



ABOUT OUR SUMMARY CARDS

Introduction

These summary cards were inspired by the cards that come with the blue book/folder given out at the end of the Team Leader's workshop. One of our members came back from the workshop and decided to make up a couple of cards on things that weren't covered, or were covered but lacked some information or material. We also wanted to be able to give them to all our members – not just those that have been fortunate enough to have attended a Team Leader's workshop.

After much searching we finally tracked down a supplier who makes a document wallet with 20 clear plastic sleeves to fit the cards (like a small "Vuee Tuee") for around \$8. Contact us if you'd like to order some – send an email to summary-cards@wollongong.ses.nsw.gov.au

Over time the number of cards has grown and we have plans to develop more in the future. A lot of effort has gone into producing them and there's a lot of useful information contained in them so we're happy to share them with other Units so that they too can benefit from this work.

Be sure to check the Table of Contents to see which cards have been added or updated recently!

Feedback

We'd appreciate your feedback so please send us an email at summary-cards@wollongong.ses.nsw.gov.au with any corrections, suggestions etc. That way we can keep improving them for the benefit of all SES members.

Acknowledgment

Much of the material for these cards has been sourced from our Training Resource Kits and the Australian Emergency Management Manual Series from Emergency Management Australia. We acknowledge these publications as the source, particularly for much of the artwork. We also acknowledge the NSW Rural Fire Service (RFS) as the source for the material in card 4.2

Disclaimer

The information contained in these summary cards is not meant to be a substitute for training, and untrained or unqualified members should not use the material in these cards without the supervision of a suitably qualified person. Also, whilst all care has been taken in compiling these cards it is possible that they may contain technical inaccuracies or typographic errors.

In no event shall Wollongong City SES be liable for any damages arising from the use of information contained within these cards.

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| | | | | | | (GRC) | (SDC) | (VRC) | (CSC) | (FAC) | (BCC) | (MSC) | (LSC) | (MRC) | (TLC) | (OCE) | (FWC) | N/A |
| 1 | 1 General Rescue | 1.1 | General Rescue - Acronyms | 1.0 | Feb-07 | ✓ | | | | | | | | | | | | |
| 2 | | 1.2 | INSARAG Marking Systems | 1.0 | Feb-07 | ✓ | | | | | | | | | | | | |
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| 5 | | 1.5 | Collapse Patterns (2) - Further 6 | 1.0 | Feb-07 | ✓ | | | | | | | | | | | | |
| 6 | | 1.6 | Ladders | 2.0 | Nov-07 | ✓ | | | | | | | | | | | | |
| 7 | | 1.7 | Improvised Rescue Techniques - Part 1 | 1.0 | Oct-07 | ✓ | | | | | | | | | | | | |
| 8 | | 1.8 | Improvised Rescue Techniques - Part 2 | 1.0 | Oct-07 | ✓ | | | | | | | | | | | | |
| 9 | 2 First Aid | 2.1 | First Aid (1/2) | 2.0 | Jan-08 | | | | | ✓ | | | | | | | | |
| 10 | | 2.2 | First Aid (2/2) | 2.0 | Jan-08 | | | | | ✓ | | | | | | | | |
| 11 | | 2.3 | 30 Second Triage | 1.0 | Feb-07 | ✓ | | | | ✓ | | | | | | | | |
| 12 | | 2.4 | Bleeding & Shock | 1.0 | Oct-08 | | | | | ✓ | | | | | | | | |
| 13 | | 2.5 | Respiratory Conditions | 1.0 | Oct-08 | | | | | ✓ | | | | | | | | |
| 14 | | 2.6 | Medical Emergencies - 1 of 2 | 1.0 | Oct-08 | | | | | ✓ | | | | | | | | |
| 15 | | 2.7 | Medical Emergencies - 2 of 2 & Cardiac C | 1.0 | Oct-08 | | | | | ✓ | | | | | | | | |
| 16 | | 2.8 | Spinal Injuries & Burns | 1.0 | Oct-08 | | | | | ✓ | | | | | | | | |
| 17 | | 2.9 | Fractures & Associated Injuries | 1.0 | Oct-08 | | | | | ✓ | | | | | | | | |
| 18 | | 2.1 | Head Injuries | 1.0 | Oct-08 | | | | | ✓ | | | | | | | | |
| 19 | | 2.11 | Chest, Abdomen & Pelvis Injuries | 1.0 | Oct-08 | | | | | ✓ | | | | | | | | |
| 20 | | 2.12 | Environmental Emergencies | 1.0 | Oct-08 | | | | | ✓ | | | | | | | | |
| 21 | | 2.13 | Poisons, Bites & Stings | 1.0 | Oct-08 | | | | | ✓ | | | | | | | | |
| 22 | 3 Casualty Handling | 3.1 | Casualty Handling - Without equipment | 1.0 | Feb-07 | ✓ | | | | | | | | | | | | |
| 23 | | 3.2 | Casualty Handling - Stretchers (1) | 2.0 | Oct-07 | ✓ | | | | | | | | | | | | |
| 24 | | 3.3 | Casualty Handling - Stretchers (2) | 1.0 | Feb-07 | ✓ | | | | | | | | | | | | |
| 25 | | 3.4 | SKED Stretcher - Contents | 1.0 | Feb-07 | | | ✓ | | | | | | | | | | |
| 26 | | 3.5 | SKED Stretcher - Rigging for Vertical Lift | 1.0 | Feb-07 | | | ✓ | | | | | | | | | | |
| 27 | 4 Fire Fighting | 4.1 | Fire Extinguishers | 1.0 | Feb-07 | ✓ | | | | | | | | | | | | |
| 28 | | 4.2 | Bush Fire Awareness | 1.0 | Nov-07 | | | | | | | | | | | | | ✓ |
| 29 | 5 Ropes, Knots & Lashings | 5.1 | Ropes and Slings | 1.0 | Feb-07 | ✓ | | | | | | | | | | | | |
| 30 | | 5.2 | Synthetic Fibre Rope & Cord | 1.0 | Feb-07 | ✓ | | ✓ | | | | | | | | | | |
| 31 | | 5.3 | Knots - Natural Fibre Rope | 2.0 | Nov-07 | ✓ | | | | | | | | | | | | |
| 32 | | 5.4 | Knots - Synthetic Fibre Rope | 2.0 | Nov-07 | ✓ | ✓ | ✓ | | | | | | | | | | |
| 33 | | 5.5 | Lashings | 1.0 | Feb-07 | ✓ | | | | | | | | | | | | |
| 34 | 6 Anchors and Rigging | 6.1 | Rigging and equipment | 1.0 | Feb-07 | ✓ | | ✓ | | | | | | | | | | |
| 35 | | 6.2 | Anchors - General | 1.0 | Nov-07 | ✓ | ✓ | ✓ | | | | | | | | | | |
| 36 | | 6.3 | Anchors - Minimum Sizes | 1.0 | Feb-07 | | | ✓ | | | | | | | | | | |
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| 48 | | 10.2 | Chainsaw - 2 of 2 | 1.0 | Jul-08 | | | | ✓ | | | | | | | | | |
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| 50 | 11 Storm and Water Damage | 11.1 | Pumps | 1.0 | Feb-07 | ✓ | | | | | | | | | | | | |
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| 58 | | 11.9 | EWPs - 2 of 2 | 1.0 | Nov-08 | ✓ | | | | | | | | | | | | |
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| 60 | | 12.2 | Risk Management - Risk Matrix | 1.0 | Feb-07 | | | ✓ | ✓ | | ✓ | ✓ | | | | | | |
| 61 | | 12.3 | Hazard Identification - Roof Job | 1.0 | Jan-08 | ✓ | | | | | | ✓ | | | ✓ | | | |
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| | | | | | | (GRC) | (SDC) | (VRC) | (CSC) | (FAC) | (BCC) | (MSC) | (LSC) | (MRC) | (TLC) | (OCE) | (FWC) | 4WD | N/A |
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INSARAG Marking Systems

Preliminary Identification



STREET NAME AND NUMBER

Victim Location

Potential Victim Location

Suspected Victim Direction

Number of Live and Deceased

Live Casualties Extricated

Team Finished (Deceased not removed)

Team Finished (All victims Removed)

Or

Team Finished (All victims Removed)

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Generators & Lighting

Power

Power (W) = Volts (V) x Amps (A)

1 kW = 1000 W 1 A = 1000 mA

Capacity

Generator Capacity ≥ Total capacity of appliances Being used (i.e. lights)

Typical Starting Procedure

1. Check sump oil and fuel level
2. Fuel is on
3. Choke is on
4. Electric start switch is on
5. Pull starter rope and guide return
6. Turn choke off
7. Switch off when finished

Safety

- Keep Generators Dry.
- Monitor electrical equipment.
- Keep fire extinguishers near generators during operation.
- Do not re-fuel the generator while it is running.
- Consider exhaust fumes when positioning generators.

Lighting

- Halogen lights – Allow to cool down after operation.
- Electrical Leads – Must be tested and tagged regularly.
- ELCB/RCDs (Earth leakage circuit breakers) – Should be installed at the generator end of the leads.

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General Rescue – Acronyms

Briefing and Debriefing

- S** Situation What has happened
- M** Mission What the task is
- E** Execution How the Task is to be accomplished
- A** Administration What support will be provided and how
- C** Command Control, Coordination, Communications

Reconnaissance

- T** Task Continuous
- C** Casualties Accurate
- H** Hazards R
- A** Accesses/Exits Rapid
- R** Resources available T
- D** Damage- extent Thorough

Stages of Rescue

- C** Clear Surface Casualties L Locate
- R** Rescue Lightly Trapped A Access
- E** Explore Likely Survival Points S Stabilise
- S** Selected Debris Removal T Transport
- T** Total Debris Clearance
- R** Reconnaissance & Survey
- E** Elimination of Utilities
- P** Primary Surface Search & Rescue
- E** Exploration of all Voids & Spaces
- A** Access by Selected Debris Removal
- T** Terminate by General Debris Control

V1.0

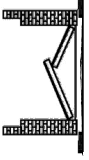
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Collapse Patterns – further 6

Pancake Floor (Horizontal)

Floor or ceiling falls flat downwards.

Inverted 'A'



A floor or ceiling gives way in the centre resulting in the opposite of the "V" type collapse pattern.

Cantilever

A piece of floor, ceiling or wall falls landing on a stationary structure and leaves a large segment hanging over an open area.

Secondary

- Signs of Secondary Collapse
- 1. Structure Movement
- 2. Visual Clues
- 3. Audible Clues

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Collapse Patterns – 5 most common

Curtain fall wall

Wall made of bricks or blocks falls like a curtain, i.e. drops straight downward.

Lean over

Wooden frame building collapses to one side.

Lean to floor

Floor above ground level becomes dislodged from one side of the structure and falls to the level below.

Angle Wall

Wall made of masonry, bricks or blocks collapses at a 90° angle covering the ground with the wall for a distance of the height of the wall.

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1.4

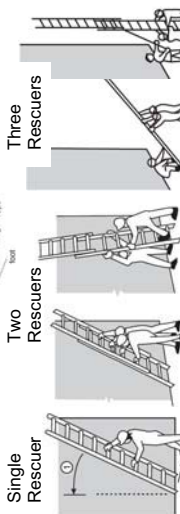
1.5

Ladders

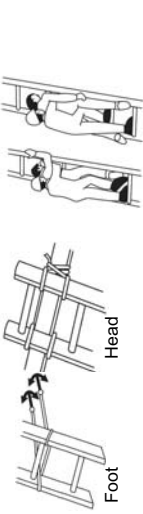
Setting Up

- Position at 75 degrees
- Extend 1 m above target
- Check for overhead wires
- Extension Ladders Overlaps:
 - 3 rung small ladder
 - 5 rungs large ladder

Putting Up



Securing



V2.1

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Improved Rescue

Techniques — Single/Two/Four Point lower

Height Safety

Safety lines required when working above 2m or within 2m from an edge

Improved Safety Line Knots

NFR: Bowline

SFR: Figure of Eight Loop

Improved Single Point Lower

- Use round turns around anchor.
- Weight of casualty will determine the number of round turns.
- Pay out rope hand over hand.
- Consider using a second anchor as a back up.

Two-Point and Four-Point Suspensions

- Attach guide lines to head and foot of stretcher (Refer to card 3.3).
- Ensure casualty is safely and securely lashed.
- Consider using an anchor back up for each lowering line (round turns or mechanical friction device).

Two-Point Suspension

- Vertical

- Stretcher goes down feet first

Four-Point Suspension

- Horizontal

- Keep Stretcher Level

Important!

- These are *IMPROVED* methods.
- If possible, use a stretcher bridle and a friction device to control the load instead of these methods.

Whistle Signals

STOP 1 short blast
HAUL 2 short blasts
LOWER 1 long blast

V1.0

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Improved Rescue

Techniques — Ladder Hinge / Ladder Slide

Height and Ladder Safety

- Ensure the casualty is safely and securely lashed.
- Attach lowering lines to the head of the stretcher.
- Consider using an anchor back up for each lowering line (round turns or mechanical friction device).
- If the ladder is extended to reach the opening, lash the overlap.

THESE TECHNIQUES ARE IMPROVISED AND USE A LADDER OUTSIDE ITS DESIGN CONSTRAINTS

Ladder Hinge

Keep the Stretcher Horizontal!

- Place the ladder vertically against the wall.
- Lift and support the stretcher 250mm above opening.
- Lash the foot of the stretcher to the ladder
- Foot and, if possible, lash the bottom of the ladder.
- Pass the stretcher out by hand until the weight is supported by the guidelines.
- Walk the ladder back controlling the lower.
- Ensure that sideways stability is applied to the ladder.

Ladder Slide

- Position the ladder in as flat an angle as possible.
- Foot the ladder and, if possible, lash the head.
- Shore or prop the ladder mid-span with at least two people.
- Feed the stretcher out of the opening feet first.
- Climb halfway up the ladder to help guide the stretcher down.
- Consider guidelines at the foot of the stretcher for lateral stability.
- Slide the stretcher down the ladder.

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First Aid

Primary Assessment

- Danger** – Take 5
- Response** – If unconscious call **000**
- Airway** – Check and clear
- Breathing** – 2 initial breaths if not breathing
- Compressions** – Commence CPR
- Defibrillation** – If available

Secondary Assessment

- Head** Wounds, pain, fluids, bleeding, deformities, pupils, swelling, bruising, mouth, skin temperature.
- Neck** Deformities/swelling, pain, feeling, bleeding, windpipe.
- Collarbones** Swelling/deformities, pain.
- Chest** Swelling/deformities, bleeding, pain, observe breathing, squeeze rib cage.
- Abdomen** Swelling/bruising, rigidity/tenderness, pain.
- Pelvis** Spring hips, tenderness, pain, incontinence.
- Legs and Feet** Deformity, pain, bleeding/ circulation, bruising, check limb power simultaneously.
- Arms and Hands** Deformity, pain, bleeding/ circulation, bruising, check limb power simultaneously.
- Back** Deformity, swelling, bleeding.

Do not move if suspected spinal injury

V2.0

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First Aid

CPR

Rate: 100 compressions / minute

2 compressions / second

Ratio: 30 compressions : 2 breaths

| Age Group | Compression Type | Approx. Depth |
|--------------|-------------------------|---------------|
| Adult | Two Hands | 4-5 cm |
| Child (1-8) | Heel of Hand | 2-3 cm |
| Infant (0-1) | Index and Middle Finger | 1-2 cm |

Vital Signs

(Check and note time every 15 mins)

- Pulse 60-100 beats/min } For an average adult
- Breathing 12-20 breaths/min
- Skin Temperature
- Conscious state
- Symptoms/Complaints

Casualty History

- Name
- Age/Date of Birth
- Sex
- Allergies?
- What happened?
- When did it happen?
- Current medical treatment?
- Medication?
- Bystanders' information
- Next of kin

V2.0

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Bleeding & Shock

Signs & Symptoms / Treatment

| EXTERNAL BLEEDING | Visible Bleeding, swelling/discooloration, shock | Direct pressure, elevate, pad and bandage, rest, treat for shock. | Dial 000 |
|-----------------------|--|---|----------|
| UNCONTROLLED BLEEDING | Use when all methods of stopping blood loss have failed or for traumatic amputations | 5 cm wide bandage over single bone, sufficient pressure to stop bleeding, mark forehead with 'T', record time on casualty, release after 30 minutes, reapply if still bleeding uncontrollably | Dial 000 |
| IMPALED OBJECT | Do not remove | Control bleeding, stabilize object, treat for shock | Dial 000 |
| AMPUTATED PART | Treat the Casualty: control bleeding, treat for shock | Severed part: Do not wash. Place in clean sealed plastic bag, place bag in cold water, keep with casualty | Dial 000 |
| NOSE BLEED | Direct pressure for 10 minutes, head slightly forwards, cold compress to back of neck | | Dial 000 |
| INTERNAL BLEEDING | Swelling and discoloration, guarding, rigidity, shock | Direct pressure, cold compress, treat for shock | Dial 000 |
| SHOCK | Faintness, anxiety, pale/cold/sweaty skin, rapid weak pulse, breathlessness, thirst, nausea, rapid breathing | Lay down and elevate legs, control bleeding, keep warm, nil by mouth | Dial 000 |

ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS

V1.0

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Respiratory Conditions

Signs & Symptoms / Treatment

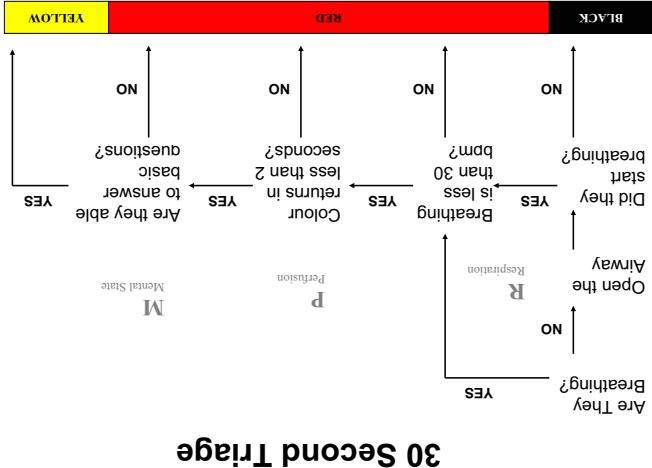
| SWOLLEN THROAT TISSUES | Difficult/noisy breathing, swallowing, speaking, drooling cyanosis | Conscious: Sit them up, cold compress to throat Unconscious: CPR | Dial 000 |
|--------------------------|---|---|----------|
| CHOKING | Wheezing, noisy/laboured breathing, coughing, cyanosis | Reassurance, encourage coughing, 5 sharp blows in the middle of the back. Place infants/children on lap | Dial 000 |
| TOTAL AIRWAY OBSTRUCTION | Unable to breathe/cry/cough, agitated (can't breathe), unconsciousness | DRABCD Adults: 5 chest thrusts. Alternate b/w 5 back blows and 5 chest thrusts. Children: Place across thigh, head down | Dial 000 |
| HYPERVENTILATION | Rapid/deep/difficult breathing, anxiety, flushed face, tingling | Encourage to breathe normally, monitor and record vital signs | Dial 000 |
| ASTHMA ATTACK | Wheezing, coughing, difficulty breathing, rapid breathing, pale and sweaty, unable to speak | Sit up, 4 puffs of Asthma reliever, repeat after 4 minutes if no relief | Dial 000 |

ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS

V1.0

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30 Second Triage



Signs & Symptoms / Treatment

| | |
|---|---|
| DIABETIC EPISODE Dial 000 | |
| Hypoglycaemia: Rapid/weak pulse, cold/clammy/sweaty skin, muscular weakness, confusion, trembling, hunger pangs, convulsions, unconsciousness. | DRABC Conscious. Give sugary drink. Unconscious. Side position |
| Hyperglycaemia: Deep/rapid breathing, red/dry/flushed face, thirsty, needs to urinate, confusion (resemble drunkenness), sickly sweet breath, unconsciousness. | |
| ABDOMINAL | |
| Pain, nausea, vomiting, raised temperature, abdominal rigidity, diarrhea, shock | Make comfortable, treat for shock, nil by mouth |
| FADING | |
| Pale/cold/clammy skin, slow weak pulse, yawning, light-headedness → unconsciousness | Conscious. Lie down and elevate legs. Unconscious. Side Position |
| STROKE Dial 000 | |
| Sudden severe headache, face flushed warm or ashen grey, slow breathing, unequal pupils, weakness on one side, unconsciousness, blurred vision, slurred speech, loss of bowel/bladder control, facial droop/salivary drool. | DRABC Conscious. Lie down, raise head 30°. Unconscious. Place on affected side. |
| SEIZURES Dial 000 | |
| Aura, collapse, spasmodic movements, loss of bladder/bowel control, cyanosis, dilated slow reacting pupils, drowsiness afterwards | During. Protect casualty from injury, protect head After. Check airway and breathing, side position, cover casualty. |
| ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS | |

Signs & Symptoms / Treatment

| | |
|--|--|
| WHENEVER THERE IS A HEAD INJURY YOU MUST SUSPECT A POSSIBLE SPINAL INJURY AS WELL | |
| CONCUSSION Dial 000 | |
| Temporary unconsciousness, loss of memory, nausea/vomiting, headache, blurred vision, dizziness | DRABC: immobilize neck, control bleeding. If bleeding from ear, position with ear down. If conscious, lay down and raise head 10° |
| FRACTURED SKULL Dial 000 | |
| Skull deformity, head wound, drowsy, lack of coordination, bleeding into eyes, bruising around eyes, bleeding/clear fluid from nose/ears, changes in size/shape/reaction of pupils | As above |
| TOOTH AND GUM INJURIES | |
| Bleeding, pain, broken teeth | Sit casualty down with head tilted forward, gauze swab in tooth socket and casualty to bite on it. Place the tooth in milk |
| EYE INJURIES Dial 000 | |
| Pain, bleeding/ watering, eyelid spasms, redness, burning sensation, inability to open | Foreign Bodies. Check for foreign bodies, flush with clean water (or eyewash), cover with pad. Penetrating Injuries. Stabilise object, place drink cup over eye, cover good eye, lay down for at least 20 minutes |
| EAR INJURIES Dial 000 | |
| Bleeding or foreign bodies | Bleeding. Place pad over ear, position casualty injured side down Foreign Body. Flood with tepid water |
| JAW INJURIES Dial 000 | |
| Pain, bleeding, unable to open mouth, swelling | Maintain open airway, casualty to support their jaw |
| ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS | |

Signs & Symptoms / Treatment

| | |
|--|--|
| FERRILE CONVULSIONS | |
| Flushed hot skin, eyes rolled back, stiff/floppy, convulsions | During. Place on the floor, turn on the side, do not restrain. After. Remove clothing, rest on their side |
| ANAPHYLAXIS Dial 000 | |
| Swelling of throat, wheezing, itching, metallic taste in mouth, cramps and nausea, collapse, unconscious. | Lie down, cold compress to throat, Inject Epi-pen®, if available. |
| ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS | |
| Cardiac Conditions | |
| Signs & Symptoms / Treatment | |
| ANGINA | |
| Chest pain on exertion, shortness of breath, light headedness, pale sweaty skin | Rest, assist with medication |
| HEART ATTACK Dial 000 | |
| Sudden crushing chest pain, shortness of breath, pale cold sweaty skin, rapid/weak/irregular pulse, fear, anxiety, nausea or vomiting. | Rest Avoid contact with chemical or contaminated material, flush area with clean water for 20 minutes, remove contaminated clothing. Refer to MSDS or ring 131 126. |
| CARDIAC ARREST Dial 000 | |
| Heart stops beating, no pulse, no breathing, pale/grey/cyanosed | DRABC |
| ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS | |

Signs & Symptoms / Treatment

| | |
|--|--|
| FRACTURED RIBS Dial 000 | |
| Local pain, bruising, tenderness, difficulty breathing, deformity. | Casualty in comfortable position, keep arm on injured side against rib cage |
| FLAIL CHEST Dial 000 | |
| Deformity, pain, difficulty breathing, bruising, tenderness, cyanosis, shock. | As above |
| SUCKING CHEST WOUND Dial 000 | |
| Pain, difficulty breathing, obvious chest wound, coughing up blood, sucked in and out of chest cavity, shock | Sit up leaning to injured side, airtight dressing sealed with tape on three sides – bottom open, treat for shock |
| ABDOMINAL INJURY (AND EXPOSED BOWEL) Dial 000 | |
| Pain, guarding, bleeding, rigidity, nausea exposed bowel, shock | Conscious. Half sitting position, knees raised and supported. Control bleeding Unconscious. Cover exposed bowel with moist non-stick dressing. Control bleeding |
| PELVIC INJURY Dial 000 | |
| Pain, guarding, wish to urinate, shock | Casualty in comfortable position, control bleeding, support fractured area |
| FEMALE GENITALS Dial 000 | |
| Pain, bleeding, rigidity, shock | Lay casualty on their back with legs raised, control bleeding |
| MALE GENITALS Dial 000 | |
| Pain, nausea, swelling, guarding | Lay casualty on their back with knees slightly bent, cold compress to affected area |
| ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS | |

Signs & Symptoms / Treatment

| | |
|--|--|
| SPINAL INJURIES Dial 000 | |
| Pain, weakness of extremities, numbness or tingling, loss of feeling, wounds, priapism, loss of control of bladder and bowel | Conscious. Do not move, treat for shock. Unconscious. DRABC, head support, keep warm. |
| ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS | |

Signs & Symptoms / Treatment

| | |
|--|--|
| BURNS Dial 000 | |
| Red, blistering, white or blackened skin. Straw coloured liquid oozing, pain, shock, breathing difficulties, altered consciousness | DRABC Burns. Flush area with clean water for 20 minutes, remove rings and jewelry, cover area with damp dressing and follow with a dry dressing. Chemical Burns. Avoid contact with chemical or contaminated material, flush area with clean water for 20 minutes, remove contaminated clothing. Refer to MSDS or ring 131 126. Electrical Burns Ensure power source is off before approaching. |
| ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS | |

Signs & Symptoms / Treatment

| | |
|--|---|
| HEAT SYNOPE | Lay on side, remove excess clothing, cool by fanning |
| HEAT CRAMPS | Rest in shade, stretch affected muscle, ice pack, sips of water |
| HEAT EXHAUSTION Dial 000 | |
| Pale, cold, clammy skin. Rapid, weak pulse and breathing, profuse sweating, thirst, nausea, vomiting, constant headache, cramps, dilated pupils. | Lay down on a cool place, loosen and remove excess clothing, cool by fanning, sips of cool water. |
| HEAT STROKE Dial 000 | |
| Dry, red hot skin, rapid weak pulse, pupils constricted, sweating, irrational, headache, vomiting, collapse and seizures | Place in cool spot, remove clothing and cool, treat for shock, apply cold packs to neck, armpits, groin, behind knees |
| MILD HYPOTHERMIA | Remove wet clothing, rewarm gradually, slow thinking, slurred speech |
| MODERATE HYPOTHERMIA | As above plus: Most shivering stopped, confusion, memory loss, muscle tightness, slow pulse and breathing |
| SEVERE HYPOTHERMIA Dial 000 | |
| As above + pupils fixed & dilated, no shivering, irregular pulse & breathing, gradual loss of consciousness | As above + rewarm gently with warm water bottles to neck, armpits, groin, behind knees. |
| FROSTBITE Dial 000 | |
| Numbness of affected part, skin is wax-like, lack of movement and circulation, pain when rewarming | Remove clothing restricting circulation, place affected part in hot water for 15-60 minutes, treat for shock, cover part with dry, sterile and bulky dressings. |
| ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS | |

Signs & Symptoms / Treatment

| | |
|---|--|
| FRACTURES | Immobilise at joint above and below site of fracture, elevate, lie off on uninjured side, check for circulation |
| Pain, tenderness, loss of power, swelling, bleeding and shock, crepitus, open wounds, discolouration, shortening of limb, deformity | Elevated arm sling Collarbone Collar and cuff sling Upper Arm Splint, roll bandage under hand, sling Forearm Splint, roll bandage under hand, sling before lying off. Fig 8 at feet, above and below break, above knees Thigh Fig 8 at knee, Splint under whole leg, fig 8 at ankle, above and below break, elevate Hip Fig 8 around feet, broad bandage above knees, pad on both sides |
| DISLOCATIONS | Pain, inability to move, deformity, tenderness, swelling, discolouration |
| BRUISES, SPRAINS, STRAINS | Rest and support, cold pack, immobilize |
| Pain, swelling, bleeding into tissue | R Rest I Ice. Cool for 20 minutes every 2 hours C Compression. Roller elastic bandage for 2 hours E Elevation. |
| CRUSH INJURIES Dial 000 | |
| Remove crushing force as soon as possible | Treat for shock |
| ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS | |

Signs & Symptoms / Treatment

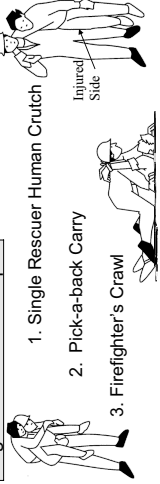
| | |
|---|---|
| POISONING: DRABC, 000, Dial 131 126 | Dial 000 |
| SNAKES | Dial 000 |
| Fang marks, headache, nausea, vomit, abdominal pain, blood in urine, blurred vision, difficult to swallow & speak, limb paralysis, swollen glands, sweating, stop breathing | Apply PIT, start resus. |
| FUNNEL WEB AND MOUSE SPIDER Dial 000 | |
| Tingling around mouth, muscular spasm, weakness, pain at site, sweating and salivating, confusion, coma | Apply PIT, start resus. |
| BOX JELLY FISH Dial 000 | |
| Immediate and severe burning pain, multiple whip wheals, restlessness, irrational behaviour, nausea and vomiting, collapse | Pour vinegar, cold packs. Do not apply PIT. Start resus. |
| BLUE RINGED OCTOPUS, CONE SHELL Dial 000 | |
| Numbness & tingling around the mouth, blood & no start resus. | Apply PIT, start resus. |
| REDBACK SPIDER Dial 000 | |
| Intense pain, profuse sweating, swollen glands, nausea, vomiting, rapid pulse, weak muscles | Apply ice. Do not apply PIT |
| OTHER SPIDERS, SCORPIONS AND CENTIPEDES | Apply PIT. |
| Pain, red lump, headache, nausea | Ice compress. In case of allergic reaction start resus. Apply PIT. |
| TICKS | |
| Irritation, lethargy, muscle weakness, double vision, unsteady gait | Pull out tick by the head with tweezers, apply antiseptic. |
| BEES, WASPS AND ANTS Dial 000 | |
| Painful, red swelling, allergic symptoms, itchy rash, facial swelling, difficulty breathing. | Remove bee sting, ice compress. In case of allergic reaction start resus. Apply PIT. Epi-pen® |
| STONEFISH, STINGRAY | |
| Pain and Swelling, grey/blue skin, irrational behaviour | Place part in warm water, or apply a cold compress. Do not apply PIT |
| ALWAYS REASSURE THE CASUALTY AND MONITOR VITAL SIGNS | |

Casualty Handling – Without Equipment

3.1

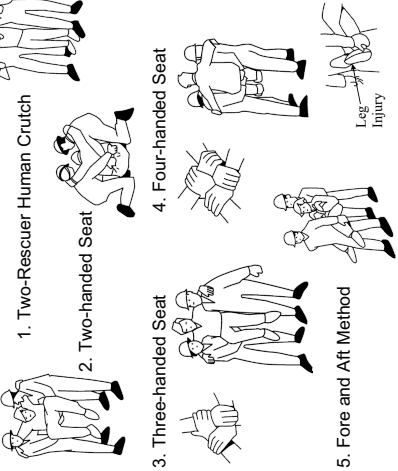
Single Rescuer Techniques

1. Single Rescuer Human Crutch
2. Pick-a-back Carry
3. Firefighter's Crawl



Two-Rescuer Techniques

1. Two-Rescuer Human Crutch
2. Two-handed Seat
3. Three-handed Seat
4. Four-handed Seat
5. Fore and Aft Method



V1.0

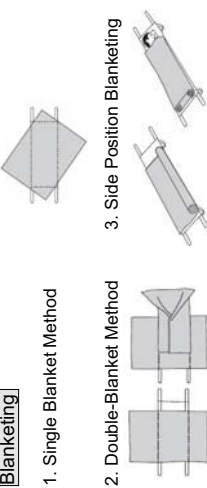
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Casualty Handling – Stretchers (1)

3.2

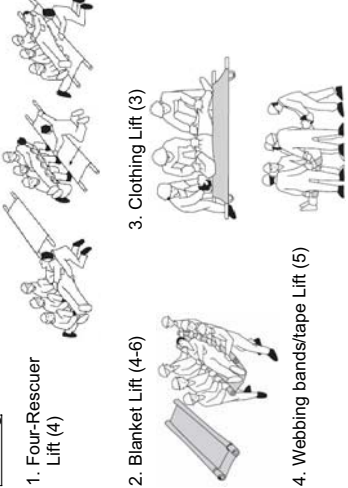
Blanketing

1. Single Blanket Method
2. Double-Blanket Method
3. Side Position Blanketing



Loading

1. Four-Rescuer Lift (4)
2. Blanket Lift (4-6)
3. Clothing Lift (3)
4. Webbing bands/tape Lift (5)



V2.0

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Casualty Handling

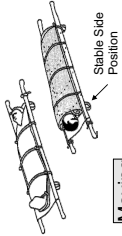
3.3

– Stretchers (2)

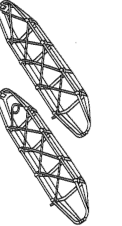
Lashing

Start: Clove Hitch **Finish:** Round Turn two half hitches
Use: Natural fibre rope, Synthetic fibre rope or Tape

Folding Stretcher



Basket Stretcher

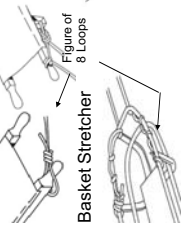


Moving

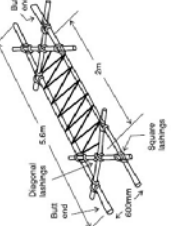
- Feet First
- Head Above Feet
- Over Water: PFD and No Lashings
- Narrow Openings: Halve an Extension Ladder

Guide Lines

Folding Stretcher

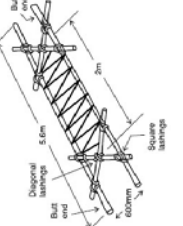


Bush Stretcher



Improvised

Bush Stretcher



V1.0

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SKED Stretcher (1)

3.4

Kit Contents

- 1 SKED Stretcher
- 1 Backpack Carrying Case
- Horizontal Lift Slings
- 1 Vertical Lift Sling –10m x 9mm Static Rescue Lifeline
- 1 Large Steel Screwgate Karabiner
- 1 Tow Strap
- 4 Removable Webbing Handles



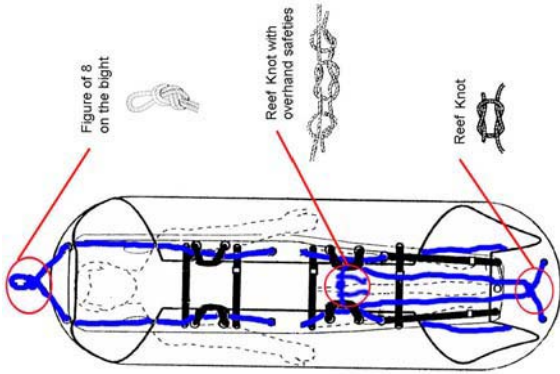
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SKED Stretcher (2)

3.5

Rigging for Vertical Lift



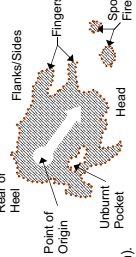
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Bush Fire Awareness

4.2

Structure of a bush fire



Risks on the Fireground

- Fire (smoke, radiant heat, overrun).
- Surroundings (falling branches, rolling logs, burning buildings, power lines).
- Within yourself (heat stress, exhaustion, fatigue, dehydration).
- Other Personnel (moving vehicles, chainsaws).
- Firefighting Activities (water bombing, back burning).

PPE on the Fire Ground

- Overalls
- Neck flaps
- Gloves
- Goggles
- Helmets
- Face / Neck protection
- Cotton/woollen underwear/socks (no synthetics)

Fire Overrun

Always

- Move to bare, clean or burnt ground.
- Ensure PPE is complete.
- Send out an 'Emergency' priority radio call.

On Foot

- Shelter in a depression
- Do NOT run away uphill or through the flames.

V1.0

Developed by Wollongong City SES

4.1

Fire Triangles



Fire Extinguisher Selection Chart

| Extinguisher | Fire Class | | Type | A | B | C | D | E | F |
|-------------------|------------|-------------|------|------------|-----------|-------|-------------|------------|--------------|
| | Ordinary | Combustible | | Combinable | Flammable | Gases | Combustible | Electrical | Cooking Oils |
| Vaporising Liquid | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Dry Chemical | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| CO ₂ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wet Chemical | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Foam | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Water | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

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5.1

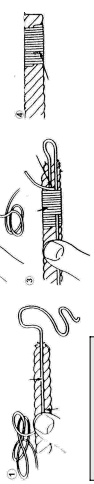
Ropes and Slings

Natural Fibre Rope

| New Rope | SWL (kg) | = | D ² |
|-----------------|----------|---|----------------------|
| Used Rope | SWL (kg) | = | 2/3 x D ² |
| Knots in Rope | SWL (kg) | = | 2/3 x SWL |
| Circular Object | SWL (kg) | = | 2/3 x SWL |
| Sharp Edge | SWL (kg) | = | 1/2 x SWL |

| Diameter | SWL | New | Used | Knot | Bend | Sharps |
|----------|------|-----|------|------|------|--------|
| 12 (mm) | (kg) | 144 | 96 | 64 | 64 | 48 |
| 16 (mm) | (kg) | 256 | 170 | 113 | 113 | 85 |

Whipping



Steel Wire Rope (For Fibre Core Steel Wire Rope)

| Steel Wire Rope | SWL (kg) | = | 8 x D ² |
|--------------------------------|----------|---|------------------------|
| Bent Wire Rope | SWL (kg) | = | 2/3 x SWL |
| Smallest D to wrap rope around | | = | 10 x D _{rope} |

Slings (Single leg vertical lift)

| Chain Slings: | SWL (kg) | = | 100/13 x D ² |
|-------------------|-------------|---|-------------------------|
| Wire Rope Slings: | MBF (tonne) | = | 1/20 x D ² |
| | SWL (tonne) | = | MBF / 8 |

| | | |
|-----|---|--------------------------|
| D | = | Rope/Chain Diameter (mm) |
| SWL | = | Safe Working Load (kg) |
| MBF | = | Minimum Breaking Force |

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Synthetic Fibre Rope & Cord

5.2

Criteria for Synthetic Fibre Rescue Rope

- Minimum Diameter 11 mm
- Static Kermantel Construction
- Minimum Rated Strength 3000 kg
- 100% polyamide
- Max 3% elongation at 80kg load
- Max 20% elongation at 375 kg load
- Min 20% elongation at 3000 kg load
- Sheath slippage of not more than 40 mm

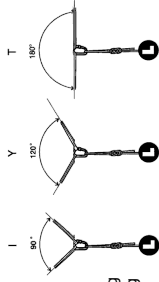
AS4142.3
Compliant

Rated Strength and Safe Working Load

| | Diameter (mm) | MBF (kg) | SWL (kg) | People (90 kg each) |
|------|------------------|-------------|-------------|------------------------|
| Cord | 6 | 700-750 | 90 | 1 |
| | 7 | 1000-1200 | 125 | 1 |
| | 8 | 1200-1500 | 150 | 2 |
| | 9 | 1600-1800 | 200 | 2 |
| Rope | 11 | 3000 | 375 | 4 |
| | 13 | 3600 | 450 | 5 |
| | 16 | 4500 | 562 | 6 |

Principle of IYT Loading

Karabiner Cross-loading:
(Safe loads on system)
 $0^\circ < \alpha < 60^\circ \rightarrow$ OK
 $60^\circ < \alpha < 90^\circ \rightarrow$ Up to 280 kg
 $90^\circ < \alpha < 120^\circ \rightarrow$ Up to 140 kg
 $\alpha > 120^\circ \rightarrow$ DANGER



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Rigging and Equipment

6.1

Safety Factors

Software = 8 Hardware = 5

Software

(Also Cord and Rescue Rope)

Tape MBL = 2000 kg SWL = 250 kg

Hardware

| | | | | |
|----------------|-----|---------|-----|--------|
| General | MBL | 2000 kg | SWL | 400 kg |
| Ascenders | MBL | 600 kg | SWL | 120 kg |
| X-loaded krabs | MBL | 600 kg | SWL | 120 kg |

Prusik Loops

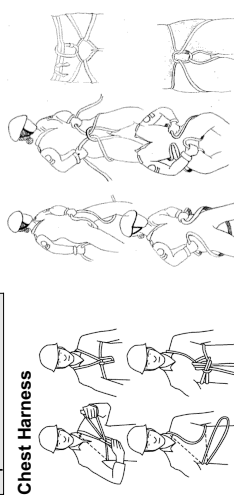
(Minimum Requirements)

Personal use 6 mm
Rescue load 8 mm
Minimum Cord Diameter 3mm less than rope

Improvised Harnesses

Chest Harness

Sit Harness

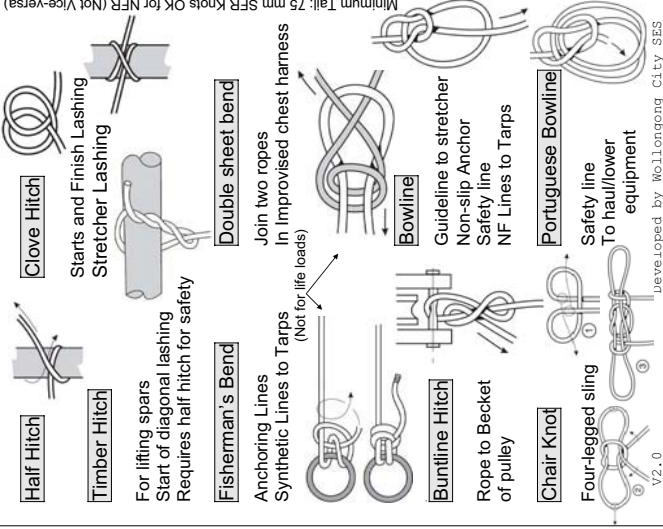


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Knots – Natural Fibre Rope

5.3

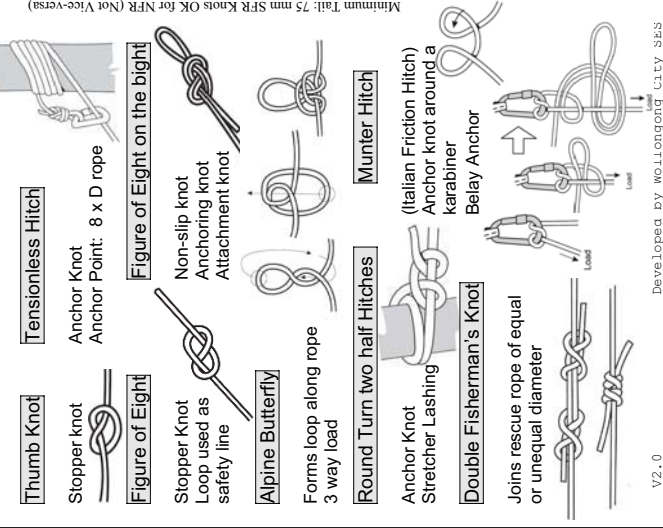


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Knots – Synthetic Fibre Rope

5.4

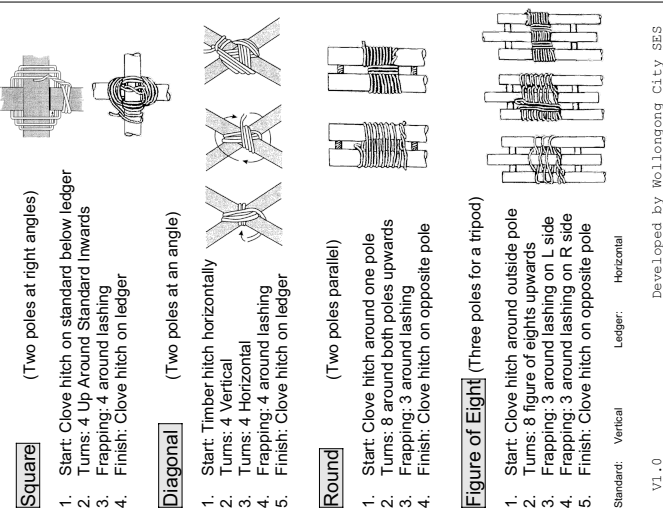


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Lashings

5.5



V1.0

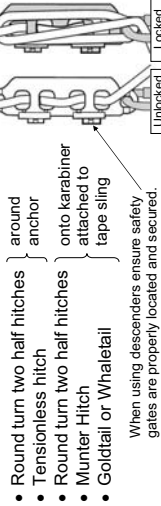
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Anchor – General

6.2

- Anchors can be natural, improvised or constructed.
- Simplest and quickest improvised anchor is to use a vehicle.
- Try to use chassis, avoid towbar and bullbar.
- If using trees as anchors protect the trunk to prevent ring barking.

Adjustable Anchor Attachments



Anchor Safety

ALWAYS

- Ask another team member to check your system before using it.
- Look for the strongest possible anchor.
- Try to select anchors that will be as low as possible and in line with the direction of pull.
- Protect ropes and slings from abrasion and damage.
- Ensure that the gate of the anchor karabiner is closed, locked and orientated downwards and outwards if possible.

Tape slings

- Should be as short as possible, double or quad if necessary.

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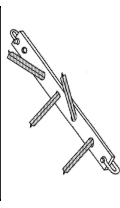
Anchor – Constructed

6.4

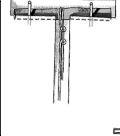
Picket Holdfast

- **Placement**
 - 90 deg to line of pull (away from the load)
 - 2/3 of length in the ground
 - At least 750 mm apart
- **Picket Lashing:**
 - Lash using 12mm NFR
 - Lash at 90 deg to pickets
 - Start: Clove hitch at head
 - 4 turns higher at head
 - frapping turns
 - Finish: Clove hitch
- **Loading:**
 - Loads up to 2 tonnes
 - 1.5m x 25mm mild steel picket = 350 kg

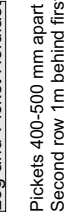
Ground Plate Holdfast



Buried Holdfast



Log-and-Picket Holdfast



Pickets 400-500 mm apart
Second row 1m behind first

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Highlines & Cableways

Tensioning the Spanline

- Always tension the spanline when it is loaded with the maximum load it will handle.

$$\text{Max. number of haulers to tension the spanline} \leq \frac{\text{Max. Load} / 10}{\text{Spanline SWL} / 50}$$

Assume 1 Hauler can:

Haul and Hold 50 kg

Tensioning Criteria:

- Maximum Tension - up to rope SWL or
- Minimum Sag - at least 5% sag (@ 5% sag, tension = 5 x Load)

Tension on Rope for 5% Sag:

$$T_{5\%} = \frac{W \times L}{4 \times S}$$

T = Tension, kg
W = Load, kg
L = Span, m
S = Sag, m

Example

| Load (kg) | Span (m) | Sag (m) | Tension (kg) |
|-----------|----------|---------|--------------|
| 16 | 5.0 | 0.5 | 160 |
| 18 | 5.0 | 0.6 | 180 |
| 20 | 5.0 | 0.7 | 200 |
| 22 | 5.0 | 0.8 | 220 |
| 24 | 5.0 | 0.9 | 240 |
| 26 | 5.0 | 1.0 | 260 |
| 28 | 5.0 | 1.1 | 280 |
| 30 | 5.0 | 1.2 | 300 |
| 32 | 5.0 | 1.3 | 320 |
| 34 | 5.0 | 1.4 | 340 |
| 36 | 5.0 | 1.5 | 360 |
| 38 | 5.0 | 1.6 | 380 |
| 40 | 5.0 | 1.7 | 400 |

Cableways

- Use a 3:1 Z-Rig to tension.
- Use a releasable safety.

To 3:1 Z-Rig with releasable safety

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V2.0

Mechanical Advantage

2 to 1



3 to 1



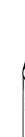
3 to 1



4 to 1



5 to 1



6 to 1



Z - Rig Hauling



Z - Rig Lowering



Assume 1 Hauler can:

- Haul and Hold 50 kg
- Continuously Haul 20 kg

V2.0

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Rescue Frames (3)

Tripod & Larkin Frame

SRTE Standard Tripod Access to shafts or Pits

- SWL 350kg Weight: 26kg
- Max Height 3.0m Max Leg Spread 2.6m

Tripod Safety

- Assemble away from edge.
- Adjust individual leg height to suit terrain.
- Ensure anti-slip system is in place.
- If Possible, bolt or peg feet for stability.
- Ensure direction of haul is in line with a leg.

Edge management system

- SWL 400kg Weight: 40kg
- Reach out from edge: Full size - 2.5m Half size - 1.2m
- Fails safe (Moves away from Edge).

Larkin Frame Safety

- Joining pins to point down with the balls on the inside of the frame.
- Ensure the hinge pipe is at right angles to the rear guy.
- Secure the feet to avoid rotation or movement:
 - Drill two small holes into the rock to seat the feet rock spikes, or
 - Tie the foot with redirect pulley forward to a solid object, or
 - Rig a counter balance weight (bag full of rocks) over the edge back to the foot with the redirect pulley, or
 - In soft ground use soft ground feet and secure with pickets.
- (Only the side with the redirect pulley needs securing).

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Rescue Frames (1)

Jib

(Lower or raise casualties from structure)

- Lower or raise casualties from structure
- 1 m horizontal projection
- Pulley lashed 300 mm from end
- Lashing using rope or tape
- Casualty out feet first

Common Features of Rescue Frames:

- Lashing: 12 mm NF
- Guy: 16 mm NF or 11mm SR
- Top: clove hitch (if halving a rope) or round turn 2 half hitches.
- Bottom: round turn 2 half hitches.
- Distance to Frame: 2 x Height.
- Sling: Lashing protected, as short as possible.
- Redirect loadline at the base.

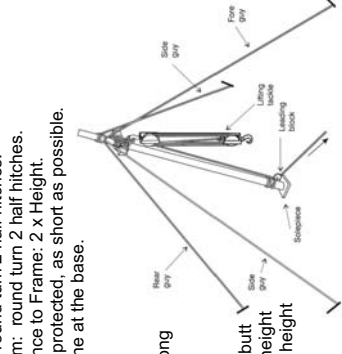
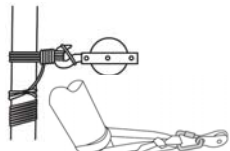
Standing Derrick

- Head: 500 mm long 500mm from top
- Lashing: Square
- Guy Anchors: 4
- Shallow hole for butt
- Max luff < 1/3 x height
- Initial luff < 1/5 x height

V2.1

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8.1



8.2

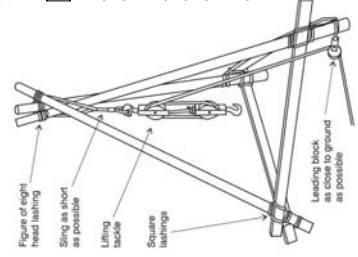
Rescue Frames (2)

A' Frame

- Lashing: Round
- Guy Anchors: 2
- Fore guy to rear pole
- Rear guy to front pole
- Butt Distance = 1/3 height of pole
- Secure poles (tape, rope, timber)
- Max luff < 1/3 x height
- Initial luff < 1/5 x height

Tripod

- Lashing: Figure of eight
- Butt Distance = 1/2 height
- Lashing 1m from head
- Reverse centre pole
- Cross outer poles under middle pole
- Secure poles (tape, rope, timber)

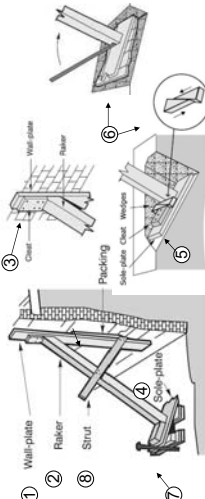


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Shoring (1) – Raking Shore

Raking Shore



Prevents Vertical Wall from Falling

- Install Wall-Plate. Pack behind it if required.
- Position Raker. 30° at the head and 60° at the foot.
- Nail a Cleat where it meets the Raker.
- Position the Sole-Plate at right angles to the Raker. Excavate or build up as required.
- Nail a Cleat to the Sole-Plate. Leave 50mm for wedges.
- Tighten Raker using the wedges. Or cut a recess and use a lever.
- Secure the end of the Wall-Plate with a stake or spike.
- Fix Strut to Raker and Wall-Plate.

Recommended Sizes

| Max Height (m) | Raker (mm) | Wall-Plate (mm) | Sole-Plate (mm) | Strut (mm) |
|----------------|------------|-----------------|-----------------|------------|
| 4.5 | 100 x 100 | 240 x 50 | 240 x 75 | 100 x 50 |
| 6.0 | 125 x 125 | 240 x 75 | 240 x 75 | 100 x 50 |
| 7.5 | 150 x 150 | 240 x 75 | 240 x 75 | 150 x 100 |

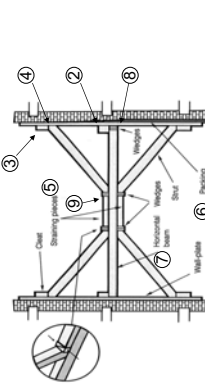
V1.0

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Shoring (2) – Flying Shore

Flying Shore

Braces damaged wall against sound wall



- Set job the out on the ground first.
- Nail Cleats for horizontal beam to Wall-plates. Allow space for wedges.
- Nail Cleats for Struts to Wall-plate.
- Set the Struts at 45° to horizontal beam.
- Measure the length of the Straining Pieces. Allow space for Wedges.
- Hold the Wall-plates in position and pack behind them if required.
- Place the Horizontal beam with Straining pieces on centre Cleats.
- Tighten Wedges between the shore and the Wall-plate.
- Place struts in position and tighten Wedges.

Recommended Sizes

| Max Height (m) | Horizontal Beam (mm) | Wall-Plate (mm) | Strut (mm) |
|----------------|----------------------|-----------------|------------|
| 3.0 | 150 x 100 | 175 x 50 | 100 x 100 |
| 4.5 | 150 x 150 | 175 x 50 | 100 x 100 |
| 6.0 | 150 x 150 | 240 x 50 | 100 x 100 |

Maximum Span Distance: 7.5m
Recommended intervals: 2.5 to 3.5

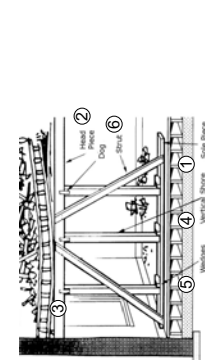
V1.0

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Shoring (3) – Dead Shore

Dead Shore

Carries vertical load of wall or floor

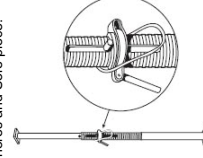


- Lay Sole-piece in position on a solid foundation.
- Hold the Head-piece in position.
- Cut ends of Vertical Shores square.
- Place the Vertical Shores upright between the Sole and Head-piece. Shorter length = Greater load-carrying capacity.
- Secure the Vertical shores with Wedges between the Shores and the Sole-piece. Tighten wedges simultaneously. Don't drive wedges too tightly to avoid a lifting effect.
- Nail Struts diagonally to Head-piece, Vertical Shores and Sole-piece.

Acrow Props

Vertical, Horizontal or Diagonal Position

- Secure Wooden Base Plates if required.
- Set up level in position
- Locate centrally under load and support (Load square to the base and head)
- Use the screw to expand it



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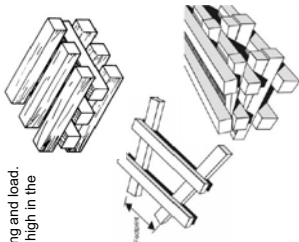
Shoring (4) – Crib Shore

9.4

Crib Shore

Supports load from below

- Do not place hands between cribbing and load.
- Do not stack blocks more than two high in the same direction.
- Maximum Height: 3 x footprint.**
- Overlap corners by width of timber.



Angled Cribbing:

- Maximum Height: 1 x footprint

Recommended Sizes

| Cribb | Timber (mm) | Supported Weight |
|-------|-------------|------------------|
| 2 x 2 | 100 x 100 | 12 t |
| 3 x 3 | 100 x 100 | 24 t |
| 2 x 2 | 150 x 150 | 30 t |
| 3 x 3 | 150 x 150 | 60 t |
| 8 x 8 | 150 x 150 | 576 t |

Softwood vs. Hardwood

- Softwood is lighter than hardwood.
- Softwood gives advanced warning of material failure.
- Hardwood is stronger.

Tunneling

Connects existing voids

- To be used as a last resort.
- From the lowest possible level.
- All rescuers must wear lifelines.

Signals:

One Pull – Stop/OK
Two Pulls – Advance
Three Pulls – Retreat/Come out
Continuous Pull – Distress

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Pumps

11.1

Water Volume

$$V = L \times B \times H$$

Pump Capacity

$$1\text{m}^3 = 1000 \text{ L} = 1000 \text{ kg of water}$$

Maximum pump head capacity: maximum vertical distance between the pump and the water outflow point.

Centrifugal Surface Pumps

- Pump is isolated from the fluid.
- Restricted portability and toxic fumes from power sources.
- Move a large volume of water in a short period of time.
- Pump must be primed prior to pumping.



Submersible Pumps

- Pump is located within the fluid.
- Restricted size and power sources.
- Good to use inside buildings.
- Level switch provides automatic cut-out when the water reaches a minimum level.
- Level switch must be free-floating in the water for the pump to operate.
- Be aware of lead placement if electrically powered.



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Chainsaw – 1 of 2

10.1

Chainsaw PPE

- Helmet
- Overalls
- Visor
- Safety Glasses
- Ear muffs/protection
- Chaps
- Gloves (optional)

Chainsaw Safety

Transporting:

- Engage the brake when moving short distances.
- Stop the chainsaw for longer distances.

Cutting:

- Use two hands when cutting.
- Cut uphill or to the side of the target.
- Do not stand in front of the saw when cutting.

Refueling:

- Stop the engine before refueling.
- Do not start the saw at the place of refueling.

Pre-start checks

- Visual inspection - Clean machine.
- Chain Oil and fuel levels correct.
- Chain brake operates.
- Throttle trigger and STOP button works.
- Chain bar mounted correctly.
- Chain tensioned correctly.
- Chain Sharp.
- Guide bar in good condition.
- Chain catcher in good condition.

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Chainsaw – 2 of 2

10.2

Post start check

- Chain lubrication.
- Working chain brake.

Kickback

Can occur when:

- The upper quadrant of the bar is used to cut or
- The chain at the nose of the guide bar is pinched during cutting.

To prevent it:

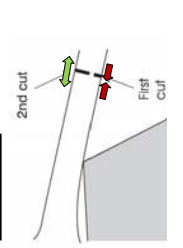
- Do not cut with the bar nose.
- Be aware of the location of the guide bar nose at all times.
- Cut at high engine speed.
- Do not cut above shoulder height.

Bind Relationships (Tension and Compression)

Top Bind



Bottom Bind



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Chainsaw Kits – Contents

10.3

Chainsaw Box Contents

- Chainsaw + Bar cover
- Miniboss + Bar cover
- Spare bars
- Spare chains

Fuel Mix Ratio

33 : 1

OR

1.0 L : 30 mL

4.85 L : 150 mL (5.0 L mix)

5.8 L : 180 mL (6.0 L mix)

Tool Kit Contents

- Combination Tool
- File guide + file + handle
- (1 x 3/16", 1 x 5/32")
- Sharpened the chain
- Started the chainsaw
- (3 x 3/16", 3 x 5/32")
- Replaced the bar cover
- Topped up fuel and oil
- Checked the tool kit roll
- Cleaning Brush
- Tree Spike / mini vice
- Checked the chainsaw box
- Cable tied the box

Maintenance Check List

Have You?...

- Cleaned the chainsaw
- Sharpened the chain
- Started the chainsaw
- Replaced the bar cover
- Topped up fuel and oil
- Checked the tool kit roll
- Checked the chainsaw box
- Cable tied the box

IF THE KIT IS INCOMPLETE TAG IT WITH A
WARNING TAG AND TELL YOUR TEAM LEADER

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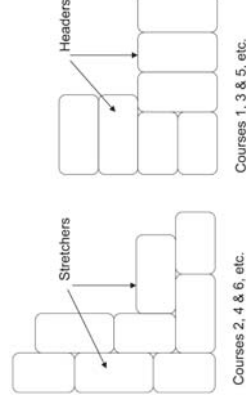
Sandbagging – 2 of 2

11.4

Laying bags

- A tamped sandbag is about 150mm high, 250mm wide and 500mm long.
- A standard sandbag, properly filled, weighs around 18 kilograms.
- Sandbags should be 1/2 to 2/3 full.
- Lay the bags in horizontal courses of headers and stretchers.
- Start and finish the wall with headers.
- Slagger joints in adjacent courses.
- Do not place necks or side seams on the outer face of the wall
- Tie the necks for transport only. Untie and flatten the necks under the next sandbag
- After each bag is laid, beat it into shape with a pick handle or similar.

Laying a Corner



V1.0

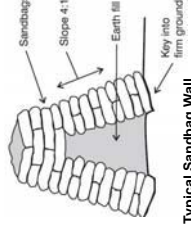
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Sandbagging – 1 of 2

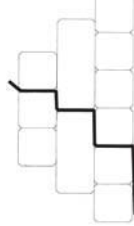
11.3

Safety

- Use proper techniques when lifting and carrying sandbags.
- Sand becomes heavier when wet.
- Wear work gloves and avoid contact with eyes and mouth.
- Use rubber gloves if in contact with storm water.



Typical Sandbag Wall



Waterproofing a Sandbag Wall

- The face must be sloped, with the base set on firm ground.
- The ratio of height to width must be 4:1.
- The maximum height is 1.5m.
- Key into the ground one sandbag deep and two wide.
- Thread plastic sheeting through the layers, not on the outside wall.

Planning considerations

- A wall 1m high by 10m long requires six rows above ground and one below and takes about 1200 sandbags.
- 1 metric tonne of sand fills about 50 sandbags (2/3 full).
- Four people take one hour to fill by hand and lay about 60 sandbags.
- The general public can help to fill and lay sandbags. They must be briefed, supervised and equipped with PPE (ie: gloves).
- For large-scale operations, use a sandbagging machine.

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Beaufort Wind Scale

11.2

| Title | km/h (knots) | On Land | Description | At Sea |
|-------|-----------------|------------|---|---|
| 0 | Calm | 0 | Smoke rises vertically | Sea like a mirror. |
| 1 | Light Air | 1 - 6 | Wind felt on face. Leaves rustle. | Ripples without crests. |
| 2 | Light Breeze | 7 - 11 | Wind felt on face. Leaves rustle. Flaps flap. | Small wavelets. Crests of glassy appearance, not breaking. |
| 3 | Gentle Breeze | 12 - 19 | Leaves and small twigs in constant motion. Flags begin to break; scattered whitecaps. | Large wavelets. Crests begin to break; scattered whitecaps. |
| 4 | Moderate Breeze | 20 - 29 | Raises dust and loose paper. Small branches are moved. | Small waves. |
| 5 | Fresh Breeze | 30 - 39 | Small trees in leaf begin to sway. | Moderate longer waves. Some foam and spray. |
| 6 | Strong Breeze | 40 - 50 | Large branches in motion. Wires whistle. Umbrellas used with difficulty. | Large waves with foam crests and some spray. |
| 7 | Near Gale | 51 - 62 | Whole trees in motion. Effort needed to walk against wind. | Sea heaps up and foam begins to streak. |
| 8 | Gale | 63 - 75 | Twigs break off trees. Progress generally impeded. | Moderately high waves with breaking crests forming spindrift. Streaks of foam. |
| 9 | Strong Gale | 76 - 87 | Slight structural damage. | High waves. With dense foam. Wave crests start to roll over. Considerable spray. |
| 10 | Storm | 88 - 102 | Seldom experienced inland. Trees uprooted. Considerable structural damage. | Very high waves. The sea surface is white and there is considerable tumbling. Visibility is reduced. |
| 11 | Violent Storm | 103 - 117 | Widespread structural damage. | Exceptionally high waves. Huge waves. Air is filled with foam and spray. Sea completely white with driving spray. Visibility greatly reduced. |
| 12+ | Hurricane | 118+ (64+) | Considerable and widespread damage to structures. | |

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Sandbagging Machine

11.5

General Specifications

- Fills a variety of sizes of bags.
- Fast filling, 6 seconds per 15kg bag based on river sand.
- Generator powered for remote use.
- Do not tow while loaded.**
- Power supply - 240V, 10 amp.
- Bagged materials include potting media, sand, gravel, stones, woodchip, scoria, stock feed etc.

Operation

- Manual control** - foot pedal operates the feeder chute.
- Automatic control** - set the electric timer, depress the foot pedal control and feeder will cut out at the selected time. It will not operate until the pedal is depressed again.

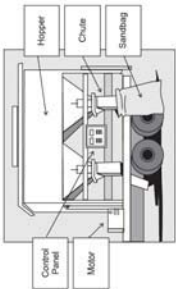
Single Hopper unit

- Hopper capacity - 1.15 cubic metre.
- Dimensions - 2.6m H x 1.8m W x 1.2m D.

Dual Hopper Unit

- Hopper capacity - 1.36 m³ per hopper.
- Dimensions - 2.6m H x 2.4m W x 1.2m D.
- Each hopper has individual controls.

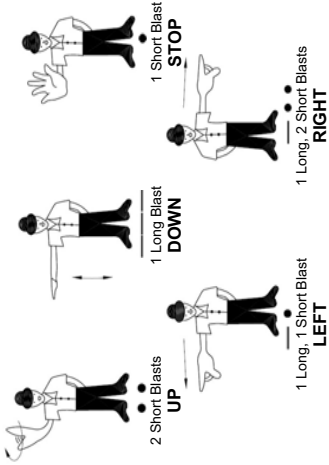
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EWPs – 2 of 2

11.9

Hand and Whistle Signals



Estimating the Weight of a Tree

THIS SECTION IS UNDER DEVELOPMENT

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Nail Guns – Safety and Preparation

11.6

Pre-Operation Checks

- Tool is clean and there are no visual signs of damage.
- Lanyard is securely attached.
- Pressure foot is operational.
- The follower is sliding freely.

PPE

- The operator and anyone near the gun must always wear eye and ear protection.

Always Work...

- At least 5m away from other people.
- In a secure position to control the recoil effect.
- In a ventilated area away from flammable materials.
- With a lanyard attachment from the tool to your harness when at heights.

Never

- Carry the tool with the trigger depressed.
- Point the nose at yourself or others and keep hands clear of nose piece at all times.
- Depress the pressure foot with your hand.
- Assume the tool is empty.



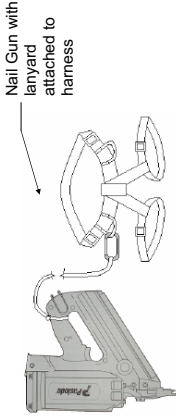
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Nail Guns – Operation

11.7

Operation

- Load the battery first.
- Load the fuel cell. Remember to check the expiration date.
- Load the Fasteners (Nails) last. DO NOT depress the trigger while loading fasteners.
- Do a test fire on a suitable piece of wood on the ground prior to commencing operation.



Work Surface Suitability

- The area below the work surface must be clear of people.
- Use only on timber free from dust or metal shards.
- Do not nail at the end of timber pieces or on defects in the timber.
- Consider using a hammer if the work surface is no suitable.

After Use

- Remove the fuel cell and the battery from the tool.
- Ensure the fuel cell has sealed properly and is not leaking.
- Clean and dry tool with a soft cloth.
- Check the tension of all nuts and bolts.

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EWPs – 1 of 2

11.8

EWPs = Elevated Work Platform

Considerations when ordering EWPs

- Potential load weights and reach distances.
- Access to the area.
- Road condition and width.
- Safety of the team, the public and vehicles.
- Overhead clearance, including power lines near the site.
- Slope.
- Ability to manoeuvre around the site.
- Clearing activities to take place before the EWP is set up.

Uses of EWPs

- Remove branches from high trees using handsaws or chainsaws.
- Access roofs without placing extra weight on the structure that can cause further damage and compromise operator safety.
- Survey damage from heights.
- Gain a height advantage where a ladder is impractical or dangerous.
- Fit tarpaulins to roofs where access is difficult or roof safety systems are difficult to establish.

Important

- Assign a single point of contact with the EWP or crane operator.
- The EWP or crane operator is always in charge of their equipment. Listen to their advice as they understand the limitations of the equipment.
- If working on a roof, attached to a EWP, tell the operator NOT to move the platform while anyone is working on the roof.

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Hazard Identification – Roof Job

12.3

- Is it an asbestos roof?
- Is the roof safe to work on?
- Is it safe to do the job in the current weather conditions?
- Is the area around the vehicle safe?
- Does equipment need to be accessed from the road?
- Will lighting be required?
- Will RSK anchors need to be constructed?
- Are there overhead hazards?
- Can the ladder be lashed?
- Can workers connect to safety lines on the ground?
- Will the roof be wet/slippery/uneven?
- Are there electrical cables exposed on the roof?
- Could there be sharps in the gutters?
- Is anyone standing in the path of falling objects?

THIS CHECKLIST DOES NOT REPLACE
A FORMAL RISK ASSESSMENT

V1.0

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Risk Management – Risk Matrix

12.2

| LIKELIHOOD | CONSEQUENCES | | | | |
|----------------|--------------|--------|-------|----------|-------|
| | Catastrophic | Severe | Major | Moderate | Minor |
| Almost Certain | H | H | H | H | M |
| Likely | H | H | H | M | M |
| Possible | H | H | M | M | L |
| Unlikely | H | M | M | L | L |
| Rare | M | M | L | L | L |

Risk Descriptors

Likelihood

Almost Certain – Expected in most circumstances
Likely – Expected occasionally (more than half the time)
Possible – Might be expected sometimes (less than half the time)
Unlikely – Only in unusual circumstances
Rare – Possible but not expected

Hierarchy of Controls

- Elimination
- Substitution
- Isolation
- Engineering
- Administration
- PPE

Consequences
Minor – No First Aid Treatment
Moderate – First Aid on the job
Major – Medical Treatment
Severe – Extensive Injuries
Catastrophic – Death

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Hazard Identification – Tree Job

- ☒ Is there roof damage? Refer to 12.3
- ☒ Is it safe to do the job in the current weather conditions?
- ☒ Are there power lines down?
- ☒ Is the area around the vehicle safe?
- ☒ Does equipment need to be accessed from the road?
- ☒ Will lighting be required?
- ☒ Does the tree need securing?
- ☒ Are there other services affected/at risk?
- ☒ Will a chainsaw be required?
- ☒ Will a polesaw be required?
- ☒ Are there overhead hazards?
- ☒ Is the chainsaw/polesaw operator competent and wearing correct PPE?
- ☒ Is the rest of the team wearing correct PPE?
- ☒ Is the size of the pieces cut safe to handle?

THIS CHECKLIST DOES NOT REPLACE
A FORMAL RISK ASSESSMENT

Flood Boat Safety

Minimum crew

- Two qualified people must be in the flood boat when in operation.
- The coxswain must have the kill switch lanyard attached to them at all times when the motor is running.
- Do not exceed the legal capacity of the boat unless it is an emergency where not acting may cause loss of life.

Flood Hazards

Flooded waterways

- Debris (trees, dead animals, building materials)
- Fences
- Sewerage
- Power lines
- Overhead lines
- Muddy water, bridges
- Sewage
- Submerged buildings
- Currents
- Vehicles
- Trees
- Uncharted and changing depths

Distress Calls

Mayday - Request for immediate assistance in an imminent, life-threatening emergency.

Pan Pan - Urgency message that indicates a boat or person is in trouble but not in immediate danger.

Power lines

| Capacity | Safe Working Distance |
|--------------|-----------------------|
| Up to 132 KV | 3 metres |
| Up to 330 KV | 6 metres |
| Over 330 KV | 8 metres |

Team Leader – Callout Procedure

Before Leaving LHQ

- Fill out vehicle list and hand over to OpCen* (*Ops Officer pigeon hole*).
- Procure Radios, Vehicle Phones and Batteries.
- Obtain vehicle folder and RFA Details from OpCen (*DO or TL*).
- Ensure vehicle is stocked and operational, check vehicle load.
- Notify SOs team is attending RFAs – Radio out (*Ring DO or page SOs*).

On the job

- Do a risk assessment and Take 5.
- Notify arrival on site – Radio Strip and estimated time#.

After each Job

- Fill out pink sheet.
- Notify departure from site – Radio completion and next job#.
- Ensure vehicle has enough fuel.

Returning to LHQ

- Notify SOs team has returned to LHQ – Radio in (*Ring DO or page SOs with team returned and No. of jobs complete*).
- Fill out Team Leader form and Injuries form (if required).
- Return radios, batteries and phone to charge.
- Return completed paperwork (include fuel receipts and white RFAs for jobs not completed) to OpCen (*Ops Officer pigeon hole*).
- Re-stock the vehicle.
- Write down unresolved vehicle issues on the vehicle board.

* If OpCen is not open, alternative procedure to follow is in brackets.

Only when OpCen is open.

DO = Duty Officer, **LHQ** = Local Headquarters, **OpCen** = Operations Centre,

RFA = Request for Assistance, **SOs** = Senior Officers, **TL** = Team Leader.

Radio Operations (1)

RSVP

Rhythm
Speed
Volume
Pitch

BASS

Brevity
Accuracy
Speed
Simplicity

KISS

Keep
It
Short and
Simple

Prowords

I SPELL - I will spell the following phonetically

FIGURES - Figures to follow.

LOCATION - What is your location?

MESSAGE - Message is to be written down.

OVER - When calling, an answer is required.

OUT - End of exchange, no answer is required.

ROGER (OR COPY) - Message understood.

SAY AGAIN - Repeat the message.

SITREP - What is your situation?

STANDBY - Please wait. I will call back. Others may transmit.

STANDBY UNLESS URGENT - Please wait. No other station to transmit unless urgent.

Radio Checks and Readability

Radio check. Ask for a radio check in your first transmission.

• Clear or (loud and clear)

• Readable

• Readable with noise

• Unreadable

"OVER AND OUT"



14.1

Radio Operations (2)

Phonetic Alphabet

A Alpha
B Bravo
C Charlie
D Delta
E Echo
F Foxtrot
G Golf
H Hotel
I India
J Juliet
K Kilo
L Lima
M Mike
N November
O Oscar
P Papa
Q Quebec
R Romeo
S Sierra
T Tango
U Uniform
V Victor
W Whisky
X X-ray
Y Yankee
Z Zulu

Simplex vs. Duplex

SIMPLEX →

• **Simplex** (Direct) sends signals directly from one radio to another.

• **Duplex** (Repeater) sends signals from radio to radio via a remote automatic relay device.

• When on a GRN channel reply before the tail finishes.

0 Zero

1 One (wun)

2 Two (too)

3 Three (thuh ree)

4 Four (for wer)

5 Five (f yiv)

6 Six

7 Seven (se ven)

8 Eight (ate)

9 Nine (niner)

Mobile Phones

• For private or confidential information.

• When there is no radio communications to the location.

• Avoid using whilst driving.

Pre-Launch Checklist

Boat

- ☒ Tie-downs/safety chains removed.
- ☒ Engine stand removed.
- ☒ Safety shackle loosened (but do not remove).
- ☒ Bungs in place and secure.
- ☒ Bow line attached to the front of the boat.
- ☒ Mooring lines prepared (if needed).

Trailer

- ☒ Light bar removed (if needed).
- ☒ Override latch for reversing engaged.

Motor

- (Prepare for starting) (Prepare for launch)
- ☒ Tank breather opened. ☒ Motor trimmed up.
 - ☒ Fuel lines connected. ☒ Key in ignition.
 - ☒ Fuel bulb primed. ☒ Kill switch lanyard fitted to the ON position.
 - ☒ Battery switched on.

Communications

- ☒ Radio check with base conducted.
- ☒ Departure report conducted (with task details, crew on board, est. return time, est. SITREP time, etc)

Pre-Departure Checklist

Boat

- ☒ All equipment stowed and/or tied down.
- ☒ Safety equipment complete and stowed correctly.
- ☒ Specialist job equipment (as required) on board.
- ☒ Boat tied down to trailer.
- ☒ Safety chains secure.
- ☒ Bungs on board.

Motor

- ☒ Ignition key and kill switch lanyard on board and in a secure place.
- ☒ Motor in the travel position (motor support fitted).
- ☒ Battery charged.
- ☒ Enough fuel and oil for the job (fuel mix ratio **50:1**).

Trailer

- ☒ Trailer coupling on tow bar, locked down fully, safety clip in place.
- ☒ Safety chains shackled and secured to towbar.
- ☒ Brake override latch open (if brakes are fitted).
- ☒ Handbrake off.
- ☒ Lights connected and tested.
- ☒ Jockey wheel stowed.
- ☒ Spare wheel and wheel changing kit carried.

Floodboat Safety Equipment

Compulsory Safety Equipment

- ☒ Anchor, chain and line
- ☒ Oars or paddles
- ☒ Bailing bucket and lanyard
- ☒ PFDs (type 1)
- ☒ Fire extinguisher
- ☒ Radio
- ☒ First aid kit
- ☒ Spare parts kit
- ☒ Waterproof Torch
- ☒ Navigation lights
- ☒ Tools
- (for night operations)

Recommended Safety Equipment

- ☒ Blankets
- ☒ Mooring lines
- ☒ Blunt-ended knife
- ☒ Signalling mirror
- ☒ Small bolt cutters
- ☒ Boat hook
- ☒ Throw bag/rope
- ☒ Bolt cutters
- ☒ Compass and/or GPS
- ☒ Flares or EPIRB
- ☒ 'V' sheet
- ☒ Maps and charts
- ☒ Water

Equipment for Special Jobs

- ☒ Basket stretcher
- ☒ Shade cloth
- ☒ Body recovery kit
- ☒ Tarpaulin

18.5

Post-Recovery Checklist

Boat

- ☒ Tie-downs/safety chains fitted.
- ☒ Engine stand fitted.
- ☒ Safety shackle and winch cable in place.
- ☒ Winch handle stowed.
- ☒ Bungs removed or scuppers opened.
- ☒ All ropes and equipment stowed and/or tied down.

Trailer

- ☒ Trailer coupling on tow bar, locked down fully, safety clip in place.
- ☒ Safety chains/shackles secured to towbar.
- ☒ Lights connected and tested.
- ☒ Brake override latch open (if brakes are fitted).

Motor

- ☒ Fuel tank breather closed.
- ☒ Fuel lines disconnected.
- ☒ Battery switched off.
- ☒ Motor in travel position (motor support fitted).
- ☒ Ignition key and kill switch lanyard on board and in a secure place.

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18.6

Navigation Markers

Port Hand Markers

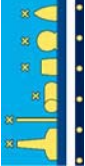


Keep **RED** on your **LEFT** when going upstream



Special Marks

- Coloured Yellow
- Yellow flashing lights
- Keep can shaped (port)
- Keep cone shaped (starboard) on your right going upstream.



Starboard Hand Markers



Keep **GREEN** on your **RIGHT** when going upstream



Isolated Danger

- White lights at night
- Pass any side

Navigation at Night



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18.7

Cardinal Markers

Cardinal Markers





West
Pass on Western side

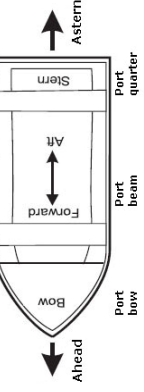


East
Pass on Eastern side



South
Pass on Southern side

Directional Terms



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19.1

Checklist – Personal Equipment for Storm and Flood callouts

Required

- ☒ Overalls
- ☒ Issued GP boots
- ☒ Helmet with chin strap
- ☒ Debris gloves
- ☒ Torch

Recommended

- ☒ Pocket knife
- ☒ Water bottle
- ☒ Snack food
- ☒ Backup torch
- ☒ Spare batteries & globe
- ☒ Roll of electrical tape
- ☒ Wet-weather gear
- ☒ Safety glasses
- ☒ Notebook and pen
- ☒ Ear Plugs
- ☒ Backpack to carry
- ☒ Chalk
- ☒ Sunscreen
- ☒ Whistle
- ☒ Re-sealable plastic bags
- ☒ Tinted Safety Glasses

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19.2

Checklist – Personal Equipment for Local Area Search callouts

Required

- ☒ Overalls
- ☒ Walking boots (not sneakers) or GP boots
- ☒ Torch (preferably head-mounted)
- ☒ Wet-weather gear
- ☒ Notebook and pen
- ☒ Water bottle (and water – minimum 1L)
- ☒ Snack food
- ☒ Whistle
- ☒ Lightweight safety glasses
- ☒ SES Wide-brimmed hat or baseball cap

Recommended

- ☒ Pocket knife
- ☒ Backup torch
- ☒ Spare batteries, globes
- ☒ Sunscreen
- ☒ Insect repellent
- ☒ Sunglasses
- ☒ Personal first aid kit
- ☒ Gaiters

Additional Information

- ☒ Ensure that the clothes worn under the overalls are suitable to the current weather conditions.

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19.4

Checklist – Personal Equipment for Bush Fire Support callouts

Required

- ☒ Overalls
- ☒ Issued GP boots
- ☒ Helmet with neck guard attached
- ☒ Debris gloves
- ☒ Torch
- ☒ Dust mask
- ☒ Sealing safety goggles (not glasses)
- ☒ Notebook and pen
- ☒ Water bottle

Recommended

- ☒ Pocket knife
- ☒ Snack food
- ☒ Backup torch
- ☒ Spare batteries & globe
- ☒ Sunscreen
- ☒ Tea towel or Triangular bandage for mouth/nose covering

Additional Information

- ☒ Wear only natural fibre clothing (i.e. cotton, wool) under the overalls – Do not wear synthetic materials unless they are fire retardant.
- ☒ Remove all jewellery that is in contact with the skin.

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20.1

4WD – Preparing to Drive

Human factors

- Attitude
- Driving responsible/safety
- Phobias/disabilities

Trip Planning

- Weather
- Maps and navigation aids (GPS)
- Food & water
- Reporting departure and estimated time of return
- Specific equipment to complete the job

Vehicle Readiness

- Under bonnet
- Under body
- External and operational check
- Internal check
- Vehicle accessories
- Recovery equipment
- Secure all loads

Recovery methods

- Snatch recovery
- Winch recovery
- High-lift jack and packing

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20.2

4WD – Driving Techniques

ALWAYS TAKE 5 BEFORE PROCEEDING

Driving on loose, rough or steep surfaces

- Select 4WD and the appropriate gear for hazard.
- Speed - appropriate to conditions.
- Tackle hazard as square on as possible.
- DON'T touch the clutch pedal whilst traversing steep terrain.
- Keep a steady pace and avoid wheel spin and slip.

Driving in water/mud

- Walk the intended route (Check the depth) prior to driving in.
- Select 4WD and the appropriate gear for the hazard.
- Once in the water/ mud, maintain momentum, DON'T stop.
- Create a bow wave.
- Remember to consider your entry and exit angles.
- Remove seat belts for deep flowing water.
- Dry brakes after exiting water/mud.

Driving in sand

- Drop tire pressures to 20psi for soft sand.
- Select 4WD and the appropriate gear for the hazard.
- Maintain momentum.
- Smooth progressive steering, no sharp turns.
- Smooth progressive throttle/brake control (no wheel spin or lock up's).
- If you get stuck, try reversing straight over the tracks you have just made, or rocking the vehicle backwards and forwards to try to regain traction.
- Never drive across a sand dune, always straight up and down.

20.3

4WD – Stall Recovery – 3 Methods

ALWAYS TAKE 5 BEFORE PROCEEDING

Steep descent - continue downhill

- Control the stall (DON'T touch the clutch pedal).
- Hold your foot firmly on the brake pedal.
- Turn the ignition off and then apply the handbrake.
- Select 1st gear using the clutch momentarily.
- Release the handbrake.
- Load the weight of the vehicle onto first gear by 'very slowly' easing your foot off the brake pedal.
- Start the Vehicle and drive down the slope. Apply the brakes to control descent.

Steep ascent - continue uphill

- Control the stall (DON'T touch the clutch pedal).
- Hold your foot firmly on the brake pedal.
- Turn the ignition off and then apply the handbrake.
- Select 1st gear using the clutch.
- Start the vehicle.
- Conduct a normal handbrake hill start.

Steep ascent - reverse downhill

- Control the stall (DON'T touch the clutch pedal).
- Hold your foot firmly on the brake pedal.
- Turn the ignition off and then apply the handbrake.
- Select reverse gear using the clutch momentarily.
- Release the handbrake.
- Load the weight of the vehicle onto Reverse gear by 'very slowly' easing your foot off the brake pedal.
- Once the vehicle is being held on the Reverse gear, start the engine.
- Slowly drive the vehicle back to a safe position.

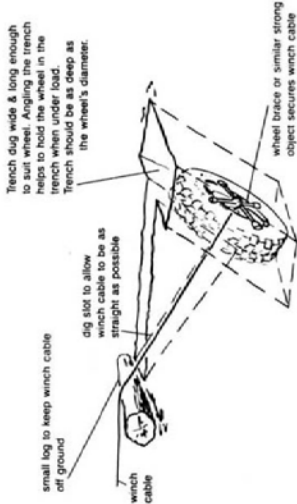
20.4

4WD – Vehicle Recovery

Recovery equipment

- D shackles, Bow shackles, (min 2)
- Winch extension strap
- Snatch block
- Tree protector
- Snatch strap
- High lift jack
- Tirthor or vehicle winch

Buried anchors – good sand recovery method

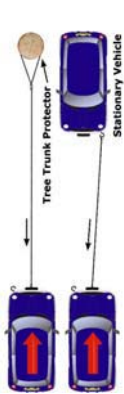


20.5

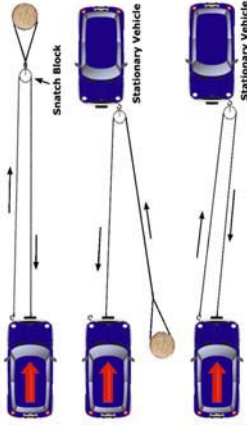
4WD – Winching Methods and MA

Single line pulls

Using tree and tree trunk protector and another vehicle



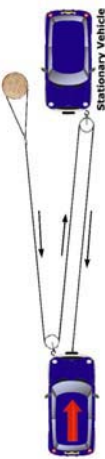
Single snatch block pulls giving a 2:1 pulling ratio



20.6

4WD – Winching Methods and MA

Double snatch block pulls giving a 3:1 pulling ratio



Snatch block used to assist lead vehicle



Joining Snatch straps

