaking activities. These weather forecasts are used by the GL to ensure that the activity is not commenced when the weather is likely to affect the safety of the personnel involved.
10.45 Details for obtaining weather reports for AT activities are in *LWP-G 7-6-1, Experimental Learning and Adventurous Training*.

10.46 The SOA is to actively monitor (minimum every 6 hours) the weather during conduct of AT. The SOA is required to be trained in accessing and communicating weather information. This will be required where the GL does not have appropriate access. Dependent on the forecast and rate of change the weather may need to be assessed more frequently.

10.47 Snapshots of mobile phone screens may be used by GLs to enable off-line review and progressive assessment after the capture of the forecast.

10.48 **Transmitted by Text.** Text messaging is the most reliable means of error-free transmission and often the easiest to read on water. All other communications methods also may be used but in moderate winds, balance and hearing may become issues.

10.49 If the UATL assesses the weather as different from forecast then they are required to confirm forecasts and constantly assess current and likely conditions with relation to future safety.

10.50 **Sources of Weather Information.** The primary source of weather information for sea kayaking is the BOM website. The BOM website is an outstanding source of information about the weather. Some of the services that are offered on the BOM website are as follows:

   a. **MetEye Weather Mapping.** MetEye is a highly detailed forecast system with forecasts for wind, waves, tides, sea levels, and sea temperature. If GLs have internet access, use of MetEye is highly recommended in conjunction with the five key forecasts and warnings, being:

      (1) marine warnings
      (2) changing weather
(3) wind conditions
(4) wave conditions
(5) tide times.

b. Telephone Weather Service. A range of telephone weather services are available by telephoning the relevant number for the type of service and the location of interest. The internet address for this information is http://www.bom.gov.au/other/tws/twsdir.shtml.

c. A Guide to Australia’s Marine Forecasts and Warnings. This guide provides detailed descriptions of marine weather services. The website that details this guide and hyperlinks to associated websites is http://www.bom.gov.au/marine/index.shtml. This guide includes information about:

(1) Marine Forecasts and Warnings. These focus on the routine coastal waters and high seas forecasts, which are produced by the BOM and broadcasted on marine radiofrequencies. Refer to the BOM website for electronic copies of:

(a) routine coastal waters and routine high seas forecast
(b) for warnings for coastal waters and shipping on the high seas.

(2) Winds. Wind forecasts are available from the BOM. The Marine Wind Forecasts\(^1\) page and MetEye\(^2\) should both be used to understand the local and larger wind situation.

(3) Definitions and Terminology. This section of the BOM website includes the definitions and

\(^2\) http://www.bom.gov.au/australia/meteye/
terminology commonly used by the BOM and includes:

(a) Beaufort Wind Scale definition and scale at http://www.bom.gov.au/lam/glossary/bpag.e.shtml

(b) wind speed

(c) gusts

(d) squall

(e) strong wind

(f) wind direction

(g) wave height

(h) wind (or sea) waves

(i) swell waves

(j) total wave height

(k) wave and swell heights

(l) king and freak waves

(m) universal time coordinates.

(4) Forecasts and Warning Delivery Systems. These systems include:

(a) Very High Frequency Voice Service. The website detailing the available VHF voice services, including the frequencies used for broadcasting them and the hyperlinks to related websites is http://www.bom.gov.au/marine/new_arrangements.shtml.

(5) Public Broadcast Radio/Television Stations. This section gives details about public broadcasts by radio and television.

(6) Recorded Telephone Services. The recorded telephone services available from the BOM include:

(a) local waters forecasts which are supplied for capital city boating

(b) severe weather warning service, which details marine and land-based warnings

(c) marine forecasts, which detail full coastal waters forecasts and the latest actual reports. The page that shows the map of the marine forecasts areas is http://www.bom.gov.au/marine/map.gif.
CHAPTER 11
NAUTICAL NAVIGATION

11.1 This chapter details navigation techniques used in a nautical environment.

SECTION 11-1. THE ROLE OF NAUTICAL NAVIGATION

11.2 Navigation includes being able to determine a location on a chart or map and being able to direct a course that is safe, efficient and in the correct direction to another location. The fundamental techniques of navigation are universal, and many skills used for land navigation can be transferred easily to nautical navigation. Route selection is the most important task in nautical navigation. The most common form of navigation in sea kayaking is ‘deck top navigation’. This term refers to navigation while paddling; utilising coastal features, maps, deck compasses and marker buoys.

11.3 Terminology. In nautical navigation the following terms are used:

   a.  *Heading*. The direction that the kayak is pointing.
   b.  *Course*. The direction the paddler wishes to travel.
   c.  *Bearing*. A direction specified in degrees, mils or compass points.
   d.  *Route*. A planned trip.
   e.  *Leg*. A section of a route.
SECTION 11-2. CHARTS AND MAPS

Nautical Charts

11.4 Nautical charts depict bodies of water and the information used specifically for marine navigation such as: water depths, shoreline composition, the extent of the tidal range on the shore, direction and speed of tides, inshore rocks and navigation aids (lights, buoys, daymarks). Most charts are printed with compass roses (similar to a protractor) and other navigational aids such as shoreline buildings, structures and terrain visible from the water. Chart latitude and longitude is depicted in degrees. Heights and depths may be drawn in either feet or metres and this information is available in the margin. The land detail on charts is very limited. Therefore, both charts and maps should be carried on expeditions in case an emergency extraction is required.

11.5 As with topographical maps, nautical charts come in various sizes and scales; the smaller the scale of chart, the larger the area they cover. The more common scale charts sold in Australia are available printed in different colours.

11.6 Latitude and Longitude. Latitude lines are the imaginary lines that divide the Earth’s surface into almost equal distances, drawn on a map from east to west, which can be used to calculate the distance either north or south of the equator. Longitude lines are the lines on a map, drawn from north to south, that are used to calculate a position east or west of the Greenwich Meridian. Due to the Earth’s surface being round, the lines of longitude cannot be drawn as lines of equal distance to each other. Using both longitude and latitude, a position on the globe can be specified. Charts measure latitude and longitude in degrees, minutes and seconds. These measurements are divided just as time is; one degree (1°) equals sixty minutes (60ʹ), one minute equals sixty seconds (60ʺ). An example of expressing a location in writing using latitude and longitude is given in Table 11–1.
11.7 **Measuring Distances.** The latitude scale depicted on the side of the chart can be used to measure distances between two points on the chart. Distances on charts are measured in nautical miles, and each nautical mile represents one minute of latitude. Therefore, 1° of latitude is equal to 60 NM. Using a ruler or dividers, a measurement of distance can be taken from the chart and converted to nautical miles using the latitude scale. To calculate a more accurate location or distance, the nautical mile can be divided into metres. There are 1852 m in 1 NM.

11.8 **Knots.** Nautical miles are the standard units of distance in sea navigation, and are also used to define the standard units of speed (knots). A speed of 1 kt is a speed of 1 NM per hour (1.852 km/h).

11.9 **Nautical Chart Symbols.** Myriad symbols and abbreviations are used to represent the information that is detailed on a nautical chart. These symbols are explained in separate publications; the preferred publication for sea kayaking is *British Admiralty 5011, Symbols and Abbreviations Used on Admiralty Charts, Edition 7*, 2018. This publication, as well as nautical charts, is available from the sales team at Australian Hydrographic Service by emailing them on hydro.sales@defence.gov.au.

11.10 When planning a new route, the three critical pieces of information to be derived from a chart are the presence of any rocks, soundings and the drying height. These are depicted as follows:

   a. **Rocks.** Rocks are depicted on charts as either an asterisk ‘(*)’ or as a plus sign ‘(+). These small symbols

<table>
<thead>
<tr>
<th>Grid Reference</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>19° 07'.1&quot;S</td>
<td>Nineteen degrees, seven minutes and one second south</td>
</tr>
<tr>
<td>150° 54'.6&quot;E</td>
<td>One hundred and fifty degrees, fifty four minutes and six seconds east</td>
</tr>
</tbody>
</table>
can represent large rocks, dangerous reefs or small inconsequential rocks. These symbols for rocks are generally accompanied with a height measurement. For example, the notation ‘(6)’ with no underline means the top of the rock is 6 ft above the water level of the high tide in that area. This means the rock stays in view above the surface at all times. On the other hand, an underlined figure such as ‘(6)’ means the top of the rock is 6 ft above the water when the tide is at its lowest astronomical tide.

b. **Soundings.** Soundings are measurements of the depth of the ocean floor. They are listed in feet, metres or fathoms (6 ft equals 1 fm). These depths are shown on charts as the absolute minimum water expected in that location. To be consistent, the measurements are generally calculated at lowest astronomical tide. This information becomes the reference point for readings on that chart and is called the ‘chart datum’. This allows a starting point for all depth calculations. The chart datum is defined as the level below which the tide will seldom fall; that is, when reading the tidal information in an area, the height of the water plus the lowest astronomical tide measurement.

c. **Drying Height.** Charts will depict reefs, rocks and mudflats with a drying height. They can be labeled either ‘Dr’, ‘dries’ or have an underlined figure similar to those on rocks. Drying heights are an essential piece of information when planning routes, especially passages over reefs, and launch and extraction points on mudflats. Areas that are prone to exposure on drying can also be presented on a chart in a different colour to the landmass.

**Topographical Maps**

11.11 Topographical maps are used during planning to locate camp sites, safe access points along the coast, roads, freshwater streams, swamps and townships. They are also used during expeditions to identify landmasses that may offer shelter from the weather. In many areas, the scale of sea charts will make
them unsuitable for nautical navigation while sea kayaking; therefore, topographic maps are used in these situations.

11.12 It is important that both maps and charts are referred to during the planning phase of an activity. Pertinent information from the topographical map can be transcribed on to nautical charts for reference once underway.

11.13 Care of Maps and Charts. All charts and maps are to be kept dry, and any maps or charts not in use should be stored in stowage areas. Where possible, all maps and charts being used for the activity should be laminated to waterproof them and be used in a waterproof map case.

11.14 Using a Chart in a Sea Kayak. Map cases are attached to the deck line so that both sides can be accessed. The charts used for an activity should be placed into the case in the order that they will be used. Laminated chart sections can also be attached in the same fashion.

11.15 Choosing and Obtaining Charts. Nautical charts can be requested through Service channels from the RAN Hydrographic Office or purchased from boating stores. Contact details are available on the Defence Telephone Directory.

11.16 Coast Pilot. Coast pilots or admiralty pilots are an ocean information source which are available for the majority of the world’s waterways. These pilots include information on climate statistics, current and tide information, and hazards that may be encountered. Pilots are available from boating stores.

SECTION 11-3. USING NAVIGATIONAL EQUIPMENT

11.17 A suggested list of navigational equipment that may be used for sea kayaking is detailed in Annex A.

11.18 Deck Compass. The navigational heading of the kayak is set by turning the craft until the bearing desired is visible on the index point. Once underway, the kayak is manoeuvred using turning strokes or the rudder to maintain the heading.
11.19 **Handheld Compass.** A handheld compass is used to determine bearings to features off the kayak’s heading, without altering the course of the kayak.

11.20 **Global Positioning System.** A GPS is used when paddling to confirm locations, to track the speed of travel and to check the course the group had paddled. A GPS receiver is a mandatory item of safety equipment because it enables accurate location reports in a distress situation.

11.21 **Dividers.** Dividers are used during the planning phase to measure distances on a chart. This is achieved by setting the legs to increments of a nautical mile found on the latitude scale and by ‘walking’ the two set legs along a plotted course. Rarely will the distance on the course plotted be a whole nautical mile so the divider legs are set to measure the remaining distance. This distance is then converted to nautical miles on the latitude scale.

11.22 **Parallel Ruler.** The parallel ruler is used to determine the grid bearing of a course plotted on a chart, using the compass rose printed on the chart. This is achieved by placing one of the two ruler halves on the plotted course and placing the other ruler half opening until it intersects the centre of the compass rose. If the compass rose is printed outside of the reach of the parallel ruler, it may be walked into position by holding one half at a time and opening the other half sequentially.

**SECTION 11-4. AIDS TO NAVIGATION**

11.23 Aids to navigation are items external to a kayak that assist in navigation such as lights, buoys, daymarks, foghorns and various radio transmissions.

11.24 **Buoys.** Buoys are used to mark waterways. The shape, colour, sound and numbering of a buoy is used to convey its meaning. Piloting with buoys must be done with caution as buoys may shift location in bad weather. Temporary buoys may be used to mark shifting sandbars and may not be listed on nautical charts. Yellow or yellow and white buoys are used for special
purposes, such as marking temporary dangers and restricted areas.

11.25 Lateral Buoys. Lateral buoys that mark channel boundaries are red on one side of a channel and green on the other side. Port side markers are painted red, are cylindrical and should be kept to the left on entry to a harbour. Starboard side markers are green and cone shaped, and should be kept to the right on entry to a harbour. When exiting a harbour the buoy system is reversed (green buoys should be on the left and red ones should be kept on the right). Charts indicate the colours of buoys with capital letters.

11.26 Spars or Parches. Spars or parches are marked on nautical charts and serve the same function as buoys. A colour and a 'topmark' distinguish spars. Starboard spars are green with a conical topmark and port spars are red with a can as a topmark.

11.27 Safe Water Marks. These are markers used to determine a safe passage in a channel.

11.28 Isolated Danger Marks. These markers indicate an isolated danger with deep water all around it.

11.29 Cardinal Marks. Cardinal marks (see Table 11–2) refer to the cardinal points of the compass; north, south, east and west. A west cardinal mark means that the clear water is to the west of the mark, and that the mark is to the west of the danger. They are painted with a combination of yellow and black bands. The top marks are easy to remember.
Table 11–2: Cardinal Mark Description

<table>
<thead>
<tr>
<th>Mark</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>North</td>
<td>Two vertical black cones both pointing upwards.</td>
</tr>
<tr>
<td>South</td>
<td>Two vertical black cones both pointing downwards.</td>
</tr>
<tr>
<td>East</td>
<td>Two vertical cones point away from each other, forming a diamond shape.</td>
</tr>
<tr>
<td>West</td>
<td>Two vertical cones point towards each other forming a ‘waist’.</td>
</tr>
</tbody>
</table>

11.30 Daymarks. In some channels, daymarks are used as buoys to mark the waterway. They are generally signs on posts or other structures in the water or onshore. These markers are listed on charts as small triangles or squares corresponding to their actual shape. Letters beside the chart symbols for daymarks are coded to give the purpose, colour and the shape of the mark. Daymarks are named with numbers and letters in a similar system to that used for buoys.

SECTION 11-5. POSITION FIXING

11.31 Triangulation. Triangulation or cross bearing at sea is a similar process to the method for land navigation. Back bearings are taken to a minimum of three known points which, when plotted, will create a triangle of error, one minimised if the objects are at...
right angles to each other. Where the triangle of error and the plotted course intersect on the map, a location can be determined. If the triangle of error does not intersect the plotted course, further calculations will be required to ascertain the distance to objects and their location in respect to the kayaking group.

SECTION 11-6. CALCULATING PADDLING SPEED

11.32 Accurate speed calculation allows the paddler to determine how far they have travelled in a given time, a measure called passage time. Passage time must be accurately calculated as the safety of the group may depend on passing a given point within a certain time frame.

11.33 Paddling speed must be taken into consideration. Variables that may affect the speed of the paddler include the speed of the water's current, the resistance of the wind on the paddler and the power of the waves.

11.34 To calculate the paddling speed to be used in planning, a paddler should measure 1 NM on a chart between two obvious features and measure the time it takes to complete the leg. This exercise should be repeated in various conditions and recorded in a logbook to gain knowledge of the speeds expected in different conditions. The speed can be calculated using the formula given in the following example.

**WARNING**

If prevailing conditions result in the group being unable to maintain a minimum of 1 kt (Gretch speed) then the safety of participants must be considered and immediate safe landing sought unless continuing is deemed of sufficient benefit for the delivery of an AT outcome, such as determination or resilience.
Example

11.35 A distance of 1 NM is travelled in 17 minutes. The speed is calculated by multiplying 1 NM by 60 and dividing the total by 17 minutes. A speed of 3.5 kt is calculated.

\[
\text{Speed (knots)} = \frac{\text{Distance (NM) x 60}}{\text{Time (decimal minutes)}}
\]

11.36 Speed Variations. Kayak speed will be greatly affected by wind, waves and current. To successfully plan and plot a course to paddle, information should be gathered on local tides, winds and wave heights, and how they are likely to affect the speed of the kayak along the route.

SECTION 11-7. DEDUCED RECKONING

11.37 Deduced reckoning (DR) is nautical navigation without the aid of landmarks. The paddler can use time, distance and speed calculations to determine their location on a plotted course. During the planning phase, a course is plotted onto a chart and a planning speed is calculated. This plotted course is then marked at intervals of distance calculated from the speed travelled for check navigation. Due to factors that may alter the paddler’s speed and result in the direction being off course, DR is an inaccurate method to determine a precise location. Formulae for DR are given in Table 11–3.

Table 11–3: Deduced Reckoning Formulae

| Time to travel leg is required | Distance and speed are known |
| Distance and speed are known | Time = \(\frac{\text{Distance}}{\text{Speed}}\) |
| Distance travelled is required | Speed and time are known |
| Speed and time are known | Distance = \(\text{Speed} \times \text{Time}\) |
| Speed is required | Distance and time are known |
| Distance and time are known | Speed = \(\frac{\text{Distance}}{\text{Time}}\) |
Paddling a Compass Course

11.38 When using DR, the paddler must direct the kayak in such a way that the compass always reads the set heading. This is called ‘steering by the compass’. Where land is in sight, the paddler should shoot a bearing to a prominent point on the land and continue to paddle in that direction, frequently checking the compass bearing for accuracy.

Confirming Location

11.39 When paddling a course using DR, reference points should be marked onto the chart. A GPS receiver can be used to check the location of the kayak or to calculate the speed travelled.

SECTION 11-8. PILOTING

11.40 Piloting is a navigation technique where bearings to known landmarks or transit lines are used to fix the position of the paddler. Generally used in conjunction with DR, piloting uses predetermined navigational checks to confirm locations along a plotted course. Piloting can be conducted using different methods, as follows:

a. **Transits.** During the planning phase, the paddler identifies a series of features on a chart that cross the plotted course and draws an intersecting line. This intersecting line is called the transit line. While paddling the plotted course, the features will align and the transit line can be identified on the chart to determine an accurate location. To confirm that the paddler has remained on the intended course, a re-section should be conducted with a handheld compass to other features in the area. If available on the course, multiple transit lines can be used confirm location.

b. **Adjacent Ranges.** If the plotted course travels between two features, a line should be drawn connecting the two features and marked where it intersects the plotted course. While paddling the route, this position can be
checked by using the paddle as a tool to align the features on either side of the kayak.

c. **Headland Ranges.** If the plotted course passes cliffs or headlands they can also be used to align distant islands or headlands and create an intersecting line; however, distant features may be obscured by the Earth's curvature.

d. **Holding a Course Using Ranges.** To ensure that the current or wind do not affect the course being paddled, the paddler should align two prominent features with the direction paddled.

**SECTION 11-9. NAVIGATION IN POOR LIGHT OR AT NIGHT**

**Night Navigation**

11.41 Night navigation, or navigation when light is poor, can be conducted using the piloting method, with lighted aids to plot and paddle a course, or with DR by paddling a course and counting paddling strokes for an estimation of the distance travelled.

11.42 **Lighted Aids.** The size and brightness of lighted aids are diverse and such aids are erected using various methods. Lighted aids are designed to be projected in certain directions and are visible at varying distances. Light aids are designed to be individually recognisable and they have different purposes. Information about this is available on sea charts and described in *British Admiralty 5011, Symbols and Abbreviations Used on Admiralty Charts, Edition 7, 2018*. Lights are depicted on charts as a purple teardrop with letters printed alongside to identify them.

11.43 **Table 11–4** gives some of the notations used to describe different lights.
11.44 Light Aid Structures. The notations listed next to light markers on a chart (see Table 11–5), give information about the type of structures on which light aids are mounted, and from what distance these light aids can be seen. If the structure type is not listed, the structure type may be assumed by the distance from which the light can be seen. Generally, the greater distance from which a light can be seen, the higher the structure that houses it. The distance from which a light aid is visible, will vary from the sea charts when in a kayak, as charts list the distance from which the light can be seen, at the height of a ship.
Generally, a light listed with a range of 14 NM or more is most likely to be a lighthouse or large tower.

### Table 11–5: Light Structures

<table>
<thead>
<tr>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fl 6 sec 27 ft 10 NM</td>
<td>Flashes once every 6 seconds from a height of 27 ft, light can be seen out to 10 NM.</td>
</tr>
<tr>
<td>Alt Fl W &amp; R 10 sec 27 ft 16 NM</td>
<td>Alternate flashes of white and red with 10 second breaks from a height of 27 ft out to 16 NM.</td>
</tr>
</tbody>
</table>

#### 11.45 Light Terminology

Light structures are listed on charts as a series of symbols, and are explained as follows:

a. ‘Fl’ indicates a flashing light.

b. ‘__sec’ indicates the duration that the light is exposed for.

c. ‘__ft’ or ‘__m’ indicates the height of the light structure measured in feet or metres.

d. ‘__NM’ indicates the distance from the structure from which the light is visible (from the bridge of a ship) measured in nautical miles. Light structures over 40 ft tall are generally lighthouses or similar structures.

e. ‘GpFl’ indicates a group of flashing lights.

f. ‘QkFl’ indicates a quick flashing light.

g. ‘Alt Fl R&W’ indicates an alternating red and white light.

h. Numbers indicate any numbers listed on the actual structure.
SECTION 11-10. NAUTICAL NAVIGATION PLANNING

11.46 Planning Phase. Navigation planning must occur before each trip and must take into account the most recent information on the likely conditions to be encountered. The following information should be obtained to assist with navigation planning:

1. Wind. Speed and direction are required.
2. Visibility. Sunrise/sunset times, and moon phase and rise/set times are required.
3. Tide. Tidal currents, and low and high tide timings are required.
4. Sea Height. Information about swell, height and direction is required.
5. Chart Information. Information about any dangers on the proposed route, safe landing points, water depths and obvious navigational aids on the proposed route, and information on currents is required.
6. Topographical Map Information. This should give details about camp sites, safe pull out points, fresh water and roads along the proposed route.
7. Local Traffic. Check that a safe passage can be made out of areas congested with motor craft traffic.

11.47 Chart Preparation. Once a safe route has been identified, the charts to be used for that leg of the route are to be prepared. The more detailed the chart preparation, the simpler the route navigation will be and the ability to react to an emergency situation will be greatly improved. The chart may have some or all of the following information listed on it to aid navigation:

1. the plotted route, including bearings for legs of the route
2. any dangers expected along the route are to be clearly marked in another colour
3. any ranges that intersect the plotted route
Contents

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d. timings written at navigation checkpoints

e. bearings to obvious landmarks marked on the plotted route

f. a calculated point where distant landfalls may be first seen, drawn as a semicircle radiating from the feature

g. alternate routes

h. safe landing points

i. any relevant information from the topographical map, including roads and buildings

j. the departure time.

Annex:

A. Navigation Equipment List
ANNEX A TO CHAPTER 11

NAVIGATION EQUIPMENT LIST

1. **Planning Phase.** The following is a suggested list of navigation equipment required for the planning phase of a sea kayaking activity:
   a. nautical charts
   b. topographical maps
   c. a coastal pilot
   d. *British Admiralty 5011, Symbols and Abbreviations Used on Admiralty Charts, Edition 7, 2018*
   e. a parallel ruler
   f. a course plotter
   g. dividers
   h. pertinent sections of the following:
      (1) tide tables
      (2) weather averages
      (3) weather forecasts
      (4) wind strength (local and coastal)
   i. pencils and erasers.

2. **On Water Equipment.** The following is a suggested list of navigation equipment required once on the water:
   a. a waterproof map case
   b. a waterproofed or laminated chart or map sections
   c. a chinagraph pencil or overhead projector marker
   d. a waterproof notebook
   e. a deck compass
Contents

f. a handheld compass

g. a GPS receiver

h. a large flat ruler with string attached

i. binoculars

j. a waterproof torch for chart reading (including spare bulbs and batteries)

k. some form of compass lighting.
CHAPTER 12

COMMUNICATIONS

SECTION 12-1. INTRODUCTION

12.1 Communications equipment is used during sea kayaking activities to obtain weather forecasts or other information about sea conditions. This equipment can also be used to alert others of a distress situation, to seek assistance, or communicate administrative information. Civilian marine safety regulations, military safety regulations, the nature of the activity and the outcome of risk analyses will determine the communication devices to be carried on a sea kayaking activity. Marine communications and signaling devices are subject to regulation and the incorrect use of them can affect the safety of the kayaking group or other parties at sea. It can also cause the unnecessary deployment of search and rescue assets. The GL must have a thorough knowledge of the considerations and constraints for using communication equipment to ensure that it is used effectively and appropriately.

12.2 Key phone numbers or frequencies should be configured and tested prior to commencing the activity.

12.3 PIN numbers or access codes should be removed from safety communications devices.
12.4 Considerations and Constraints. These include:

a. **Coverage.** A minimum of two forms of communications with coverage of the activity area are required. This may be achieved through the use of a minimum of two of the following:

   (1) mobile phones
   (2) SPOT tracker
   (3) satellite phones or messaging device
   (4) VHF marine radio or military radio.

b. **Durability.** The communications device must be able to be used for the task. In an emergency situation this includes being able to be used on water. Non-waterproof devices may require special dry bags to ensure reliable function. Electronics generally rapidly fail when used in a marine environment and care needs to be taken with their protection and use.

c. **Suitability.** The communications device must be able to be used for the duration of the activity. Battery life and the use of schedules needs to be understood to enable communications to be utilised effectively. Different communications devices have different ranges and capabilities. As an example, a mobile phone is only suitable for direct communications, whereas a VHF radio can be used to hail all other VHF users within the broadcast range.

d. **Sustainability.** For electronic devices this requires sufficient power sources for use and recharge and preventative maintenance to ensure continued functionality.
SECTION 12-2. MOBILE PHONES

12.5 The effectiveness of a mobile phone is entirely dependent on the coverage area of the particular service provider. Therefore, it is important to consider an additional type of communication device, in the event of poor or non-existent coverage.

SECTION 12-3. SPOT TRACKER

12.6 SPOT Gen 3 (see Figure 12–1) provides location-based messaging and emergency notification technology that allows you to communicate from remote locations around the globe. It offers custom tracking interval options, motion-activated tracking and long-life battery.

![Figure 12–1: SPOT Gen 3](image)

- GPS satellite signal
- SPOT Gen 3 determines your location (location and message sent)
- Communication satellite
- Ground station
- 5 minute LOCSTATS (messages are delivered via email, text message)
SECTION 12-4. SATELLITE PHONES

12.7 A satellite phone is a mobile telephone that operates by satellite, and can provide communications in some areas where there is no mobile coverage. Users must be trained in the use and limitations of a satellite phone. Most Defence satellite phones will come with an instructions placard.

SECTION 12-5. VERY HIGH FREQUENCY RADIOS OR MILITARY RADIOS

12.8 Radio transceivers enable two-way communications using the radiofrequencies of the electromagnetic spectrum. The means by which radio transceivers work is detailed in LWP-G 6-4-1, Radio Wave Propagation and Antenna Theory. Radio transceivers can be used for obtaining information about weather and sea conditions, alerting of distress situations, seeking assistance in an emergency and transmitting administrative information. Radio transceivers can sometimes achieve communications in areas where mobile telephones do not have service coverage. Marine VHF handheld transceivers are the most common types used for sea kayaking. Marine UHF, marine HF, citizens band UHF and HF, and military VHF and HF transceivers could be used but, for various reasons, are not as practical or versatile as marine VHF transceivers.

12.9 Marine Very High Frequency Radio. The marine VHF is a versatile and effective method for communicating at sea and complies with the mandatory requirements that exist in some states. They can provide relatively clear, line of sight communications and, generally, a handheld marine VHF radio will transmit to another kayak over distances of 2 to 5 km and up 10 km to receiving stations with tall masts. Distance depends on power output and antennas. They can be obtained readily and cheaply from commercial suppliers. Channel 16 of the marine VHF band is the international VHF distress channel, which is widely monitored by other sea craft, marine rescue and other emergency service organisations.
Operation of a Marine Radio

12.10 Operators of marine radio transceivers should note the following constraints and requirements for their use:

a. The transmission of false or deceptive distress, urgency or safety signals is strictly forbidden. Severe penalties, including imprisonment, exist under the Radiocommunications Act 1992 for any person found guilty of making such a transmission.

b. Marine radio telephone procedure is similar to Army radiotelephone (known as RATEL) procedure and must be used for all communications.

c. Radio call signs are not required for craft using VHF marine radios. Operators should use the name of the vessel or a suitable descriptor (eg, Army sea kayaking pod).

d. Marine radio equipment can only be used aboard vessels at sea or on inland waters.

e. A distress call (ie, ‘MAYDAY’) has absolute priority over all other transmissions. All stations that hear a distress call must immediately cease all transmissions capable of interfering with distress communications.

f. The urgency signal is prefixed with the words ‘PAN-PAN’. This indicates that the station using it is about to send an important message.

g. The safety signal is prefixed with the word ‘SECURITE’. This indicates that the station using it is about to transmit a message concerning an important navigational or weather warning.

h. A ship station may only use the frequencies that are authorised for its particular activity in accordance with the licence. Anyone may use a radio in an emergency.

i. Channel 16 is the international distress channel for the VHF marine band. Channel 67 is also used in Australian waters. Distress channels must not be used for the
exchange of routine information but may be used to establish contact with another station. Once contact is established, communications should be transferred to a working frequency.

j. Communications can be difficult to achieve with a handheld transceiver while seated in a kayak in large seas.

**SECTION 12-6. RADIO RECEIVERS**

12.11 Radio receivers are categorised by the type of radio signal they can receive. The most common type of radio receivers are AM/FM modulation radios that are used for public broadcasting. Less commonly available, and usually more expensive radio receivers, can receive marine VHF radio (eg, Channel 16 and Channel 67) transmissions and short-wave radio transmissions.

**SECTION 12-7. COMMUNICATIONS IN AN EMERGENCY**

12.12 The development of an effective emergency communications plan, and the ability to implement it efficiently, is necessary for the conduct of all sea kayaking activities. These can only be achieved if the person developing and implementing the plan has a thorough understanding of the uses and limitations of marine communications and signaling devices, and the methods for alerting others of distress and for seeking assistance.

12.13 The Process. All personnel requiring assistance should seek assistance from other personnel in the group as their first option. If other members of the group cannot resolve the situation, a member of the group should use an appropriate means of communications to seek assistance from the SOA. If the situation is an emergency, or the SOA cannot resolve the situation, a member of the group should request assistance.
12.14 Use of a Telephone to Seek Assistance. Assuming service coverage exists, telephones provide an excellent means for alerting others of distress and seeking assistance in an emergency. The efficient use of a telephone in an emergency requires ready access to the appropriate telephone contacts and the ability to concisely communicate critical information to support the provision of assistance. Pre-drafted text messages for casevac and emergency assistance may shorten response times. Carrying a telephone does not negate the need to develop an effective search and rescue and emergency communications plan.

International Distress Signals

12.15 Depending on the situation and the equipment carried during a sea kayaking activity, distress can be signalled to other seagoing craft or search and rescue agencies using one or more international distress signals. International distress signals are universally recognised methods for signalling distress and seeking assistance at sea. The following signals, used or exhibited either together or separately, indicate distress and the requirement for assistance:

a. a gun or other explosive signal fired at 1 minute intervals
b. a continuous sounding of any fog-signalling apparatus
c. rockets or shells throwing red stars, fired one at a time at short intervals
d. a signal made by radiotelegraphy or by any other signalling method consisting of the group ... – – – ... (SOS) in morse code
e. a signal sent by radiotelephony consisting of the spoken word ‘MAYDAY’
f. the international code signal of distress, ‘NC’ as signalled by marine flags
g. a signal consisting of a square flag having above or below it a ball or anything resembling a ball
h. flames on the vessel (as from a burning tar barrel, oil barrel, etc.)
i. a rocket parachute flare or a hand flare showing a red light
j. a smoke signal giving off orange smoke
k. slowly and repeatedly raising and lowering arms outstretched to each side
l. the radiotelegraph alarm signal
m. signals transmitted by a PLB or EPIRB
n. approved signals transmitted by radio communication systems, including survival craft radar transponders.

12.16 Use of Signalling Devices in an Emergency. The signalling devices that are commonly used to signal distress during sea kayaking activities are described in Chapter 2. It is important that GLs and participants in sea kayaking activities can employ these signalling devices effectively.

Use of a Marine Radio in an Emergency

12.17 Distress Message. In an emergency, a distress message can be sent using marine radio. The distress signal is only justified if a member of the group is in grave and imminent danger and requires immediate assistance. It does not extend to situations where immediate assistance is sought on behalf of a person (eg, a medical emergency). The urgency signal should be used in these situations. The following procedure should be used for transmitting an emergency distress signal:

a. select the distress channel (eg, Channel 16 for VHF)
b. state MAYDAY three times – ‘MAYDAY, MAYDAY, MAYDAY’
c. identify the caller by call sign or description – ‘THIS IS [your name/call-sign]’ (eg, ‘THIS IS LIAM, LIAM, LIAM’)
d. provide particulars of the position – ‘WE ARE ONE NAUTICAL MILE NORTH EAST OF BROUGHTON ISLAND’

e. provide details of the nature of the distress and the kind of assistance required – ‘SEA KAYAK GROUP, ONE PERSON UNCONSCIOUS WITH CATASTROPHIC HAEMORRHAGE, REQUIRE EVACUATION’

f. provide other information that may facilitate rescue – ‘WE WILL SIGNAL WITH FLARES WHEN VESSEL OR AIRCRAFT SIGHTED’.

12.18 Urgency Signal. Use of the urgency signal indicates that the person sending it has a very urgent message to transmit concerning the safety of a kayak or a member of the group. The procedure for issuing an urgency signal is as follows:

a. select Channel 16

b. state ‘PAN-PAN’ (pronounced ‘PAHN-PAHN’) three times

c. say ‘HELLO [name of station called]’ three times (eg, ‘HELLO PORT STEPHENS VMR, HELLO PORT STEPHENS VMR, HELLO PORT STEPHENS VMR’)

d. use ‘THIS IS’

e. identify your call sign three times (eg, ‘EMMA, EMMA, EMMA’)

f. send the message.
SECTION 12-8. ADMINISTRATIVE COMMUNICATIONS

12.19 Administrative communications during a sea kayaking activity may include:

a. Communication between UATLs during the conduct of an activity using an appropriate hailing channel on your marine VHF radio (see Figure 12–2).

Figure 12–2: Australian Very High Frequency Marine Radio Channels
b. obtaining weather forecasts and information on sea conditions

c. lodging, updating and closing a float plan (as detailed in paragraph 1.38) with a volunteer coastal patrol agency or the SOA

d. providing positive advice on safety and wellbeing to the SOA

e. coordinating replenishment or extraction with the SOA.

12.20 The method for conducting these communications will be determined by the nature of the activity, the location of the activity and the communications equipment available. Regardless of the method used, the leader of a sea kayaking activity should consider the following when developing a communications plan to support the activity:

a. At the completion of the activity and prior to the specified search and rescue time, the float plan must be closed with all agencies with which it has been lodged.

b. Where an activity extends beyond the area monitored by a marine rescue organisation and a float plan has been lodged with it, the rescue organisation must be advised when the sea kayak pod exits the monitored area.

c. Scheduled timings for communications (commonly referred to as ‘scheds’), may be used where continuous monitoring of communication devices is not practical or desirable.

d. Where the ability to achieve communications is critical, secondary or alternative communication methods should be available.
12.21 Signals are used to communicate during sea kayaking when verbal communications are ineffective, and are similar to field signals. Where possible when signaling ensure the paddle that is used is a high visibility colour and does not blend into the background. Cyalume or other light sources may be used in a similar manner in low light conditions. Complement these signals with a whistle blast to attract attention. These signals are as follows:

a. **Whistle Blast.** In sea kayaking a whistle is used to attract attention. Where you require immediate attention blow the whistle repeatedly and loudly. Whistle blast may also be used specifically for communicating to solve a specific problem. In this case the GL is to ensure that all members understand the patterns or sequences used and their meanings.

b. **Stop.** A paddle or arms are raised in a horizontal position (see Figure 12–3).

![Figure 12–3: Stop Signals](image-url)
c. Go. Raise a paddle straight up into the air with the blade’s back face of the blade facing forward (see Figure 12–4). When using cyalume or light hold one vertically up and one vertically down.

Figure 12–4: Go Signals
d. **Go in this Direction.** An extended paddle or horizontal arm is pointed in a safe direction indicating which direction to paddle in (see Figure 12–5 and Figure 12–6).

![Figure 12–5: Adjust Course to Your Left Signals](image-url)
Figure 12–6: Adjust Course to Your Right Signals

e. *Emergency.* Raise a paddle or arms above the head, with the blade’s back face or cyalume facing forward and wave from side to side (see Figure 12–7).
Figure 12–7: Emergency Signals – Stage 1 and Stage 2

f. *Come to Me.* Place the palm of a hand on the top of your head and raise it up and down (see Figure 12–8).
g. *Raft Up.* Raise the paddle above your head and make small circles (see Figure 12–9), then nominate the paddler by pointing. Hand field signals using the same motion can also be used.
h. *Close Up.* Raise the paddle in one hand, the palm of the other hand is to face inwards. Move the paddle and free hand inwards, indicating coming together (see Figure 12–10).

![Figure 12–9: Raft Up Signals](image)

![Figure 12–10: Close Up Signal](image)
i. **Space Out.** Raise the paddle in one hand. The palm of the other hand is to face outwards. Move the paddle and the free hand outwards, indicating to space out (see Figure 12–11).

![Figure 12–11: Space Out Signal](image)

j. **Are You OK?/I Am OK.** To ask someone if they are OK, or to tell someone that you are OK, place a fist on top of the head (see Figure 12–12) and ask ‘ARE YOU OK?’ The reply is the same signal, ‘I AM OK’.
Figure 12–12: Are You OK? I Am OK Signal

k. **Backpaddle.** To direct someone to backpaddle away from you. The paddle blades or hands go in backwards circles (see Figure 12–13).

Figure 12–13: Backpaddle Signal
CHAPTER 13

EMERGENCY MANAGEMENT (SEA KAYAKING)

13.1 Emergency management in a sea kayaking environment requires the GLs and SOA to have:

a. Good Planning and Preparation. Ensure that all relevant information required in relation to the safety plan, weather, equipment, water and rations are available. Failures of one small part are unlikely to cause significant problems. However multiple small errors can quickly cause issues to escalate. Identified issues and shortfalls should be assessed both individually and as a whole to ensure that overall risk management is correctly applied.

b. Early Decision-making. Early decision-making ensures a clear understanding of limits, casevac procedures and actions on. When errors, injuries or loss of and damage to equipment start occurring this information should be assessed and communicated early so the SOA is aware of the situation(s).

c. Communication. Communication of this key information is an important as the key information itself. The primary way we ensure retention and management of this information is through issuing the float plan. The float plan must be lodged with the SOA prior to departure. Any other logging on with marine rescue authorities is acceptable, however matching log offs must be recorded so as not to trigger a search and rescue response.

13.2 The assistance flowchart in Annex A details the actions to be taken where an emergency situation has arisen. Escalation is a process and is dependent on members knowing to whom and how the issue should be escalated. Any step of who or how to notify may be skipped dependent on the risk of the assessed
emergency (eg, if life is at risk then PLBs may be initiated immediately).

SECTION 13-1. SAFE LANDINGS

13.3 Depending upon the level of sea kayaking activity being performed (ie, novice, intermediate or advanced) the maximum limits and proximity for safe landings are defined by the activity levels shown in Table 1–2.

13.4 During the activity's planning phase, possible safe landings will need to be identified and communicated across the SOA and all participants with respect to all conditions. On the day of the activity these safe landings will need to be assessed based on the prevailing conditions forecast before getting on the water and while on the water. If through logical assessment safe landings are not available within the required maximum limits or proximity then an alternate location should be used or local reconnaissance conducted to confirm conditions prior to launch.

13.5 Conditions will always be reduced on the lee side away from wind, waves or swell.

13.6 Considerations for safe landings include:

a. wind, waves and swell and the resultant expected surf

b. shape of the ocean floor and headlands, particularly those providing lee

c. tides and currents

d. standing waves and direction participants will be pushed if they capsize

e. landing with a casualty or empty craft, options need to be assessed based on the casualty and conditions:

(1) casualty landing:

(a) swim in – or a supported swim in with the rescue swimmer
(b) tow in – is suitable in smaller conditions only

(c) back deck carry – as described in the rescues section

(d) long pull – connecting multiple towlines and then using them pull the casualty through a short break, the Beach Master must control the speed and manage the risk of entanglements

(e) trailing anchor – the use of trailing drogues or kayak can slow or partially anchoring the stern of the casualties kayak which will assist in keeping the kayak straight in surf

(f) in all casualty landings the rescue swimmer is to be ready and additional controls and communication put in place if required

(g) if the casualty is stable, bringing them in second last generally allows best management of any issues that may arise with multiple people available on the beach.

(2) empty craft:

(a) push in – launch or push in the back of the break, watch for littoral currents, gutters and rips to ensure that kayak and equipment not lost to the ocean; this needs to be controlled with personnel ashore and afloat tasked with monitoring the kayak

(b) swim out – where a swimmer swims out through the surf and paddles the kayak in

(c) tow in – noting the risk that the towed kayak may capsize fill with water and endanger the tower, or surf past the tower and cause immediate broaching and entanglement hazard.
13.7 Emergency vehicle transfer will generally be conducted under control of emergency services (via 000) for Priority 1/Priority 2 casualties and through the SOA for Priority 3 casualties:

a. SOA is to coordinate all casevac and seek to manage the ongoing incident reporting by moving to the casualty location as soon as possible and coordinating reporting to higher.

b. In accordance with standard casevac plans, all emergency reporting numbers, participant details, health facility contact details, facility capability, location and routes to and from must be available to the SOA, GLs and any supporting vehicles.

c. Where a participant is evacuated, control of stores and equipment and especially recovery of group stores before they leave must be planned for.

d. If possible send the casualty with a dry change of clothes and identification. Consider sending support person to assist in incident management and personal support.

e. Pre-identification of which safe landing areas have easy vehicle access for casevac will ensure appropriate exit point.

Safety Officer Ashore – Roles for Coordination

13.8 Once float plan limits are breached the SOA must take action immediately through to full escalation for search and rescue while continuing to maintain communications with rescue authorities. They are also responsible for follow-through of any on-water requests for support other than emergency evacuation.
Signalling

13.9 Use of signalling devices in an emergency are required to be synchronised and used appropriately. Signalling devices and methods used in Defence sea kayaking include:

a. voice
b. pealess whistle
c. matches (signal fire if on land)
d. signal mirror
e. cyalume
f. torches
g. strobe lights
h. V-sheet
i. marker sea dye
j. orange day smoke
k. red night flare
l. mobile phones
m. marine VHF radios
n. military UHF, VHF and HF radios
o. satellite phones and transponders
p. SPOT tracker
q. PLBs
r. EPIRBs.

SECTION 13-2. EVACUATION AT SEA

Water Transfer (Kayak to Boat)

13.10 The rescue boat crew upon arrival at the scene will first attempt to talk with the person in charge (the GL may be indisposed) of
the group. If rescue is requested, then the master of the rescue boat is given complete control of the situation.

13.11 The priority and responsibility of the rescue boat master is for their boat and crew. This responsibility will affect the master’s decision-making when it comes to manoeuvring the boat into a position to extract a paddler.

13.12 If conditions permit, the rescue boat will be positioned as closely as possible so the master/crew can talk clearly to the person in charge. If conditions prevent the master/crew from talking directly to the person in charge, other options such as use their VHF radio or boarding of the rescue boat by the person in charge should be considered.

13.13 Before departing on a trip GLs and SOA need to know what the preferred VHF channel is as used by marine rescue organisation and repeater stations in that area. If it is unknown or VHF communications are poor try Channel 16 (distress and calling) or Channel 67 to hail any boat in the area that may be able to relay messages or render assistance.

13.14 Once communications have been established, depending upon the conditions and the position of the rescue boat, several options may need to be considered on how to get the stricken participant aboard the rescue boat.

13.15 If the boat is alongside it will be a relatively less complicated extraction than when conditions or the location force the boat to stand-off. How far the boat stands-off will depend upon the rescue boat master’s judgement.

13.16 Where possible, the rescue should be conducted in the lee of the rescue boat. The boat’s hull will provide some protection from the prevailing conditions.

13.17 Determine the capability and transfer limitations of the vessel. The height difference between the sea kayaker and the vessel they need to transfer to may be a significant issue that needs to be overcome.

13.18 Options may range from simply coming alongside and removing the stricken paddler onto the rescue vessel, to having
13.18 To get a throw line from the rescue boat to the stricken paddler’s kayak and have the rescue crew pull the rescuee (either alone or assisted) over to the rescue boat. However, a pitching and rolling rescue boat is a difficult platform to work on and can pose a hazard to the rescuee. Helmet and life jackets should remain fitted to the casualty to minimise this risk.

13.19 It may be plausible, instead of bringing the kayak over to the rescue boat in rough seas, that the stricken paddler is attached to the throw line by making a loop in the line using a bowline knot. The loop is placed over the stricken paddler to their waist and then they are assisted out of their kayak and then floated/hauling over to the rescue boat.

13.20 Depending upon available space on the rescue boat and or environmental conditions, the stricken paddler’s kayak may not be retrieved by the rescue boat and may have to be abandoned. Where possible, all hatches should be secured to maximise chances of future recovery.

13.21 All safety equipment, including PFD and helmet, should be worn and, where necessary, the casualty should be wrapped in a thermal blanket to retain body heat.

Helicopter Transfer

13.22 Principles and considerations:

a. Signalling and communication is needed to rendezvous with the rescue crew. This includes understanding effective ranges and correct use of all signalling and communications devices. By day, mirrors, sea dye and smoke are very effective; by night, flares, strobes and torches are more appropriate.

b. Rotor wash as the helicopter hovers close by or manoeuvres the rescue swimmer has potential to capsize craft (see Figure 13–1).

c. Rescue swimmer deployment may be either tethered or detached. Consider if the casualty can be safely put in the water with support people and the kayaks moved from the area. Alternatively, the rescue swimmer may be
brought into location and lowered to recover the casualty.

d. Spectators who are not required for stabilising the casualty should be moved outside of the immediate area.

e. Follow directions from the crew and rescue swimmer.

f. Communicate via VHF, early if possible. Most rescue aircraft are able to communicate with marine VHF Channel 16.

g. The helicopter may undertake a number of passes to determine best location for wind and approach before commencing the rescue.

h. All safety equipment, including PFD and helmet should be worn, and, where necessary, the casualty should be wrapped in a thermal blanket to retain body heat.

Figure 13–1: Helicopter Rescue
Fixed Wing Signalling

13.23 Fixed wing aircraft are unable to conduct a rescue but will often be used to locate the rescuee and drop a life raft and other emergency stores.

a. If you sight or hear any aircraft, they should be signalled immediately.

b. If the aircraft identifies the rescue, they will undertake a number of passes to determine wind and conditions and to confirm signs of life.

c. They will then seek to drop a life raft and supplies, often tethered in a line of two to four items, upwind of the rescue position.

d. In preparation for the dropping of the life raft, prepare a tethered swimmer to swim to the items and secure a line.

e. The raft should then be righted and all personnel relocated onboard.

f. Further details are available on the Australian Rescue Coordination Centre website.

Annex:

A. Assistance Flowchart
ANNEX A TO CHAPTER 13

ASSISTANCE FLOWCHART
**Assistance required?**

- **No** → **Identify location**
  - Ops, Chart, Map
  - Use appropriate communication equipment to request assistance

- **Yes** → **Situation resolved?**
  - Yes → **Resume or conclude activity**
  - No → **Use appropriate means of signalling to mark position** → **Signal RV**

**Level**
- **Distress Priority 1**
  - **Description**: May Day call
  - **Who to?**: Rescue authorities, any other personnel or vessels able to provide assistance

- **Urgency Priority 2**
  - **Description**: Pan-Pan call
  - **Who to?**: Rescue authorities, any other personnel or vessels able to provide assistance

- **Administration Priority 3**
  - **Description**: Routine call
  - **Who to?**: SOA

**Why?**
- **Distress Priority 1**: Grave and imminent danger
- **Urgency Priority 2**: Safety of personnel or vessel at risk
- **Administration Priority 3**: Administration assistance

**When?**
- **Distress Priority 1**: Immediate
- **Urgency Priority 2**: Urgent
- **Administration Priority 3**: Routine

**Communication equipment**
- **Distress Priority 1**: All available
- **Urgency Priority 2**: All available less PLBs/EPIRBs unless directed by rescue agency
- **Administration Priority 3**: All available less PLBs/EPIRBs
CHAPTER 14

MARINE FIRST AID

SECTION 14-1. INTRODUCTION

14.1 First aid is the assistance given to an injured or ill person using available equipment before the arrival of more qualified medical aid. First aid should be started immediately and continued until medical aid takes over or the casualty recovers.

14.2 Many AT activities will occur in wilderness settings with access to hospitals greater than 2 hours away. Correct treatment and monitoring of a casualty while waiting for casevac is critical to maximise their chances of survival.

14.3 When sea kayaking on water, standard first aid is often not possible given sea conditions, constant motion and continual exposure to environment.

14.4 Aims of First Aid. The aims of first aid are as follows:
   a. to preserve life
   b. to protect the casualty (unconscious or otherwise)
   c. to prevent casualty conditions from worsening
   d. to promote recovery
   e. to provide a safe environment.

14.5 This chapter outlines further details beyond those laid out in LWP-G 1-2-5, Army First Aid required to be understood by UATLs in order to safely facilitate the activity and provide appropriate first aid response during an emergency. Basic life support principles (see Table 14–1) remain unchanged.
Table 14–1: Basic Life Support Principles of Danger, Response, Send, Airway, Breathing, Compressions and Defibrillation

<table>
<thead>
<tr>
<th>D</th>
<th>Danger. Check for danger to yourself, others and then the casualty. In an operational context, be alert for lines of enemy fire, ambush, mines and booby traps as well as more obvious hazards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Response. Assess the casualty’s response by giving simple commands, such as ‘OPEN YOUR EYES’ or ‘SQUEEZE MY HANDS’, or by gently shaking the casualty’s shoulders. Casualties who are breathing normally but fail to respond should be rolled onto their side into the lateral position. Ensure that the casualty’s head and neck are supported when rolling.</td>
</tr>
<tr>
<td>S</td>
<td>Send. Send for help or ask a bystander to call for help.</td>
</tr>
<tr>
<td>A</td>
<td>Airway. A casualty with an obstructed airway may not be breathing, may have noisy breathing or may have a blue or pale face. Where possible, a casualty’s airway may be cleared while they are lying on their back. However, if the casualty is unconscious they must be promptly rolled onto their side into the lateral position in order to clear the airway. The mouth should be opened and turned slightly downward to allow any of the obvious foreign material (eg, food, vomit, blood and secretions) to drain using gravity. Visible material can be removed with the AFA’s fingers. Remove dentures only if they are loose, broken or dislodged. Ensure that the casualty’s cervical spine (neck) is not moved in any direction during airway clearance.</td>
</tr>
<tr>
<td>B</td>
<td>Breathing. Assess the casualty’s breathing by using the ‘look, listen and feel’ technique. Look at the chest (sighting towards the feet) to see if it rises and falls. The AFA should place an ear over the casualty’s mouth to listen for breathing sounds and to attempt to feel air movement. If the casualty is not breathing normally, the AFA should initiate CPR.</td>
</tr>
</tbody>
</table>

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### Contents

<table>
<thead>
<tr>
<th>14-3</th>
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</thead>
</table>

| C | **Compressions.** If the casualty shows no signs of life, the AFA should start chest compressions at a ratio of 30 compressions to every two rescue breaths. AFA should perform chest compressions for all casualty ages at a rate of approximately 100 compressions per minute (almost two compressions per second). This does not imply that 100 compressions will be delivered each minute. The number will be reduced by interruptions during rescue breathing. |
| --- |

| D | **Defibrillation.** Manual is to be supplemented by an AED if one is available, but only if operated by qualified personnel. |
| --- |

### 14.6 Consideration points for sea kayaking first aid:

- a. **Make the treatment area as stable as possible through stopping the kayaks and rafting together.** Use of a rafted tow and drogues will minimise the effect of sea and swell. Immediate landing should also be considered, if viable.

- b. **Consider treatment options that will work in a complex marine environment and with limited accessible equipment.** The basic individual first aid stores are an emergency bandage and gaffer tape. Opening a first aid kit in a complex marine environment may possibly result in the loss or damage of the entire kit. Where necessary this should occur, but the Army first aider (AFA) should seek to establish a stable treatment area first.

- c. **Limit removal of individual safety equipment such as helmets, PFD, cags and thermal clothing unless absolutely necessary for immediate first aid treatment.**

- d. **Communication of the situation early on will result in the fastest possible evacuation if required.** Use of other group members to undertake reporting should occur for any serious injury or illness.
Personnel operating sea kayaks are exposed to the wind, rain, sea and sun. It is important that all personnel involved in small craft operations are dressed as follows:

a. sleeves must be rolled down to prevent sunburn and/or to stay warm
b. a hat is required to prevent sunburn
c. only light enclosed footwear such as runners and reef shoes should be worn
d. sunscreen should be applied to exposed skin
e. waterproof clothing may be required in inclement weather
f. a wetsuit may be required for extended periods in cold wet and windy conditions
g. sunglasses may be required to counter reflection from the sea surface.

Sunburn. The effects from the sun can be amplified when reflected from the surface of the water. To prevent sunburn, the head and skin should be kept covered, and sunscreen and a lip balm should be used and refreshed regularly. Exposure to the wind can also cause windburn, which has the same effects as sunburn. When possible, personnel should stay in the shade and in the lee to avoid the sun and wind.

Recommended methods of treatment in relation to resuscitation, hypothermia, envenomation from marine bites and stings, and trauma continue to change and evolve with ongoing medical and scientific research. If a discrepancy is noted between the methods of treatment in this publication and the method of treatment issued by the Australian Resuscitation Council (ARC), then the ARC recommendation will stand. Where this is the case, immediate feedback should be given to the Adventurous Training Wing to enable an update. The guidelines are available at the ARC website¹.

SECTION 14-2. FIRST AID KITS

14.10 Detailed lists of the contents of first aid kits requirements are outlined in Annex B to Chapter 15.

14.11 Dependent on location and risk analysed in conjunction with the supporting health officer, items may be added or removed (eg, vinegar is only required for the treatment of some tropical jellyfish stings). Location will influence requirements also, particularly in relation to the relative ease and access to reliable evacuation assets.

14.12 Given the propensity of all items carried being immersed in sea water during carriage and use, the prescribed kits have to have individually waterproof items.

Individual First Aid Kits

14.13 Individual first aid kits for sea kayaking must be waterproof and functionally address the ability to address major trauma and common on water injuries.

Group First Aid Kits

14.14 This kit is to be carried per pod or group of paddlers as per the equipment list at Annex B to Chapter 15.

14.15 The kit must be stored in a waterproof container and components should be packaged internally in ziplock bags to ensure that contents are appropriately protected for emergency use. The kit must be clearly labelled FIRST AID or with the white cross on a green background for quick identification. This may be a dry bag or hard case.

14.16 Medical supplies and equipment must be carried to treat minor medical conditions and injuries, or to temporarily stabilise a patient until transfer to medical assistance can be arranged. Further consideration must be given to the particular risk inherent to the expedition, its duration, number of personnel, location, types of local flora and fauna and access to medical facilities.
14.17 Qualifications and currency of persons administering first aid should be appropriately matched to the planned expedition and likely casualty evacuation timelines. Significant expeditions with response times over 2 hours will likely require a combat first aider or wilderness first aider.

SECTION 14-3. SEA SICKNESS

14.18 Sea sickness is a form of motion sickness characterised by nausea and dizziness, sometimes accompanied by vomiting, resulting from the rocking or swaying motion of a vessel in which one is travelling at sea.

14.19 Motion sickness is a disorder of the sense of balance and equilibrium and, hence, the sense of spatial orientation that is caused by repeated motion. Motion sickness is due to irritation of a portion of the inner ear due to the brain receiving visual stimulus of motion but the body not registering it; or conversely the body feeling motion but the eyes not registering it, particularly on night paddles. The symptoms of motion sickness include:

a. nausea
b. vomiting
c. vertigo
d. sweating
e. a general feeling of discomfort and not feeling well (malaise).

14.20 Symptoms usually stop when the motion that causes it ceases. However, some people suffer symptoms for even a few days after the trip is over.

14.21 **Extreme Sea Sickness.** Extreme sea sickness may develop to such an extent that a participant may lose consciousness and experience anxiety and stress. The UATL is to assess the situation and make for the nearest safe landing in the case of extreme sea sickness.
14.22 **Treatment.** Generally, motion sickness will pass with time. If significant vomiting occurs, then dehydration can result. Some over the counter and in extreme cases prescription medications can be used. Medical advice should be sought for the use of medications and treatment of extreme sea sickness.

14.23 **On Water Management.** On water management should be enacted early:

a. Eat light meals or snacks 24 hours before traveling, and try to avoid big or high fat content meals.

b. Use over the counter medications in accordance with the manufacturer’s instructions. Many take time to take effect and if vomiting is occurring they may not be effective.

c. Where possible you should focus on distant land when paddling to align physical and visual cues.

d. Short, shallow and rapid breathing can often contribute to motion sickness symptoms, therefore concentrate on maintaining slow and deep breathing.

**SECTION 14.4. MARINE BITES AND STINGS**

14.24 Envenomation is the poisoning that results from the injection of venom into the body by bites and stings or penetrating wounds from various venomous creatures. These include certain marine creatures such as:

a. jellyfish

b. molluscs

c. fish

d. sea snakes.

14.25 Defence personnel are likely to be exposed to all of these creatures in the course of training and during operations. The possibility of exposure to such creatures is a risk that can be
effectively managed through good education (avoidance), protective dress and the application of timely and effective first aid and medical treatment.

14.26 It is particularly important to note that the severity of the envenomation will depend on various factors, including:

a. the type and amount of venom injected
b. variation within the creature; for example, the size and maturity of a snake and the time since it last injected venom
c. the size, age and general health of the casualty
d. the administration of correct and prompt first aid and medical treatment.

14.27 With jellyfish stings it is usually difficult to recognise which species caused the sting. Management of stings is based on risk of serious stings in the known geographical distribution of dangerous species. Jellyfish able to cause life-threatening stings primarily occur along the tropical coastline of Australia; that is, from Bundaberg (Queensland) northwards, across the northern coastline and down to Geraldton (West Australia).

14.28 Some casualties may display a severe allergic reaction to what is generally regarded as a minor envenomation, such as a bee sting. This anaphylactic reaction, especially if stung near the neck which would have an effect on the casualty’s airway, can be fatal and should be treated as a medical emergency.

14.29 The important lesson for all AFAs is that every bite or sting should be treated as serious until the full effects on the individual are evident. Most individuals would be expected to display signs and symptoms of envenomation within 4 hours of being stung or bitten, or after the removal of first aid measures such as the pressure immobilisation technique (PIT).
14.30 Further information can also be found in the *Manual of Envenomation and Poisoning – Australian Fauna and Flora (Occupational Health Series 1).*

**EMERGENCY CONTACT**
The Australian Venom Research Unit maintains a continuous emergency advice line for envenomation on +61 8344 7753

14.31 **Pressure Immobilisation Technique.** The purpose of applying the PIT is to retard the movement of venom from the bite site into the circulatory system, thus ‘buying time’ for the patient to reach medical treatment. Research has shown that very little venom reaches the bloodstream if firm pressure is applied in a timely manner over the bitten area and the limb is immobilised. This treatment was initially developed to treat snakebite, but it is also effective first aid for other bites and stings from some other venomous creatures. This method of treatment is currently recommended for most life-threatening venomous bites and stings in Australia. Table 14–2 details the venomous bites for which PIT is and is not recommended.

**Table 14–2: Recommended Use of the Pressure Immobilisation Technique**

<table>
<thead>
<tr>
<th>Recommended</th>
<th>Not Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Australian venomous snakebites, including sea snake bites</td>
<td>Bluebottle jellyfish sting</td>
</tr>
<tr>
<td>Cone shell stings</td>
<td>Stonefish and other fish stings</td>
</tr>
<tr>
<td>Blue-ringed octopus bites</td>
<td>Box jellyfish stings</td>
</tr>
</tbody>
</table>

Where possible, heavy roller bandages should be used to apply pressure, but any improvised material can be used in an emergency. The first bandage applied to the bite site is the most important, as this bandage traps the venom at the site and prevents it from spreading around the body. The venom initially moves through the body via the lymphatic system. It should be noted that the PIT can be applied at any stage after being bitten (but is most effective if applied immediately) and pressure is normally not removed by medical staff until antivenom is available.

14.33 The general principles for applying the PIT are outlined in Figure 14–1.
Box Jellyfish

14.34 The box jellyfish (*Chironex fleckeri*) is found in the coastal waters of northern Australia, from Gladstone in Queensland to Broome in Western Australia. It is not found on the Great Barrier Reef during the summer months.

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**Figure 14–1: Principles for Applying the Pressure Immobilisation Technique**

**DO**
- Calm the casualty and keep them at rest.
- Immediately apply firm local pressure with a pad over the bite site.
- Apply a firm bandage around the limb directly over the bite site and mark the bite site on the bandage.
- Bandage from the extremities upwards, covering as much of the limb as possible, as firmly as you would a sprained ankle. This may go over non-bulky clothing.
- Immobilise the limb by an independent splint. Check that circulation has not been cut off.
- Reassure the casualty and monitor circulation and signs of life.
- Document and evacuate to medical aid.

**DO NOT**
- Attempt to catch the creature responsible.
- Elevate the bitten limb.
- Cut or excise the wound.
- Attempt to suck poison from the wound.
- Wash the bitten area.
- Apply an arterial tourniquet.
- Remove bandages or splints.

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*LWP-G 7-6-5, Adventurous Training – Sea Kayaking, 2019*
14.35 It is the most dangerous jellyfish and one of the most dangerous venomous creatures in the world. It is a large jellyfish weighing up to 6 kg and measuring 20 to 30 cm across the bell (see Figure 14–2). The tentacles may stretch up to 2 m. It is transparent in the water and therefore difficult to see. It has four bundles of tentacles, which may number up to 60 in total. Each tentacle contains many millions of nematocysts (stinging cells), which discharge venom on contact with the skin. Contact with a large amount of tentacular material over a wide surface area of the skin can result in massive envenomation.

Figure 14–2: Box Jellyfish

14.36 Most casualties are stung in the summer months, in shallow water near the beach. Personnel operating in these environments must take precautionary measures (protective dress) based on a risk analysis.

14.37 Nematocysts, or stinging cells, are used by jellyfish to deliver toxins into their prey. The stinging apparatus consists of a harpoon on a thread coiled inside the stinging cell, which is...
attached to a reservoir containing venom. On contact with the victim, the stinging cell discharges its harpoon into the skin and injects venom. Each tentacle may be covered with millions of stinging cells, resulting in a large amount of venom being injected over a wide area.

14.38 Death has been known to occur within 5 minutes after massive envenomation. The mechanism(s) of toxicity are poorly understood, but the death is thought to be due to respiratory failure. The casualty may become unconscious before they can leave the water.

14.39 There have been at least 63 confirmed deaths from envenomation by box jellyfish in the Indo-Pacific region. In addition to cardiotoxic properties, the venom also contains dermatonecrotic components, which produce patches of full-thickness skin necrosis (see Figure 14–3) that may result in severe and permanent scarring.

14.40 Due to the rapid onset of symptoms, immediate first aid is vital and CPR may be required. Fortunately, an antivenom is available.
14.41 Identification. An AFA checking for signs of a box jellyfish sting in a casualty should look for the following:\(^3\)

a. immediate and severe burning pain  
b. multiple weal markings on the skin surface  
c. tentacles on the skin surface  
d. irrational behaviour  
e. a loss of consciousness.

14.42 Severe stings can cause respiratory arrest (cessation of breathing) and cardiac arrest.

14.43 Management. The management of a box jellyfish sting should be carried out as follows:

a. Apply the basic life support principles of DRSABCD (see Table 14–1).  
b. Remove the casualty from the water, while avoiding contact with the jellyfish.  
c. Rest and reassure the casualty.  
d. Restrain the casualty from rubbing the affected area.  
e. Saturate the affected area with vinegar for at least 30 seconds. Do not use fresh water, as this will cause the undischarged stinging cells to sting. If there is no vinegar available, flick off any remnants of the tentacles with a stick and wash the area well with sea water to remove microscopic nematocysts adhering to the skin.\(^4\)  
f. Monitor the casualty’s signs of life.  
g. Document and evacuate the casualty to medical aid. Antivenom for the box jellyfish is available.

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14.44 The purpose of applying vinegar is to prevent the firing of undischarged nematocysts and the injection of more venom into the casualty. Vinegar will not decrease pain or diminish the effects of the venom; it will only stop the injection of further venom.

14.45 The use of the PIT in treating box jellyfish stings remains under consideration; however, the Australian Venom Research Unit and the ARC do not currently endorse the use of the PIT for the treatment of box jellyfish stings.

14.46 Casualties who initially appear stable but experience severe symptoms in the following 30 minutes maybe suffering from Irukandji syndrome.

Irukandji Syndrome

14.47 This is a syndrome potentially caused by several very small box jellyfish, the best known being the Carukia barnesi. These small jellyfish, with a 1 to 2 cm diameter bell (see Figure 14–4), are responsible for an unusual and dramatic syndrome (observed following stings in northern Australia, especially north Queensland).

Figure 14–4: Irukandji – Reserved

14.48 Unlike the box jellyfish, the Irukandji stings have occurred in the deeper waters of the reef, although it can be swept inshore by prevailing currents. Divers and snorkelers are particularly at risk. Stings have been recorded from Childers to Broome, and a similar syndrome has been described elsewhere in the Pacific.

14.49 The sting itself is only moderately painful, with little associated tissue damage; however, after approximately 30 minutes the casualty can develop a complex of systemic symptoms, including severe back and abdominal pain, limb or joint pain, nausea and vomiting, profuse sweating and agitation. The casualty may also experience numbness. Casualties frequently require hospitalisation.
14.50 No definitive treatment is currently available for Irukandji syndrome. First aid should consist of DRSABCD, and documentation and immediate evacuation.

Other Jellyfish Stings

14.51 There are a number of other venomous jellyfish found within Australian waters, although none as potentially dangerous as the box jellyfish. A brief description of each of these is given in paragraph 14.53 to paragraph 14.57.

14.52 Many other jellyfish inhabit the tropical and temperate waters of Australia. The majority of stings by these jellyfish result only in local pain and skin welts. Nausea, vomiting and headaches may sometimes occur. The first aid procedure for box jellyfish stings is applied for stings from each of these other jellyfish.

14.53 *Chiropsalmus Quadrigatus*. *Chiropsalmus quadrigatus* is similar to, but smaller than, the box jellyfish (*Chironex fleckeri*). The bell measures up to 7 cm, and the number of tentacles on each of the pedalia (fleshy arms) seldom exceeds nine (see Figure 14–5). The tentacles are shorter and finer than those of the box jellyfish.

![Figure 14–5: Chiropsalmus Quadrigatus](image-url)
14.54 The *Chiropsalmus quadrigatus* venom contains lethal properties in about the same proportions as box jellyfish venom, but the venom output of *Chiropsalmus quadrigatus* is much lower than that of the box jellyfish. Stinging results in severe pain and shock, but the illness is less severe than that resulting from a box jellyfish sting. Residual scarring is usually minimal.

14.55 No deaths from the sting of this genus have been reported in Australia, although there have been deaths reported in the Philippines.

14.56 **Jimble.** The Jimble is a small carybdeid jellyfish (see Figure 14–6), with four tentacles measuring up to 30 cm each. The Jimble is widely distributed throughout the world’s warmer waters, including Australian temperate waters, and are often found in groups. Stings cause moderate pain for up to 2 hours, with associated swelling and redness. Skin changes may take several weeks to resolve, and pigmentation may remain for even longer.

Figure 14–6: Jimble Jellyfish
14.57 Bluebottle (Portuguese Man-of-War). The Portuguese man-of-war, or bluebottle (*Physalia* species) (see Figure 14–7), is well-known throughout Australian waters (and both the Pacific and Atlantic oceans) for causing painful stings. No fatalities have been confirmed in Australia. The float measures from 2 to 15 cm. The main or fishing tentacle may be up to 10 m long and is responsible for most of the stings.

Figure 14–7: Bluebottle
14.58 Following a sting, pain is the most prominent feature, along with localised skin lesions with a string-of-beads appearance. Systemic symptoms are uncommon but may include headache, nausea and vomiting, abdominal pain and occasionally collapse.

14.59 Management. The management of other jellyfish stings is as follows:

a. apply the basic life support principles of DRSABCD (see Table 14–1)

b. wash the sting area with salt water (the use of vinegar or fresh water does not assist in any way), and fresh water and rubbing may trigger further stings

c. apply a cold compress or ice packs, and reassure the casualty

d. document and seek medical aid if the casualty starts to develop an allergic reaction.

Fish Barb Wounds (Stonefish, Stinging Fish and Stingrays)

14.60 This group of venomous creatures includes the stonefish, bullrout, catfish, rock cod, butterfly fish, crown-of-thorns sea star, the stingray and a number of other barbed fish. These creatures cause barb wounds to the skin, all of which are painful and have the potential to become badly infected.

14.61 The first aid treatment for stings from each of these species is the same. However, additional information is provided on the most venomous species (the stonefish and stingray) so that AFAs may better understand the severity of symptoms and the priority required for evacuation.

14.62 Stonefish. Stonefish (see Figure 14–8), are found in warm coastal waters throughout the world and may be described as the world’s most dangerous stinging fish, although in Australia there have been no fatalities caused by stonefish.

Figure 14–8: Stonefish

14.63 The two Australian species, *Synanceia trachynis* and *Synanceia verrucosa*, are found in northern Australian waters, from Brisbane to 600 km north of Perth. They are extremely well camouflaged and dig themselves into the surrounding sand or mud, making them almost impossible to see. Thirteen dorsal spines project from venomous glands along their back, so that venom is involuntarily expelled when the spine is stepped or pressed upon.

14.64 The stonefish’s sting is extremely painful and swelling rapidly develops. The severity of the symptoms is related to the depth of penetration of the spines and the number of spines involved. Systemic effects of the venom may include muscle weakness, paralysis and shock. Fatalities have been recorded in the Indo-Pacific region, but not in Australian waters.
14.65 AFAs need to be aware that spines may become lodged in the wound, and extra care is required to ensure that the injury is not aggravated if the barbs cannot be removed. It may be possible to protect embedded spines using a doughnut bandage. The management of barbed envenomation wounds should be carried out as follows:

a. Apply the basic life support principles of DRSABCD (see Table 14–1).

b. Rest and reassure the casualty.

c. Remove any remaining barb that may be in the wound, taking care not to further aggravate the injury.

d. Place the casualty’s affected area into hot water (this is well known for its ability to alleviate severe pain). Ensure that the water is tested first so as to not cause further injury.

e. Monitor the casualty’s signs of life.

f. Document the casualty and seek medical aid urgently.

14.66 All stonefish stings require medical attention, as do most deep stings caused by other fish. Often, foreign material and bacteria are deposited quite deeply in the wound. Stonefish antivenom is available.

14.67 Lionfish. Lionfish are covered with a stripy pattern which can be red, brown, orange, yellow, black or white. They have long feathery fins which hide 13 large poisonous spines. They are found all around Australia in shallow coastal waters.

14.68 Treatment. As per stonefish.

**WARNING**

Do not attempt to restrict the movement of the injected toxin by using the PIT or any other method.
14.69 **Stingray.** Although stingrays, as shown in Figure 14–9, are known to be venomous, the major threat is from the stinging mechanism itself.

![Figure 14–9: Blue-spotted Stingray](image)

14.70 The stinging mechanism is attached halfway along the stingray’s whip-like tail. The stinger is known to produce deep, penetrating injuries or severe lacerations. A sting to the chest or abdomen from a stingray is a medical emergency and requires immediate evacuation and medical treatment.

14.71 The signs and symptoms of a stingray sting include immediate and intense burning pain, bleeding from the wound and possible breathing difficulty. Envenomation may result in increasing local pain, which may spread to the entire limb, with swelling, and the wound having a characteristic bluish-white appearance. Do not attempt to remove the barbs if it is stuck in the wound.
14.72 The first aid for penetrating wounds is to apply the basic life support principles of DRSABCD (see Table 14–1), and to document and immediately evacuate.

14.73 Avoid stingray stings by shuffling your feet and wear thick soled shoes when walking through shallow water.

Blue-ringed Octopus and Cone Shells

14.74 **Blue-ringed Octopus.** The blue-ringed octopus (see Figure 14–10), is a small brown octopus that develops brilliant blue ring-shaped markings when disturbed. The blue-ringed octopus is found throughout Australia’s coastal waters. The blue-ringed octopus is found in tidal rock pools and is very attractive, especially to children.

![Figure 14–10: Blue-ringed Octopus](image)

14.75 It has been associated with severe envenomation resulting in respiratory failure and a number of fatalities. Bites are primarily caused when trying to handle the creature or when it is accidentally trodden on (with bare feet). The blue-ringed
The blue-ringed octopus venom contains tetrodotoxin (also found in puffer fish), which is secreted in the saliva of the octopus. It causes a blockage of sodium channels; therefore, a bite results in neurological problems such as weakness, numbness or paraesthesia, breathing difficulties and paralysis. The patient may be completely paralysed and unable to respond, sometimes with fixed dilated pupils, but the sensorium is often intact and care should be taken to avoid negative remarks that the patient may hear.

Envenomation is uncommon but may require supportive treatment. There is no antivenom available for blue-ringed octopus envenomation in Australia.

**Symptoms.** A painless bite with a spot of blood, numbness of the lips and tongue, a progressive weakness of muscles of respiration leading to inadequate or cessation of breathing.

**Treatment.** Apply PIT. Continue CPR, even if it does not seem to be working, keep going. The patient might survive if you can keep their heart beating until the poison wears off and they will suddenly start breathing on their own again.

**Cone Shells.** More than 70 species of cone shells are found in the warmer waters of Australia, several of which are known to be dangerous to humans. They have attractive shells (see Figure 14–11), and may be picked up by those unaware of the danger.
Cone shells are predatory gastropods that live in shallow reef waters and kill their prey with venom, which they inject via small, radial teeth-like harpoons. The venom gives rise to neurological symptoms of weakness, lack of coordination and disturbance of vision, speech and hearing. Localised symptoms of pain, swelling and numbness are common. Severe envenomation may result in death from respiratory muscle paralysis.

There is no antivenom for cone shell stings.
14.83 Management. The management of envenomation from the blue-ringed octopus and cone shells is to be carried out as follows:
   a. apply the basic life support principles of DRSABCD (see Table 14–1)
   b. rest and reassure the casualty
   c. apply the PIT if possible
   d. monitor the casualty’s signs of life, noting that long-lasting paralysis will eventually wear off
   e. document and evacuate the casualty to medical aid.

Sea Snakes

14.84 At least 32 species of sea snake have been recorded in northern Australian waters, and some species, such as the yellow-bellied sea snake (see Figure 14–12), have also been found in the southern waters off Victoria, Tasmania and South Australia. Sea snakes are readily identified by their flattened tails and valvular nostrils. They are excellent swimmers and divers, feeding on fish and eels. They shed their skins much more frequently than land snakes, as often as every two weeks.
14.85 All sea snakes are venomous, and rhabdomyolysis is a major feature of sea snake envenomation, resulting in muscle pain, tenderness and sometimes spasms. Myoglobinuria (the presence of myoglobin in the urine, which usually occurs after massive muscle injury, physical trauma or electrical activity) develops after 3 to 6 hours. The bite itself is not particularly painful, and may go unnoticed, distinguishing it from envenomation by stinging fish and jellyfish, the bites of both of which usually cause immediate and often excruciating pain. Envenomation may be treated with sea snake antivenom (based on the venom of the beaked sea snake, *Enhydrina schistosa*) or tiger snake antivenom.

**Sharks**

14.86 Sharks (see Figure 14–13) are found all over Australia in all depths of water, not only in the ocean but in rivers and canals.

14.87 Shark bites generally result in massive trauma and blood loss.
Shark attacks are very rare and if base safety tips are followed the risk can be further reduced:

a. do not swim after dusk or before dawn when sharks are most active
b. never swim alone or with pets
c. never swim while bleeding
d. never swim in murky water, near estuary mouths, where fish are cleaned or near bait balls of fish.

**14.89 Treatment.** Get the person out of the water and immediately evacuate. Apply pressure to stop the bleeding, treat for shock and provide CPR if necessary.

Figure 14–13: Great White Shark
14.90 Estuarine saltwater crocodiles are ambush predators. They have short limbs and a heavy muscular body covered with rough scales. They can hold their breath underwater for over an hour, swim at up to 32 km/h and run short distances on land as fast as 17.6 km/h.

14.91 They are found across the north of Australia and can be found up to 100 km inland along freshwater rivers and swamps. Adult males grow up to 5.5 m and are territorially defensive.

14.92 Crocodile attacks involve bites with massive damage and severe bleeding. They kill their prey by using a mix of bite and roll. During the roll they disorient and drown their prey while rolling with their prey held securely in their mouths. Crocodiles do not chew their food and if they cannot swallow their prey whole will cache it and allow it to rot and breakdown before tearing to pieces.

14.93 Management. Never enter the water where crocodiles might live. Stand a few metres back from the water’s edge and well away from slide marks. Do not dangle arms and legs in the water.

14.94 Treatment. Get the person out of the water and immediately evacuate. Apply pressure to stop the bleeding, treat for shock and provide CPR if necessary.

SECTION 14-5. FISH HOOKS

14.95 Where a fish hook is embedded it requires assessment (Pearse Assessment) to determine the depth of embedment and level of prioritisation or treatment to be undertaken.

14.96 Where casevac is readily available, package the patient with a donut type bandage to minimise any risk of worsening the injury and evacuate. Where evacuation is not available within 2 hours consideration should be given to removing the hook to allow cleaning of the wound to minimise bacterial infection.
14.97 **Shallow Embedment.** In the case of shallow embedment, where the barbs have limited penetration, remove any attached line. Pull out the hook in line with the barb by attaching string/fishing line/multi-tool around the curve of the hook, hold down the hook’s eye and pull (see Figure 14–14).

![Figure 14–14: Shallow Embedment Removal](image)

14.98 **Deep Embedment.** In the case of deep embedment, where the barbs or gangs on a multi-gang hook would not allow removal without risking significant damage, use a multi-tool to push the barb up through the skin (see Figure 14–15[a]), cut the barb of the hook and remove it the way it went in (see Figure 14–15[b]). Clean the wound well.
Figure 14–15: Deep Embedment Removal

a. Deep embedment

b. Remove hook
14.99 Shock is the loss of effective circulation resulting in impaired tissue oxygen and nutrients delivery and causes life threatening organ failure.

14.100 Causes. The causes of shock include:

a. **Hypovolaemic Shock.** Loss of circulating blood volume from severe bleeding, major trauma or fractures, severe burns or scales, severe diarrhoea and vomiting, severe sweating and dehydration.

b. **Cardiogenic Shock.** Cardiac causes such as heart attack or dysrhythmias.

c. **Distributive Shock.** Abnormal dilation of blood vessels generally from severe infections, allergic reactions, spinal and brain injuries, and fainting.

d. **Obstructive Shock.** Blockage of blood flow into or out of the heart.

14.101 Symptoms. The symptoms signs and rate of onset of shock will vary widely depending on the nature and severity of the underlying cause. Shock is a condition that may be difficult to identify. Signs and symptoms may include dizziness, thirst, anxiety, restlessness, nausea, breathlessness and feeling cold with potential to collapse, rapid breathing, cool, sweaty skin that may appear pale, confusion or agitation, decreased or deteriorating level of consciousness, vomiting and a rapid pulse that may become weak or slow.

14.102 Management. To manage shock:

a. place the casualty on their back, if unconscious place them on their side

b. control any bleeding promptly

c. call an ambulance

d. administer treatments relative to the cause of the shock

e. administer oxygen if available and trained to do so
14-33

f. maintain body temperature (prevent hypothermia)

g. reassure and constantly re-check the victim's condition for any change.

SECTION 14-7. EAR PROBLEMS

14.103 If there is a foreign object in the ear flush it out. Face the ear down and irrigate using an irrigation syringe, water bottle or disposable saline solution vial. Do not try to attempt removal with forceps.

14.104 Sign and Symptoms. Where a participant has earache and pulling on the earlobe produces pain it is possible they have an outer ear infection also known as swimmer’s ear. Symptoms of swimmer’s ear include:

a. pain

b. pain which may be exacerbated by moving the head or pulling at the ear

c. foul-smelling yellow or green pus in the ear canal

d. reduced hearing

e. noises inside the ear, such as buzzing or humming.

14.105 Swimmer’s Ear. Swimmer’s ear is usually caused by moisture in the ear that allows bacterial/fungal growth.

14.106 Treatment. Treatment of swimmer’s ear depends on the severity of the infection and the type of infectious agent, but may include:

a. thorough cleaning and drainage of the ear canal

b. measures to keep the ear canal dry, such as using earplugs or a shower cap while bathing

c. painkillers

d. heat packs held to the ear

e. antibiotic ear drops.
14.107 **Prevention Strategies.** Suggestions to reduce the risk of swimmer’s ear include:

a. Avoid swimming in dirty or polluted waters.
b. Wear earplugs when you swim.
c. Dry your ears thoroughly after exposure to water.
d. To make sure that ear canals are completely dry, use a couple of drops of one part alcohol and one part vinegar in each ear.
e. Plug your ears with cotton wool when using hair spray, shampoo or other chemical products.
f. Do not be too enthusiastic about cleaning your ears.
g. Avoid poking your fingers in your ears, because fingernails can cut the skin of the ear canal.

**SECTION 14-8. NEAR-DROWNING**

14.108 Drowning is death by suffocation from immersion in water or another liquid. A near-drowning has occurred when an immersion casualty has responded to initial treatment, but a full recovery may not have occurred after 24 hours or more.

**Resuscitation of the Drowning Victim**

14.109 Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid. Drowning outcomes are classified as death, morbidity and no morbidity – the latter two now referred to as ‘near drowning’.

14.110 The most important consequence of drowning is interruption of the oxygen supply to the brain. Early rescue and resuscitation by trained first responders or first aiders at the scene offer the victim the best chance of survival.
Drowning Classifications

14.111 There are three classifications of near-drowning, as follows:

a. **Dry.** This occurs when water or fluids do not enter the lungs due to airway spasm or an airway obstruction. This is not uncommon and highlights the importance of following the correct DRSABCD procedure. Effective rescue breathing can be performed only if the airways are clear.

b. **Wet.** This occurs when water or fluids enter the lungs and the casualty suffers asphyxia.

c. **Secondary.** This occurs when the casualty survives the initial drowning process but subsequently suffers from a process that causes pneumonia and/or fluid on the lungs. This can happen from 24 hours after the initial drowning. Salt and fresh water have different effects:
   
   (1) fresh water washes the fluid lining from the small air sacs (alveoli) in the lungs and the sacs collapse
   
   (2) in salt water, the salt will suck fluid out of the blood across the alveoli membrane and cause fluid on the lungs.

14.112 Management. In an attempt to resuscitate a near-drowned casualty, the AFA should follow the basic life support procedures of DRSABCD (see Table 14–1). It is important for a near-drowned casualty to be evacuated immediately following resuscitation to a medical facility, in order to prevent later complications. If rescuing a drowning casualty, AFAs should never go beyond their own swimming capabilities, or they will risk drowning themselves. If the casualty cannot be evacuated then they must be actively monitored until evacuation occurs.

14.113 Possible Sequence of Events. In drowning or near-drowning a possible sequence of events is:

a. Immersion of the face in water (or other liquid). Water
entering the mouth is spat out, swallowed or aspirated.

b. Breath-holding, usually lasting no more than a minute.

c. Vigorous breathing efforts. These may continue, even after loss of consciousness. Some amount of water is aspirated into the airways causing coughing and sometimes laryngeal spasm, which temporarily prevents further water entering the lungs.

d. Swallowing of air and water, often in large amounts. This usually causes vomiting or regurgitation of stomach contents, which may be aspirated into the lungs.

e. Respiratory impairment causes brain hypoxia, leading to unconsciousness and cessation of breathing efforts.

f. The heart rate initially increases with exercise and panic. With hypoxia, the heart rate and blood pressure begin to fall, progressing finally to a cardiac arrest, requiring CPR.

14.114 Drowning Management. To manage drowning or near-drowning:

a. Remove the victim from the water as soon as possible but do not endanger your own safety. Call for help; plan and effect a safe rescue. In minor incidents, removal from the water is often followed by coughing and spontaneous resumption of breathing.

b. In more serious incidents, assess the victim. If unconscious or not breathing normally, commence CPR.

c. Assess the victim on their back with the head and the body at the same level, rather than in a head down position. This decreases the likelihood of regurgitation and vomiting and is associated with increased survival.

d. The victim should not be routinely rolled onto the side to assess airway and breathing. Assessing the airway of the victim without turning onto the side (i.e., leaving
the victim on the back or in the position in which they have been found) has the advantages of simplified teaching, taking less time to perform and avoids movement.

e. The exceptions to this would be where the airway is obstructed with fluid (eg, water or blood) or particulate matter (eg, sand, debris, vomit). In this instance the victim should be promptly rolled onto their side to clear their airway. Their mouth should be opened and turned slightly downwards to allow any foreign material to drain using gravity.

f. Vomiting and regurgitation often occur during the resuscitation of a drowned victim. If the victim has been rolled to the side to clear the airway, then reassess their condition. If breathing commences, the victim can be left on the side with appropriate head tilt. If not breathing normally, the victim should be promptly rolled onto their back and resuscitation recommenced as appropriate.

g. Avoid delays or interruptions to CPR. Do not empty a distended stomach by applying external pressure. Do not attempt to expel or drain clear water or frothy fluid that may re-accumulate in the upper airway during resuscitation.

h. Victims who appear to have been successfully rescued and resuscitated require close monitoring to detect a relapse into cardiopulmonary arrest. This can occur in the minutes or hours following return of spontaneous circulation and breathing, due to persisting lung damage and hypoxic injury to the heart.

i. Call an ambulance for all victims of an immersion event, even if seemingly minor or the victim appears recovered.

j. If it is not possible to remove the victim from the water, begin in-water rescue breathing. Rescue breathing in deep water requires an appropriately trained rescuer
and flotation aid such as a rescue board, tube or buoyancy vest. In water, chest compressions are ineffective and should not be attempted. All possible actions must be taken to remove the casualty from water to enable appropriate first aid. One option is rafting the kayaks together and using the combined deck area as a working platform. Use of a drogue or paddler to keep the raft oriented into the wind will provide the greatest stability.

SECTION 14-9. CHAFING AND RUBBING

14.115 Chafing and rubbing must be treated as a priority. Any delay in treatment increases the risk of infection from the bacteria in sea water. This is especially the case in warmer conditions.

14.116 Broken skin should be cleaned as soon as possible and swabbed with an antiseptic wipe (Betadine or Povidone-iodine wipes) and liberally coated with an anti-chafing cream such as 3B Action Cream or Vaseline® to reduce friction. Lip balm from a participant’s personal first aid kit may be used on water immediately when chafing is noticed.

14.117 Ensuring correct fit of life jacket and paddling clothes will minimise this risk. Significant salting of paddling clothes will occur with the continual drying of salt spray. Paddling clothes and life jacket should at a minimum be rinsed in fresh sea water daily to reduce salting. Cleaning in fresh water and washing should occur whenever possible.

14.118 Pre-lubricating the arm pits should be considered as preventive action where consecutive crossings are to be undertaken.
SECTION 14-10. HAND AND ARM INJURIES

14.119 Delivery of paddle strokes through applying power through a paddle is required for all sea kayaking. Injuries to hands and arms may result in the inability to paddle and present other challenges to the group in effecting an evacuation. Particular care must be taken to follow correct paddle stroke techniques and not use the palms and inside of the fingers to push off or in launching the kayak off a beach.

14.120 Cuts and Abrasions to the Hands. Immediate treatment of cuts and abrasions to the hands are necessary to minimise infection, especially in warmer climates. Cuts and abrasions should be dressed and covered with strapping tape and the dressings changed regularly.

Occupational Overuse Syndrome

14.121 Occupational overuse syndrome (OOS) is caused by repetitive movements or awkward postures and is common to fingers, hands wrists and elbows. OOS is also commonly known as repetitive strain injury (more commonly known as RSI). Kayaking involves repeated bending, stretching and twisting which if done incorrectly may cause RSI. This is particularly the case where incorrect paddle stroke techniques creates additional stresses and strains on joins, ligaments and muscles due to poor form.

14.122 Symptoms include swelling, pain and weakness in the affected joints, numbness and restricted mobility of the joint. Vulnerable tendons may also become inflamed due to overwork.

14.123 It is not possible to work through OOS. Initially the pain and stiffness may be slight and only noticed while a particular task is being performed. If these symptoms are ignored the discomfort will escalate until the joints, muscles and tendons are painful even at rest.

14.124 Participants must advise GLs as soon as possible when they begin to feel joint pain particularly in the wrists and elbows.
14.125 **Treatment of Occupational Overuse Syndrome.** Treatment should include:

a. frequent breaks
b. stretching
c. change work practices, in particular the paddle strokes technique corrections including:
   
   (1) opening the top hand or loosening top hand grip when pushing through on each power phase, to relax muscle tension, potential cramping and encourage blood flow
   
   (2) correct torso rotation in paddlers box to minimise unnatural wrist and elbows movements
   
   (3) correct exit angle to minimise lifting water and unnecessarily increasing work effort
   
   (4) change of paddle to one of different length, different blade shape, size and feather to change the point of impact

d. if pain persists then the participant must cease exacerbating the injury and be evacuated.

**SECTION 14-11. HYPOTHERMIA**

14.126 For normal function of most body systems and organs the human body’s temperature is kept controlled between the narrow limits (about 37 °C).

14.127 Hypothermia is when the body’s temperature is below 35 °C.

14.128 As the body’s temperature falls, systems and organs progressively fail until death occurs, usually from cardiac arrest. Infants and elderly people are at greater risk. Hypothermia may develop acutely (eg, falling into icy water) or be a gradual and insidious process.

14.129 Human body temperature cannot be altered by more than a few degrees from normal before proper functions are affected.
A falling core body temperature causes deterioration of body organs and cells eventually leading to death from hypothermia. The core body temperature is maintained in cold conditions in the following two ways:

a. By Heat Production. Heat is produced and maintained through normal body function and increased by muscular exercise. Heat production during exercise can be up to 15 times above the resting level.

b. Reduction of Heat Loss. The body reduces heat loss by decreasing the flow of warm blood to the skin. Wearing insulating clothes can artificially induce the same effect.

14.130 There are limits to both heat production and insulation, and when these prove insufficient to maintain the body’s core temperature, hypothermia occurs.

14.131 The onset of hypothermia is often accompanied by apathy, tiredness and subtle changes in personality coupled with impaired judgment which often leads to unnecessary risk-taking.

14.132 The thermal conductivity of water is approximately 25 times greater than that of air, so the onset of hypothermia caused by immersion in cold water can be rapid. Factors which will determine a core body temperature when immersed are as follows:

a. the water temperature
b. the duration of immersion
c. the amount of insulation provided by body fat and clothing
d. the degree of activity
e. an individual’s degree of cold adaptation
f. the use of drugs and/or alcohol.

14.133 Causes. The causes of hypothermia include:

a. Environmental. Exposure to cold, wet, or windy
conditions, cold water immersion/submersion and exhaustion.

b. Trauma. Immobility and burns.
c. Drugs. Alcohol and or sedatives.
e. Endocrine. Impaired metabolism.
f. Systemic Illness. Severe infections, malnutrition.

14.134 Recognition. Symptoms include;

a. Mild hypothermia:
   (1) casualty shivering
   (2) pale, cool skin
   (3) impaired coordination
   (4) slurred speech
   (5) responsive buy with apathy and confusion.

b. Moderate to severe hypothermia:
   (1) absence of shivering
   (2) increasing muscle stiffness
   (3) progressive decrease in consciousness
   (4) slow irregular pulse
   (5) hypotension.

c. In more severe cases there may be dangerous cardiac arrest, fixed dilated pupils. The casualty may appear dead, particularly if they have a weak slow pulse.

14.135 The main aim of immediate hypothermia management is to rewarm the casualty by wrapping them fully in thermal blankets or a sleeping bag to prevent further heat loss. The AFA is to apply the basic life support principles of DRABCD and evacuate the casualty to medical aid as soon as possible.
14.136 Management. Management of hypothermia includes:

- a. Remove the casualty from the cold environment.
- b. Provide general and supportive treatment with application of basic life support where appropriate. This must continue until the casualty is re-warmed.
- c. Remove sources of heat loss such as wet clothing, contact with cold surfaces and windy environment. Do not remove wet clothing if there is no dry blanket or other suitable cover. Apply insulation between the body and the environment (e.g., blanket).
- d. Dry the casualty if they are wet.
- e. Give the casualty warm oral fluids (not alcohol) and only if the casualty is fully conscious.
- f. If the casualty is in a remote location and not shivering the rescuer should initiate active re-warming:
  - (1) Cautiously apply a source of external heat such as heat pack or body-to-body contact.
  - (2) To avoid burns ensure that any heat source is warm or tepid but not hot.
  - (3) Do not place the casualty in a warm bath.

Response Planning

14.137 In Tasmania, sea temperatures range from 8 °C in winter to 18 °C in summer.

14.138 Inland Tasmanian waters are colder, ranging from 2 °C to 17 °C.

14.139 The risk of drowning increases nearly five times if the water temperature is below 15 °C.

14.140 Studies show up to 60 per cent of fatalities due to cold water immersion occur in the first 15 minutes before the body core temperature cools to hypothermic levels.
14.141 Cold water carries heat away from the body 25 times more quickly than air with the same temperature.

1:10:1 Principle – Three Phases of Cold Water Immersion

14.142 1 Minute – Cold Shock Response. The body’s response to cold water is to increase breathing to a rapid rate which can cause you to inhale water. A sudden shock of cold water immersion can also cause a heart attack in some people.

14.143 10 Minutes – Cold Incapacitation. After 10 minutes, cold water can cause swim failure which is due to blood vessels in your arms and legs constricting, which makes it difficult to keep your muscles moving properly. This then makes it difficult to wave for help or grab a throw ring which can quickly lead to drowning. Wearing a life jacket greatly reduces the possibility of drowning from swim failure.

14.144 1 Hour – Hypothermia. When the body drops below 35 °C (normal is approximately 36.5 °C), hypothermia occurs which results in uncontrolled shivering and mental confusion. If body temperature continues to drop, unconsciousness will occur, followed by death. Survival will depend on wearing appropriate protective clothing and flotation (see Table 14–3).
Table 14–3: Survival Time in Water

<table>
<thead>
<tr>
<th>Sea Temperature (°C)</th>
<th>T-Shirt and Shorts</th>
<th>Light Wetsuit and Life Jacket</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Functional Time (hours)</td>
<td>Survival Time (hours)</td>
</tr>
<tr>
<td>0</td>
<td>1.1</td>
<td>2.3</td>
</tr>
<tr>
<td>4</td>
<td>1.4</td>
<td>2.9</td>
</tr>
<tr>
<td>8</td>
<td>2.0</td>
<td>3.9</td>
</tr>
<tr>
<td>12</td>
<td>3.5</td>
<td>6.1</td>
</tr>
<tr>
<td>16</td>
<td>7.6</td>
<td>11.6</td>
</tr>
</tbody>
</table>

Note:
See the Marine and Safety Tasmania website for more information (https://www.mast.tas.gov.au/recreational/cold-water-immersion/).
14.145 Cold Water Considerations. These include:

a. Dress for immersion relevant to the conditions to ensure that functional time in water exceeds maximum expected rescue time.

b. Increased body size, weight and body fat content all increase survival time in water.

14.146 When using space blankets ensure that they cover the head to minimise heat loss. Space blankets should ideally be secured close to the skin with small patches of gaffer tape. Ensure that the casualty maintains the ability to conduct a wet exit if required and swim if required and ensure that all personal safety equipment is correctly refitted.

SECTION 14-12. SEA SURVIVAL TECHNIQUES

14.147 Sea kayaks operate in a hazardous environment with the potential for capsize, floundering, sinking, separation from craft and exposure to adverse weather conditions. Although training and adherence to procedures will reduce the likelihood of such occurrences, survival situations can occur. Training and practice in sea survival techniques will ensure that sea kayak participants maximise survival chances if faced with a survival situation.

Drown-proofing

14.148 The drown-proofing technique is based on the natural buoyancy of the body when the lungs are filled with air. It conserves energy and enables a person to stay afloat indefinitely when not wearing a life jacket and there is minimal risk of hypothermia. The method consists of the following five-step cycle (see Figure 14–16):

a. Step 1 – Rest Position. The swimmer takes a deep breath and allows their body to sink below the surface of the water. The face is kept down with the back of the head and shoulders level with the surface of the water. In this position the body will remain buoyant and sink no
deeper.

b. **Step 2 – Preparing to Exhale.** When ready for another breath (after approximately 10 to 15 seconds) the swimmer maintains the upper body in the resting positioning, slowly raises the arms to approximately shoulder height and slowly separates the legs in a scissors-type kick.

c. **Step 3 – Exhalation.** The swimmer raises their head just high enough for the mouth to be out of the water, exhales through the nose, the mouth or both. The eyes should be open so the swimmer does not become disoriented.

d. **Step 4 – Inhalation.** As the swimmer’s head becomes vertical, the swimmer simultaneously draws the arms downward and brings the legs together. Air is then inhaled through the mouth. The arm and leg actions are done slowly to conserve energy.

e. **Step 5 – Return to Rest Position.** The swimmer simultaneously relaxes the body, allows the legs and arms to relax and dangle, and the head is lowered into the facedown position in the water. The cycle is then repeated.
Figure 14–16: Drown-proofing Five-step Cycle

**Heat Escape Lessening Posture**

14.149 Where there is a risk of hypothermia the position a swimmer assumes in the water is important when conserving body heat. Major body heat loss areas are shown in Figure 14–17.
When the swimmer has a life jacket and there is a risk of hypothermia, the heat escape lessening posture can increase survival time by approximately 50 per cent. Keep the head covered where possible. An uncovered head will radiate 50 to 70 per cent of the body’s total heat.
This posture will prevent vital heat loss from areas such as the groin and armpits. Using the help position will extend survival time from 2.4 to 4 hours in a water temperature of 10 °C. In this position (see Figure 14–18), the swimmer slows the loss of body heat by doing the following:

a. by holding the inner sides of the arms tight to the sides of the chest
b. by raising the thighs to close off the groin region
c. by keeping the head out of the water.

Figure 14–18: Heat Escape Lessening Posture
The Huddle

14.152 When more than one swimmer is in the water, the escape of body heat can be slowed if swimmers huddle in small groups as shown in Figure 14–19.

14.153 The effectiveness of the huddle technique depends on the following:
   a. on how much chest contact can be maintained
   b. the type of life jacket worn.

Figure 14–19: The Huddle
CHAPTER 15

PLANNING

15.1 This chapter details the considerations for planning and conducting a sea kayaking AT activity. This chapter is to be read in conjunction with LWP-G 7-6-1, Experiential Learning and Adventurous Training.

SECTION 15-1. ACTIVITY DESIGN

15.2 Commander’s Intent. The activity should be designed to meet the commander’s intent, with consideration given to the qualities that the commander wishes to develop within the unit.

15.3 The Design. The design of a sea kayaking AT activity should include the characteristics for sea kayaking as detailed in LWP-G 7-6-1, Experiential Learning and Adventurous Training. Where possible, the activity should be conducted as an expedition-style activity to maximise these qualities. A detailed risk assessment must be conducted prior to the activity, and a comprehensive Risk Management Plan must be established in accordance with Army Standing Instruction - Military Risk Management.

15.4 The Location. The considerations for selecting a suitable location for AT activities are detailed in LWP-G 7-6-1, Experiential Learning and Adventurous Training. In addition to these considerations, the GL is required to consider the following:

a. the participants’ skill level
b. the duration of the activity
c. the ability to access and egress the training areas
d. access to emergency and rescue organisations
e. the ability to establish communications with the SOA, emergency and rescue organisations
f. the current and forecasted sea conditions.

SECTION 15-2. ACTIVITY PLANNING

15.5 When an activity has been designed, detailed planning must take place to ensure that the activity is conducted successfully. A proforma to assist in the planning of a sea kayaking activity is located in Annex A. The following additional points should be considered when planning sea kayaking AT activities:

a. *Unit Adventurous Training Leader Support.* It is advisable to use UATLs who have experience in sea kayaking activities in the training areas where the activity is to be conducted.

b. *Weather Seasons.* The weather seasons in Australia are vast and extreme, hence the effects of these seasons must be considered when planning a sea kayaking activity. For example, the clothing and equipment required to conduct an activity in southern Australia during winter is different to the clothing and equipment that would be required to conduct a similar activity in northern Australia.

c. *Coastal Information.* Coastal information is critical to the planning and conduct of any sea kayaking activity. Information on suitable paddling locations can be obtained from guidebooks, the internet, UATLs and other sea kayakers. Detailed information should be sought, particularly on access and egress points and local emergency organisations.

d. *Reconnaissance.* The reconnaissance requirements for AT activities are detailed in *LWP-G 7-6-1, Experiential Learning and Adventurous Training.* In addition to these requirements, the GL for sea kayaking activities should conduct a reconnaissance of the area to liaise with park rangers, gain local knowledge and confirm access points, availability of fresh water, camp sites, vehicle requirements and access to egress points.
e. **Adventurous Training Equipment.** Sea kayaking equipment is available at a number of AT regional equipment pools throughout Australia. It is recommended that equipment be booked as early as possible. Specific equipment requirements for sea kayaking are detailed in the proforma located in Annex A to Chapter 1. The planning for the equipment to be used on a sea kayaking activity should include:

1. **Packing the Equipment.** All clothing and sleeping bags should be wrapped in garbage or ziplock bags, inside a dry bag, to ensure that they stay dry. Perishable foodstuffs should be stored in plastic containers inside dry bags in order to remain edible. The dry bags containing food should be the last bags packed to avoid them sitting in residual water in the bottom of stowage compartments. Any electrical equipment should be packed in watertight containers so that it remains serviceable.

2. **Equipment Checks.** Prior to departure from each location, the GL is to ensure that no equipment is left behind and that all safety equipment is identified and placed in an accessible location.

3. **Equipment Security.** The GL must plan for the employment of appropriate security measures to secure all equipment, including securing the kayaks above the HW mark at landing sites.

f. **Vehicles.** Prior to selecting a vehicle for an activity, consideration must be given to the size of the group, the quantity of stores to be carried, and the likely routes to access and egress points. Vehicle drivers should familiarise themselves with the planned access and egress points, and routes to emergency facilities.
Rations and Water

15.6 It is recommended that a combination of fresh and combat ration pack meals are carried on expedition type activities as this will help to maintain energy levels and improve the morale of the participants. Rations can be supplemented with seafood caught during the activity.

15.7 Drinking water containers should be accessible when paddling and larger containers should be stored in stowage compartments. If possible, water should be sourced locally from streams, rainfall or desalination, and treated with water purification tablets or boiled for 3 minutes.

15.8 On longer expeditions, a resupply of food and water may have to occur and safe landing locations should be identified during the reconnaissance for this purpose. A resupply can either be by meeting the shore party of the activity or from prearranged weatherproofed caches.

15.9 Medical. Sea kayaking has its own inherent medical complications. All participants are to be conversant with the medical training requirements of sea kayaking as detailed in paragraph 1.35. A first aid medical stores proforma is located at Annex B.

Documentation

15.10 There are a number of documents that are required to be completed prior to commencing a sea kayaking activity. These are detailed in LWP-G 7-6-1, Experiential Learning and Adventurous Training.

15.11 State Marine Regulations. Each state has safety regulations for waterways. Activity organisers are to be aware of these. When conducting activities crossing state borders, consideration must be given to the safety equipment carried by the group, as requirements may vary from state to state.

15.12 Safety Officer Ashore. The group is responsible for lodging a float plan with the SOA and local rescue organisations. The SOA is to be aware of the group’s plan and is to alert authorities if an emergency situation arises. The SOA is responsible for
maintaining scheduled communications with the group at sea, where possible, with VHF, mobile phone or satellite phone. They are also responsible for monitoring weather forecasts and passing this information on to the groups at sea.

15.13 **Float Plan.** A float plan is an outline of the activity being conducted and contains information on the group’s composition, planned route, pull out points, alternate pull out points, equipment carried and contact details. A proforma float plan is given in Annex C.

15.14 **Minimal Impact Camping.** When camping in national parks, participants are to adhere to the following minimal impact rules:

a. **Fire Restrictions.** Where fire bans are in place, permission to use fuel stoves may have to be gained from park managers. Open fires are not recommended but, if they are permitted, only dead wood may be used as fuel. All fires are to be extinguished before departure and the remains scattered. Fuel stoves are the preferred method of cooking.

b. **Human Waste Disposal.** If no toilet facilities are available then latrine areas are required. They must be established at least 50 m from fresh water sources and camp sites. Human waste removal tubes are the preferred method for disposal of human waste.

c. **Washing and Cleaning.** Water quality must be maintained. No washing or cleaning may be conducted within 50 m of a river or any tributaries. No detergents are permitted to enter the water system.

d. **Camp Site Selection.** All signs of overnight camping during a multi-day activity must be removed. If possible, designated or existing camp sites should be used. Selecting camp sites that are flat, on high ground above the high tide, or river level sites, are recommended; where possible, do not alter the natural state of the camp site.
e. *Flora and Fauna.* Care must be taken not to damage or injure the flora and fauna near the selected camp site.

f. *Rubbish.* All rubbish must be carried out and disposed of at the end of an activity.

15.15 **Sensitive Areas.** Some locations may have sensitive areas within them and, where possible, they should be avoided.

15.16 **Safety Brief.** Prior to commencing an activity, a daily safety brief is to be given to the group by the group or trip leader. A safety brief format proforma is given in Annex D.

### Sea Conditions

15.17 **Tide Information.** Tide information should be gained from the tide times relevant to the area, and the charts should be checked to identify the direction of the water and any dangers that may arise due to different water levels.

15.18 **Hazards.** During the conduct of a sea kayaking activity, the following hazards are to be identified and managed:

a. *Rocks.* The safe water level necessary to navigate/cross rocks and what water levels are safe in which to cross rock ledges and coral quays.

b. *Rips.* Dangerous rips at beaches should be avoided.

c. *Marine Dangers.* Marine dangers include sharks, crocodiles, stingers, stingrays, cone fish and blue-ringed octopuses. Measures such as the appropriate footwear and clothing will minimise most dangers. Carriage of firearms may be considered when activities are conducted in known habitats of large, dangerous marine creatures.

d. *Other Craft.* If safe boating practices are applied, most other craft using the waterway can easily be avoided. In low light conditions or busy waterways, other craft may have to be alerted to the presence of the group by sounding air horns, flashing lights or waving paddles.
Navigational Planning

15.19 Length of Trip. The length of a trip will be determined by the experience and fitness levels of the group. It is recommended to commence an activity with small trips in environments that enable the group to gradually gain confidence and fitness.

15.20 Plotting a Course. The course for an activity should be challenging for the group, but designed with the group’s abilities in mind. A plotted course should include:
   a. put in and pull out points
   b. emergency pull out points
   c. rendezvous points
   d. navigational aids
   e. navigational checkpoints
   f. time on the water
   g. time expected at certain points of the course
   h. any transits on the course to assist in determining a location.

15.21 Calculating Time and Distance. The distance plotted for a course should be calculated into timings. These timings will enable the guide to plan for meal breaks and for time off the water.

15.22 Access and Egress Points. Areas where the group can safely access the coastline from the water, and areas where safety vehicles can access the coast should be identified and reconnoitred. Routes from these areas to emergency services should be identified and marked on the vehicle maps in case of emergency.

SECTION 15-3. POST ACTIVITY

15.23 Stores. All stores are to be returned at the end of an activity, as per Chapter 4.
15.24 **Trip Reports.** Trip reports are a simple document that details the following information:

a. what was done  
b. where it was done  
c. how it was done  
d. what equipment was used and where it was sourced from  
e. the points of contact used during the activity  
f. the lessons learnt during the activity  
g. a GL diary of the activity  
h. photographs of the activity.

15.25 The AT Wing maintains a copy of trip reports that UATLs submit to them on their SharePoint website. These reports are available to assist all UATLs in planning sea kayaking activities. These reports can be submitted to the AT Wing online or via email to cell heads.

15.26 **Conclusion.** Good trip planning and conduct is developed through experience. Careful information gathering and adherence to the references will ensure that consideration is given to all necessary factors. During the planning and conduct of sea kayaking trips it is useful to consider the trip in chronological order, from stores pick-up to stores return, and every step in between. At all stages, a UATL should anticipate the worst-case scenario and plan to manage all problems identified.

**Annexes:**

A. Activity Checklist Proforma  
B. Medical Stores Checklist Proforma  
C. Float Plan Proforma  
D. Safety Brief Proforma
## ANNEX A TO CHAPTER 15

### ACTIVITY CHECKLIST PROFORMA

<table>
<thead>
<tr>
<th>Activity Name:</th>
<th>Activity Dates:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Activity</td>
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<tr>
<td>Activity Proposal</td>
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<td>Commander’s intent</td>
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<td>Activity concept</td>
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<td>Activity proposal</td>
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<tr>
<td>Reconnaissance</td>
<td></td>
</tr>
<tr>
<td>Write instruction for recon</td>
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</tr>
<tr>
<td>Book areas for recon</td>
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<tr>
<td>Park clearance for recon</td>
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<tr>
<td>Environmental clearance</td>
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</tr>
<tr>
<td>Book vehicles for recon</td>
<td></td>
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<tr>
<td>Order rations for recon</td>
<td></td>
</tr>
<tr>
<td>Book stores for recon</td>
<td></td>
</tr>
<tr>
<td>Organise staff for recon</td>
<td></td>
</tr>
<tr>
<td>Plan route</td>
<td></td>
</tr>
<tr>
<td>Source maps/charts</td>
<td></td>
</tr>
<tr>
<td>Pick up stores</td>
<td></td>
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<td>Conduct recon</td>
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## Contents

### Bookings

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<th>Date Completed</th>
<th>Comments</th>
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<tr>
<td>Recon routes to emergency services/POCs</td>
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<tr>
<td>Book training areas (all states)</td>
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<td>Land clearances</td>
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<td>Environmental compliance</td>
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<tr>
<td>Book accommodation</td>
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<tr>
<td>Book extra facilities</td>
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<tr>
<td>Order stores</td>
<td></td>
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<td>Order vehicles internal</td>
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<tr>
<td>Order vehicles external</td>
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<tr>
<td>Request for driver support</td>
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<tr>
<td>Request for combat rations</td>
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<td>Request for fresh rations</td>
<td></td>
<td></td>
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<tr>
<td>Request for UATLs/staff</td>
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<tr>
<td>Request for ammunition</td>
<td></td>
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<tr>
<td>Finalise payment methods</td>
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### Pre-activity

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<td>Personal particular forms</td>
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<tr>
<td>Swim test</td>
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**Activity Name:**

**Activity Dates:**

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LWP-G 7-6-5, Adventurous Training – Sea Kayaking, 2019
## Contents

### Pre-deployment Checklist

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<tr>
<td>Pick up equipment</td>
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<td></td>
</tr>
<tr>
<td>Finalise transport plan</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Finalise medical plan</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Finalise SAR plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finalise communications plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Write activity instruction</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Conduct risk assessment</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Write activity program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order maps and charts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Write route cards</td>
<td></td>
<td></td>
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<tr>
<td>Request allowances for staff</td>
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### Activity Name:

**Activity Dates:**

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<th>Date Completed</th>
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<tr>
<td>Pick up and pack general stores</td>
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<tr>
<td>Pick up and pack activity stores</td>
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<td></td>
</tr>
<tr>
<td>Pick up medical stores</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pick up rations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pick up ammunition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pick up vehicles/fuel cards</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity Name:</td>
<td>Activity Dates:</td>
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**Activity Conduct**

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<th>Comments</th>
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<tbody>
<tr>
<td>Conduct convoy orders</td>
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<td></td>
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<tr>
<td>Swim test</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>First aid revision</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity instruction and PAR submitted to ATW</td>
<td></td>
<td></td>
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</table>
ANNEX B TO CHAPTER 15

MEDICAL STORES CHECKLIST PROFORMA
### Individual First Aid Kit

<table>
<thead>
<tr>
<th>NSN</th>
<th>Description</th>
<th>Quantity</th>
<th>Comments/Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Emergency wound dressing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Space blanket</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lip balm</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sunburn Cream SPF 50+</td>
<td>1</td>
<td>Zinc cream, sun protective clothing.</td>
</tr>
</tbody>
</table>

**Note:**
All components of the individual first aid kits are waterproof and will not deteriorate due to salt water. Where possible (lifejacket dependant) they should be carried on the person with other key safety and signaling equipment.

### Group First Aid Kit

<table>
<thead>
<tr>
<th>NSN</th>
<th>Description</th>
<th>Quantity</th>
<th>Comments/Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First aid kit container</td>
<td>1</td>
<td>The kit must be stored in a waterproof container and should be packaged internally in ziplock bags to ensure that contents are appropriately protected for emergency use. The kit must be clearly labeled FIRST AID or with the white cross on a green background for quick identification. May be a dry bag or hardcase.</td>
</tr>
<tr>
<td></td>
<td>First aid reference book</td>
<td>1</td>
<td>(Minimum requirement is an A5 printed extract of Chapter 14 of LWP-G 7-6-5, Adventurous Training – Sea Kayaking and a copy of this annex [Annex B to Chapter 15]).</td>
</tr>
<tr>
<td>7530-66-159-6162</td>
<td>AE261 CASEVAC 9-LINER and MIST card (or equivalent)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>7530-66-118-5931</td>
<td>PM377 Field or Transport Medical Report</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emergency wound dressing</td>
<td>4</td>
<td>Major wounds, bleeding control, secure dressing and support injured parts, replaces confirming bandages and wound dressing.</td>
</tr>
<tr>
<td></td>
<td>Blanket, emergency thermal</td>
<td>2</td>
<td>Hypothermia and shock.</td>
</tr>
<tr>
<td></td>
<td>Gaffer tape 50 cm x 15 m</td>
<td>1</td>
<td>On water bandage, secure dressing or space blanket, sling, replaces triangular bandage. Most bandages and adhesives will not work appropriately in salt water.</td>
</tr>
<tr>
<td></td>
<td>Lip balm</td>
<td>2</td>
<td>Spares, can also be used for chafing.</td>
</tr>
<tr>
<td>NSN</td>
<td>Description</td>
<td>Quantity</td>
<td>Comments/Alternatives</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------------</td>
<td>----------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Sunburn Cream SPF 50+</td>
<td>1</td>
<td>Zinc cream, sun protective clothing.</td>
</tr>
<tr>
<td></td>
<td>Petrolum Jelly/Anti-chafing cream 50 g</td>
<td>1</td>
<td>Chafing.</td>
</tr>
<tr>
<td></td>
<td>Resuscitation mask, disposable</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wound dressing/cleaning</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gloves, disposable, large</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dressing, waterproof island dressing 5 x 5 cm</td>
<td>4</td>
<td>Wound cover, resistant to bacterial infection from salt water.</td>
</tr>
<tr>
<td></td>
<td>Dressing, waterproof island dressing 10 x 10 cm</td>
<td>5</td>
<td>Wound cover, resistant to bacterial infection from salt water.</td>
</tr>
<tr>
<td></td>
<td>Burn gel sachet 5 mL</td>
<td>4</td>
<td>Burns.</td>
</tr>
<tr>
<td></td>
<td>Dressing, hydroactive (10 x 10 cm or similar)</td>
<td>2</td>
<td>Blisters, burns and minor exudate wounds.</td>
</tr>
<tr>
<td></td>
<td>Adhesive roll non-woven fabric 1 cm x 10 m</td>
<td>1</td>
<td>Securing dressings.</td>
</tr>
<tr>
<td></td>
<td>Dressings, elastic fabric strips</td>
<td>50</td>
<td>Minor wound cover.</td>
</tr>
<tr>
<td></td>
<td>Gauze swabs, sterile (single use pkt of 3)</td>
<td>4</td>
<td>Cleansing/dressing wound.</td>
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<td></td>
<td>Eye pad, sterile</td>
<td>2</td>
<td>Eye cover.</td>
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<td></td>
<td>Wound closure/sterei strips, wide, 6 x 38 mm (pack of 5)</td>
<td>2</td>
<td>Securing wound sides.</td>
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<td></td>
<td>Tape surgical waterproof 2.5 cm x 5 m</td>
<td>1</td>
<td>Secure dressing.</td>
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<td></td>
<td>Ziplock plastic bag set (3 assorted L, M and S)</td>
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<td>Amputated parts/disposal of used items.</td>
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<tr>
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<td>Safety pins, stainless, assorted pkt of 12</td>
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<tr>
<td></td>
<td>Splinter probes, sterile, disposable</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tweezers, splinter forceps, 12.5 cm</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Shears, stainless, 19 cm minimum</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Splint malleable, universal (sam splint) 36&quot;</td>
<td>1</td>
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</tbody>
</table>
### Group First Aid Kit

<table>
<thead>
<tr>
<th>NSN</th>
<th>Description</th>
<th>Quantity</th>
<th>Comments/Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal saline, sterile 30 mL</td>
<td>6</td>
<td>Eye irrigation/wound cleaning.</td>
</tr>
<tr>
<td></td>
<td>Povidone-iodine or betadine swabs (single use) (or 10% antiseptic liquid 100 mL)</td>
<td>10</td>
<td>Antiseptic.</td>
</tr>
<tr>
<td></td>
<td>Tourniquet</td>
<td>1</td>
<td>Major wound management.</td>
</tr>
<tr>
<td></td>
<td><strong>Drugs (require authorisation or qualified person)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anaesthetic + antiseptic cream 30 g</td>
<td>1</td>
<td>Wound management.</td>
</tr>
<tr>
<td></td>
<td>Paracetamol 500 mg tablets or capsules</td>
<td>20</td>
<td>Mild pain relief.</td>
</tr>
<tr>
<td></td>
<td>Hyoscine Hydrobromide 0.3 mg tablets</td>
<td>10</td>
<td>Seasickness.</td>
</tr>
<tr>
<td></td>
<td>Loperimide 2 mg or Diphenoxylate HCl 2.5 mg/Atropine Sulfate 25 mcg tablets</td>
<td>16</td>
<td>Diarrhoea.</td>
</tr>
<tr>
<td></td>
<td>Antacid tablets</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Swimmer’s ear solution (50 mL)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stingose or bite cream (50 mL)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gastrolyte/Oral Rehydration Powder 15 g sachets (pack of 10)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Activity dependant items

|     | Neck brace | 1 | If activity is surf centric, in addition to sam splint. |
|     | Vinegar (2 L) | 1 | If activity has exposure to tropical jellyfish. |

**Note:**

Many items cannot be readily used on water or will absorb sea water and increase the risk of bacterial infection. Bandages on water should be secured with gaffer tape and regularly changed and monitored. Where appropriate immediate landing should be considered to allow effective treatment of a casualty. The first aid must be packed in an on water accessible location.

Dependent on location and risk analysed in conjunction with the supporting health officer items may be added or removed (eg, vinegar is only required for the treatment of tropical jellyfish stings). Location will influence requirements also, particularly in relation to the relative ease and access to reliable evacuation assets.

Products such as analgesics and creams will be considered adequate if an opened package contains at least 50% of the original quantity, and the remaining product is uncontaminated and unaffected by an expiry date or as a result of the seal being broken. All products must carry instructions and directions for use in English and clearly state the adult dose where applicable to enable safe and effective use of the medication for the intended purpose(s).

GMs must be current and qualified as Army First Aiders/Civilian Senior First Aider or better.
Advanced Expedition First Aid Kit

<table>
<thead>
<tr>
<th>NSN</th>
<th>Description</th>
<th>Quantity</th>
<th>Comments/Alternatives</th>
</tr>
</thead>
</table>

Note:
Advanced expedition first aid kits must be specifically prepared to meet the identified risks for the planned trip. As a planning basis compliance with AMSA, National Standard for Commercial Vessels Scale G First Aid Kits should be considered in conjunction with professional medical advice.

Medical supplies and equipment must be carried to treat minor medical conditions and injuries, or to temporarily stabilise a patient until transfer to medical assistance can be arranged. Further consideration must be given to the particular risk inherent to the expedition, its duration, number of personnel, location, types of local flora and fauna and access to medical facilities.

Qualifications and currency of persons administering first aid should be appropriately matched to the planned expedition and likely casualty evacuation timelines. Significant expeditions with response times over 2 hours will likely require a Combat First Aider or Wilderness First Aider.
ANNEX C TO CHAPTER 15
FLOAT PLAN PROFORMA
LWP-G 7-6-5, Adventurous Training – Sea Kayaking, 2019

### FORECAST CONDITIONS

<table>
<thead>
<tr>
<th>Date</th>
<th>Wind</th>
<th>Sea</th>
<th>Swell</th>
<th>Tide times</th>
<th>Water temp</th>
<th>Air temp</th>
<th>Rain % and amount (ml)</th>
</tr>
</thead>
</table>

### PARTICIPANTS

<table>
<thead>
<tr>
<th>Name</th>
<th>PMKeyS</th>
<th>Age</th>
<th>Gender (M/F)</th>
<th>Skill</th>
<th>Kayaks (type/colour)</th>
<th>Comments</th>
</tr>
</thead>
</table>

- **GL** - Group Leader; **N** – Novice; **I** – Intermediate; **A** – Advanced; **M** – Medical training

**SAFETY ASHORE MUST HOLD OR HAVE ACCESS TO MEDICAL AND NOK INFO**

Loc of medical info: ______________________

Loc of NOK info: ______________________

### TRIP PLAN

**MAP/CHART USED:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>FROM</th>
<th>ETD</th>
<th>TO</th>
<th>ETA</th>
<th>DISTANCE</th>
<th>COMMENTS</th>
</tr>
</thead>
</table>

**VEHICLE & TRAILER REGO**

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<tr>
<th>COLOUR</th>
<th>LOC</th>
<th>RELOCATION</th>
<th>TIME</th>
<th>LOC</th>
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### DANGEROUS AREAS

<table>
<thead>
<tr>
<th>CRUX POINTS</th>
<th>SHELTERED AREAS</th>
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### SAFE LANDING POINTS

<table>
<thead>
<tr>
<th>EXTRACTION POINTS</th>
<th>RV/RESUP</th>
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### EMERGENCY CONTACT DETAILS

<table>
<thead>
<tr>
<th>AGENCY/CONTACT</th>
<th>PHONE NUMBER</th>
<th>COMMENTS (OP HRS, FREQ, CAPABILITY, APPROX SAR RESPONSE TIME)</th>
</tr>
</thead>
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**ACTION ON MISSED COMMS SCHEDULE**

**ACTION ON MISSED RV OR RESUPPLY**
<table>
<thead>
<tr>
<th></th>
<th>Novice</th>
<th></th>
<th>Intermediate</th>
<th></th>
<th>Advanced</th>
<th></th>
<th>Actually Taken on Water</th>
<th>Comments (eg, equip colour)</th>
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<tbody>
<tr>
<td></td>
<td>Individual</td>
<td>Group(1)</td>
<td>Individual</td>
<td>Group(1)</td>
<td>Individual</td>
<td>Group(1)</td>
<td>Pod 1</td>
<td>Pod 2</td>
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<td>- Sunglasses (secure strap)</td>
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<td>Comments (eg, equip colour)</td>
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<td>Group(1)</td>
<td>Pod 1</td>
<td>Pod 2</td>
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<td>PLB/EPIRB</td>
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<td>Communications – SPOT tracker/VHF radio/mobile/satellite phone(2)</td>
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<td>GPS (if it is accessible on water, using GPS on mobile phone is OK)</td>
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<td>1</td>
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<td></td>
<td></td>
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<td>Distress flares – day</td>
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<td>Distress flares – night</td>
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<tr>
<td>Waterproof matches/lighter</td>
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</tr>
<tr>
<td>Cyalume sticks (white or blue preferred)</td>
<td>2 pp</td>
<td>2 pp</td>
<td>2 pp</td>
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<td>Strobe light</td>
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<td>Waterproof head torch (not required if no night activity)</td>
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<td>Individual first aid kit</td>
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<tr>
<td>Portable hand-operated bilge pump</td>
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</tr>
<tr>
<td></td>
<td>Novice</td>
<td>Intermediate</td>
<td>Advanced</td>
<td>Actually Taken on Water</td>
<td>Comments (eg, equip colour)</td>
<td></td>
<td></td>
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<tr>
<td></td>
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<td>Group(1)</td>
<td>Individual</td>
<td>Group(1)</td>
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<td>Group(1)</td>
<td>Pod 1</td>
<td>Pod 2</td>
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<tr>
<td>Towline&lt;sup&gt;(3)&lt;/sup&gt;</td>
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<tr>
<td>Throw bag&lt;sup&gt;(3)&lt;/sup&gt;</td>
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<td>Navigation aids:</td>
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<td>- Float plan</td>
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<tr>
<td>- Deck compass</td>
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<td>Dry bags/waterproof</td>
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<td>Quantity</td>
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<tr>
<td>bags/containers</td>
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<tr>
<td>Stove/fuel/pot</td>
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<td>1/boat</td>
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<td>Fuel and fuel bottle for stove</td>
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<tr>
<td>Emergency water</td>
<td>1 L pp/day</td>
<td>2 L</td>
<td>4 L</td>
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<td>3 meals</td>
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<tr>
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<td>Novice</td>
<td>Intermediate</td>
<td>Advanced</td>
<td>Actually Taken on Water</td>
<td>Comments (eg, equip colour)</td>
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<td>Group (1)</td>
<td>Pod 1</td>
<td>Pod 2</td>
</tr>
<tr>
<td>Group first aid kit</td>
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<td>2/boat</td>
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<td>(see Annex B to</td>
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<td>Chapter 15)</td>
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</tr>
<tr>
<td>Kayak repair kit</td>
<td>1</td>
<td>1</td>
<td>1/boat</td>
<td>1/boat</td>
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</tr>
<tr>
<td>(see Annex B and</td>
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<tr>
<td>Annex C to Chapter 3</td>
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<tr>
<td>Drogue (5)</td>
<td></td>
<td>Optional</td>
<td>Optional</td>
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</table>

**Note:**
1. Group size – maximum of six boats being a GL and paddlers up to the maximum ratio, excluding additional UATLs.
2. Minimum two forms of communications with coverage of the activity area. VHF should be accessible on the PFD or deck.
3. Throw bag required where likelihood of personnel rescue required, may be combined with towline if line thickness >7 mm.
4. Dependant on risk of hypothermia you may opt to use space blankets only.
5. Drogues are required where rescues may need to be effected in strong currents and winds.
1. The following lists outline what should be included in an AT sea kayaking activity safety brief.

<table>
<thead>
<tr>
<th>Sea Kayaking Safety Brief</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topography</strong></td>
</tr>
<tr>
<td>a. General description of area (e.g., location, characteristics)</td>
</tr>
<tr>
<td>b. Natural features (e.g., landmarks, shoreline, vegetation, estuaries, and headlands)</td>
</tr>
<tr>
<td>c. Artificial (e.g., roads, camp grounds, towns, beacons)</td>
</tr>
<tr>
<td><strong>Meteorological Details</strong></td>
</tr>
<tr>
<td>a. Weather forecast (e.g., wind strength and direction, rain, currents)</td>
</tr>
<tr>
<td>b. Tides (e.g., high/low, tidal range, currents)</td>
</tr>
<tr>
<td>c. Sea state (e.g., sea, swell size and direction)</td>
</tr>
<tr>
<td>d. Moon (e.g., rise/set and phase)</td>
</tr>
<tr>
<td>e. Sun (e.g., rise/set)</td>
</tr>
<tr>
<td>f. Visibility</td>
</tr>
<tr>
<td><strong>Situation</strong></td>
</tr>
<tr>
<td>a. Hazard (e.g., weather/sea conditions, currents, surf/rocky landings, marine life)</td>
</tr>
<tr>
<td>b. Other watercraft</td>
</tr>
<tr>
<td>c. ADF personnel</td>
</tr>
<tr>
<td>d. Civilians</td>
</tr>
</tbody>
</table>
### Sea Kayaking Safety Brief

#### Mission

- a. Group objective (eg, destination to reach)
- b. Learning objective (eg, AT outcomes)

#### Groupings/Tasks

- a. GL
- b. 2IC
- c. GM
- d. SOA
- e. Buddy pairs

#### Coord Instructions

- a. Timings
- b. Kit check
- c. Depart current loc
- d. On-water
- e. Estimated time of return/RV/finish
- f. SAR time
- g. Current location
- h. Route to departure point
- i. Method of movement to departure point
- j. Padding route – consider phasing if route is long and/or complicated (eg, navigation data sheet, bounds/checkpoints, RVs and windows, sheltered areas, safe landings, alternate routes, effect of tide and weather, danger areas, walk-out routes)
- k. Formation
# Sea Kayaking Safety Brief

## I. Order of March

### Actions on

- Halt
- Reaching bound
- Capsize
- Injury
- Loss/separation of craft
- Lost
- Breakage
- Approaching shore
- Unpredicted bad weather conditions
- Failure to meet an RV
- Failed communications/missed schedules

## Search and Rescue

- Float plan (eg, lodged with whom, details)
- Rescue agencies (eg, loc, capabilities)
- Procedure for group requesting assistance
- Procedure for SOA requesting assistance
- Action on SAR time
- Location of safety vehicle (eg, of keys)
- Location of safety folder
- Environmental impact management (eg, rubbish, interaction with flora and fauna, toilet, construction of camp sites)
### Sea Kayaking Safety Brief

<table>
<thead>
<tr>
<th>Admin/Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Rations/water</td>
</tr>
<tr>
<td>b. Dress</td>
</tr>
<tr>
<td>c. Individual equipment</td>
</tr>
<tr>
<td>d. Group equipment (eg, loc)</td>
</tr>
<tr>
<td>e. Kayak configuration</td>
</tr>
<tr>
<td>f. Special equipment (eg, weapons, lights)</td>
</tr>
<tr>
<td>g. Medical</td>
</tr>
<tr>
<td>h. Loc of medic and medical kit</td>
</tr>
<tr>
<td>i. Contents of individual and group medical kits</td>
</tr>
<tr>
<td>j. Medical issues</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Casevac Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Emergency: contact emergency services and coordination of evacuation</td>
</tr>
<tr>
<td>b. Non-emergency:</td>
</tr>
<tr>
<td>(1) contact SOA and coordination and evacuation</td>
</tr>
<tr>
<td>(2) (if contact SOA fails) contact emergency services</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Comd/Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Loc of leader</td>
</tr>
<tr>
<td>b. Loc of SOA</td>
</tr>
<tr>
<td>c. Seniority</td>
</tr>
<tr>
<td>d. Signals (eg, raft up, stop, beach landings signals)</td>
</tr>
<tr>
<td>e. Communications equipment</td>
</tr>
<tr>
<td>f. Loc</td>
</tr>
</tbody>
</table>
### Sea Kayaking Safety Brief

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<table>
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<tbody>
<tr>
<td>g.</td>
<td>Satellite/mobile phone (eg, phone numbers – SOA, rescue agencies, on-water, PIN)</td>
</tr>
<tr>
<td>h.</td>
<td>VHF radio (eg, frequencies, call signs, emergency distress/urgency message format, schedule timings)</td>
</tr>
<tr>
<td>i.</td>
<td>Emergency signaling equipment (eg, items, loc, authority to use, method of operation)</td>
</tr>
</tbody>
</table>

Any Questions
BIBLIOGRAPHY

Australian Resuscitation Council 2010, Guideline 9.4.5, Envenomation – Jellyfish Stings

Australian Resuscitation Council 2014, Guideline 9.4.7, Envenomation – Fish Stings

Australian Standard 4758.1-2015: Lifejackets – General requirements


Australian Standard/New Zealand Standard 4280:2-2017: 406 MHz satellite distress beacons – Personal locator beacons (PLBs)


Radiocommunications Act 1992

St John Ambulance Australia 2014, Australian First Aid: An Authorised Manual of St John Ambulance Australia, St John Ambulance Australia, Australian Capital Territory
