



The purpose of this document is to demonstrate to the reader the safety of the facilities at Craufurdland Estate, known as Crate Staking, Tree Top Trials, referred to as TTT). This will be demonstrated through the use of a Safety Management System which utilises a logical process to, identify and manage the hazards identified.

## Safety Management System

### METHODOLOGY

The management System consists of five components .

#### DEFINE

The safety objectives for Treetop Trials are:

To minimise the injury to any person using, or in the vicinity of the activities, at any time, whilst allowing enjoyment of those participating in the activities.

#### ORGANISE

- Recruitment, training and organisation of appropriate staff
- Build, maintain, inspect, and monitor all parts of TTT courses
- Effectively purchase all appropriate PPE for staff, users and other parties involved in the operation of TTT
- Organise and assign safety related tasks and duties to appropriately competent staff.

#### IMPLEMENT

The process used here will follow the following steps.

- **Hazard Identification.** – including hazards to participants, staff, observers and passers-by, unauthorised users and malicious users. A Hazard is defined as something that can lead to an undesired outcome in the process of meeting an objective (safety objectives in this case)
- **Risk assessment-** of all identified hazards with consideration to the probability and consequences of the identified hazards, and assess against the Risk Matrix (below)

Probability	Scale	Occurrence
Frequent	5	Likelihood will happen
Less Frequent	4	Quite likely
Remote	3	Moderate chance
Very Remote	2	Unlikely to happen
Extremely Improbable	1	Very unlikely to happen

Consequence	Index	Occurrence
Catastrophic	5	Very Serious Injury or Fatality
Severe	4	Serious injury requiring Medical assistance
Hazardous	3	Injury significant enough to cease the activity
Major	2	Injury Minor- cuts and bruises
Minor	1	Insignificant- e.g. splinter

CONSEQUENCE		PROBABILITY				
		Extremely Improbable	Very Remote	Remote	Less Frequent	Frequent
		1	2	3	4	5
Minor	1	1	2	3	4	5
Major	2	2	4	6	8	10
Hazardous	3	3	6	9	12	15
Severe	4	4	8	12	16	20
Catastrophic	5	5	10	15	20	25

#### RISK ASSESSMENT MATRIX

Risk may be 'calculated' by using

$$R=C \times P$$

Green- Negligible Risk

Orange- Tolerable Risk

Red- Intolerable

- Risk Reduction-** As risk may be considered as the product of the probability of a hazard occurring and the consequence of that hazard, risk reduction measures should, address the reduction of probability of occurrence, consequence of occurrence or both. Hazards with a Intolerable Risk MUST be reduced, hazards with Tolerable Risk should be reduced (ALARP), and Negligible can be consider so low that they require no further actions but must continue to be monitored. Hazard's risk levels are assessed after risk reduction methods are applied and the Residual Risk level then estimated.
- Emergency Preparedness-** To be prepared to take the most appropriate actions and respond rapidly in the event that a significant hazard becomes reality in order to minimise its effects.

The results of this stage of the Safety Management System are shown below in the Hazard management matrix.

## MEASURE

The monitoring of risk levels, effectiveness of risk reduction methods, training and drills for emergency preparedness all are part of the measurement of the effectiveness of the Safety Management of the site.



## REVIEW

The review of the Safety Management System should include a review of all aspects, reviewing defined objectives, Organisational elements, all aspects of the Implement stage of the system (Hazard Identification, Risk Assessment, Risk Reduction and Emergency Preparedness), and system effectiveness measurement.

## HAZARD Management Matrix, including Risk Assessment

Haz ID	Hazard description	Probability	Consequence	Risk Assessment	Who might be affected	Emergency Preparedness or other control Measures	Residual Risk
Haz 1	<p>Falling to the ground, onto another person, onto another part of the course or another object due to:</p> <ul style="list-style-type: none"> <li>Deliberately removing equipment or unclipping from the safety system then slipping, jumping or falling, either unintentionally or intentionally</li> <li>Failure by Belaying participant or instructor</li> <li>Being attached on to the safety cable (system) incorrectly</li> <li>Failure of part of the activity infrastructure</li> <li>PPE failure, incorrect selection, use, fitting, etc</li> <li>Tree failure, falling over or onto the course, etc</li> <li>Slips and trips</li> </ul>	2- Very Remote	5- Catastrophic	10 Tolerable	Employees Course Users Contractors Onlookers Unauthorised users, Public	See Procedure below for Major Injury	Negligible

Haz 2	Falling objects • from the course onto the activity including crates	3- Remote	4 Severe	12 Tolerable	Employees Course Users Contractors Onlookers Unauthorised users, Public	See Procedure below for Major Injury	Negligible
Haz 3	Impact including: Course users swinging into something solid • On the course • At the landing (e.g. resulting in lower leg injury)	2 Very Remote	4 Severe	8 Tolerable	Employees Course Users Contractors Onlookers Unauthorised users, Public	See Procedure below for Major Injury	Negligible
Haz 4	Unsuitable PPE: Incorrect assessment of loadings including premature failing or malfunctioning of PPE	2 Very Remote	5 Catastrophic	10 Tolerable	Employees Course Users	See Procedure below for Major Injury	Negligible
Haz 5	Inadequate Supervision Incompetence Distracted attention of adult Distance between supervisor and children	4 Less Frequent	2 Major	8 Tolerable	Course Users	No Emergency Preparedness specific to this hazard	Negligible
Haz 6	Rowdy Groups	4 Less Frequent	2 Major	8 Tolerable	Course Users	No Emergency Preparedness specific to this hazard	Negligible
Haz 7	Unauthorised Users	3 Remote	5 Catastrophic	15 Intolerable	Unauthorised users	See Procedure below for Major Injury	Negligible

Haz 8	Extended exposure to suspension trauma	2 Very Remote	5 Catastrophic	10 Tolerable	Employees Course Users Contractors	See Procedure below for Person suspended from belay wire in harness	Negligible
Haz 9	Spectator injuries while watching due to slip, trip, fall or collision with elements, nature fauna etc	3 Remote	3 Hazardous	9 Tolerable	Employees Course Users Contractors Onlookers Unauthorised users, Public	See Procedure below for Major Injury	Negligible

## Risk Reduction Measures

The following Risk Reduction measures are implemented as part of the Safety Management System and are 'applied' to all relevant hazards identified above and the Residual Risk is the implied Risk level after consideration of all Risk Reduction measures listed below.

### Instructor based Belay System

**The Belay Safety System is set-up by the instructor, who will then operate the belay using the Gri Gri, or will closely monitor those using the belay.**

- Customers activity involved in the crate stack, are attached to the safety system at all times when off the ground
- Maximum weight of 19 stone / 120 kg due to load limits of course. Scales provided in Kit Box. Information provided to customers on booking confirmation documents, Risk Waiver and website.
- Anyone who is deemed to be under the influence of alcohol or drugs is not permitted access onto the course.
- Anyone who does not have the correct footwear (e.g. sandals) or clothing that may lead to a slip or a trip will not be allowed onto the course.
- Only trained and assessed instructors will be allowed to supervise the Crate Staking this is to ensure they can handle difficult groups when under pressure.

### Instructors and Management Training and Qualifications

- Instructors must be competent at working on the course. Site specific and/or ERCA Adventure Course Instructor Qualified. Familiar with Standard Operating Procedure for "Opening and Closing the Course". WAH regs. See note 1 below re Instructor Training
- Instructors trained in rescue procedures. WAH regs.
- Instructors trained in the correct fitting and inspection of PPE to ensure they are safe for course participants and they cannot fall out of the harness and the harness is in good order and will not break.
- Activities Manager must undergo a 1 day PPE inspection course so they are competent to inspect the relevant PPE.

### Activity inspections, set-up and checks

- Pre-use activity checks and routine visual inspections are carried out by instructor when opening up the activity to ensure the course is safe to use and no overnight damage has occurred. This includes checking of condition of the safety system and obstacles. WAH regs. EN(2).
- Periodic site operational checks (1-2 monthly) are carried out and recorded by the Activities Manager or a competent person appointed by the Activities Manager. The course check reports are regularly reviewed by the Estate Manager.

- Annual periodical inspection of the course, including the Tarzan Swing, ladder halos, all anchor points and points used for rescues, by a competent person / company (Type C, ISO 17020). A qualified inspector carries out this inspection, and a report is submitted. LOLER & PUWER regs. EN(2).
- Records of inspections and examinations, maintenance, testing and certificates of conformity are maintained. Daily Report and Monthly Course Inspection. WAH regs.
- Following high winds, snow and lightning the course must be checked thoroughly for any damage, initially from the ground and then on the activity, prior to opening the course to participants.

### **PPE provision and checks**

- Effective procurement and management system, using reputable suppliers to ensure all PPE is of the correct standard (CE marked, etc) and design and has correct information provided for use and is therefore safe and appropriate for its intended use. PPE regs.
- Advice on selection of correct PPE that is fit for purpose and use must be sought from industry experts and suppliers.
- All equipment must be / is used correctly as directed by manufacturers' guidelines. A copy of each new batch of PPE's manufacturing guidelines is to be kept on record.
- PPE compatibility policy (where more than 1 item of PPE is being worn); PPE compatibility policy (where more than 1 item of PPE is being worn) is to be checked by the an Activities Manager, who will consult with appropriate technical advisor, who has undertaken the 4 day PPE inspection course and who must seek advice from reputable suppliers on compatibility. This ensures that it is safe for two pieces of PPE to be used together in a system and applies fall arrest lanyards, etc. PPE regs
- PPE must be / is assembled correctly and correct procedures are included in instructor training
- Activities Manager must undergo a 1 day PPE inspection training course so they can identify problems with PPE. Activity Manager must then train their instructors in PPE inspection and the identification of likely problems. The PPE inspection poster is to be displayed within the Kit Box as a reminder.
- Daily recorded checks confirming all of the saferoller trolleys, K Hooks and Zip trolleys are operating correctly.
- All PPE must be checked for faults prior to first use (from the manufacturer) PPE regs.
- PPE inspections are carried out and recorded every two months by the Activities Manager or a trained person appointed by the Activities Manager. The equipment reports are regularly reviewed by the Estate Manager. Where PPE is thought to be defective it is placed in the quarantine box until examined by a qualified PPE inspector. Faulty PPE is returned to the supplier for repair or replaced. PPE regs.
- PPE is visually checked prior to and after each use by instructors. This includes harnesses and rescue equipment, which is inspected by a trained instructor to ensure it is safe to use. PPE regs. EN(2B).



- PPE is to be stored in a dry, clean area, away from any chemicals. PPE must be cleaned and dried as detailed in the manufacturers guidelines. PPE Policy. PPE regs.
- All PPE must be identifiable, documented and thoroughly examined annually by a competent and trained person who has attended an appropriate 4 day PPE course. PPE regs. (Note that an examination and inspection are different.)
- All PPE is documented and logged by the Activities Manager, including inspection and maintenance records. These records are checked periodically during the site audit by the Estate Manager. PPE regs.
- The Activities Manager must ensure that all instructors are trained in the correct fitting of PPE, its operation and its operating limits, inspection of the PPE and record the training on the individual staff "Training Record Sheet". PPE regs.
- PPE replacement is to follow manufacturers guidelines.
- A trained instructor must check all course participants' harnesses before they go onto the course to ensure they are correctly fitted.
- If a course user removes or adjusts their harness, they are instructed to inform a member of staff that their harness must be checked for correct fitting prior to the course user returning onto the course.
- Patrolling instructors carry out visual checks to ensure that PPE is still fitted correctly and has not slipped or moved so that it is unsafe.
- 2 styles of harness are used for the Continuous Belay Courses. Small Full Body Harnesses for those up to 40kg, Sit Harnesses for those over this weight
- Only PPE approved by the Activities Manager/ Estate Manager and/or in consultation with technical consultant is used on Tree top Trials course.
- Personal PPE must not be / is not used, (except in exceptional circumstances by a contractor – clearance for this is required from the Estate Manager.
- Helmets are worn by all persons on the course at all times This includes( but is not a definitive list); all participants, instructors, construction work, rescue training and when moving off the normal customer route to carry out inspections, maintenance and repairs (to mitigate a fall or objects falling onto the rescue participants and workers).
- Activities Manager must complete a 1 day PPE inspection training course so they can identify problems with PPE. Activities Manager must then train the instructors in PPE inspection and the identification of likely problems. The PPE inspection poster is displayed at all sites as a reminder.
- Builders and contractors using their own PPE are responsible for ensuring it is fit for use and ensure that there is no scope for a fall due to faulty or incorrect PPE. They must provide a written undertaking that their PPE and systems of use meet PPE and WAH requirements.
- Maillons on sit harnesses are tightened with a spanner so they cannot be undone by hand.
- A PPE quarantine system is in place at the Kit Box so PPE identified unfit for use on the course does not enter circulation.

- Builders and contractors PPE should be visually checked when being used on the course.

### **Damage to PPE**

- No smoking whilst wearing harnesses
- No use of chemicals near PPE
- Use of experienced and competent course designers
- Records of materials

### **Operation systems and controls of the activity**

- Instructors to use a system for clipping onto the safety system throughout the course that has a backup, so that a “junction” can be passed without completely unclipping. Therefore two lanyards must be used. Likewise in rescues there must always be a back up safety system.
- In lightning, high winds, heavy ice and snow, the course must be evacuated and closed.  
\*Emergency Evacuation Procedures.
- Whilst on the course, the use of mobile phones as telephones is not permitted as this can lead to distraction. Mobile phones can be used to take photographs but should be / are secured to the user to prevent them falling. Cameras should be / are also secured. Lanyards available. This is at the managers discretion.
- First aid supplies are available and there is a minimum of 1 First Aid qualified member of staff on duty each day.
- Emergency evacuation procedures are detailed in separate document, with details for each zone on the course and included in the training to ensure safe course evacuation should it be required

### **Trees**

- Prior to opening the course all trees that form part of the course have been inspected for stability and disease by a qualified arboriculture expert.
- All trees are to be inspected annually by an arboriculture expert and a written report of these inspections is to be kept.
- System for monitoring trees where a potential problem has been identified by the arboriculturalist, including a photographic record where necessary.
- Measures are taken to protect tree roots from compaction (e.g. using woodchip or fencing off).

### **Retainers and Lanyards**

- Information must be supplied to course users through the safety rules and advice and checked during the Safety Brief.
- All individual PPE, including pulleys, must be attached to the course user.
- Equipment used for moving customers must be attached at all times.

- All course trees should be visually checked daily, by the instructor opening the course, for loose and broken branches that may become dislodged and fall. Deadwood likely to fall onto the course should be removed so it does not fall onto course users.

#### **General Husbandry on and in vicinity of Course**

- The routes of all zone courses are monitored for obstructions and potential impalement points for normal use and those of a suspended user at all points of the courses, in particular those point of access
- 'Normal' and 'expected' routes for those observing and spectating on courses will be monitored by course staff to ensure no unnecessary potential injury sights exist on trees.
- Paths in vicinity of course and in areas of 'normal' and 'expected' will be monitored for areas of unnecessary trip hazard, or access difficulty, but are not paved in any manner.

#### **Control and Safety of Onlookers and Others**

- The course has throughout routes marked and exclusion zones formed using brightly coloured tapes/rope to exclude spectators for areas on the course where interaction with the course could lead to injury of onlooker or participant.
- All formal access points to the course are marked with a sign which reads "All non-participants accessing these woodland areas beware of uneven ground, trip hazards, and objects which they could collide (trees, logs, fences and other structures). Do not enter exclusion areas marked within these woods. This is for your Own Safety!!" See Appendix 1 for sign design and locations
- All staff and instructors will inform any non-participating to beware of the hazards which they might encounter and will actively guide any found within the exclusion areas.

Note 1: Instructors Training – Craufurdland Treetop Trials instructors must pass through a rigorous training and assessment programme before they can instruct on TTT. To be selected for training prospective instructors must demonstrate they have the requisite aptitude and experience. They then undergo training in safety instruction and procedures, operational limits on the use of the course, course inspections during daily course opening and closing, patrolling techniques, personal protective equipment, harness fitting and inspection, emergency operations, health and safety and customer management. Only instructors with the correct aptitude are selected for additional training in rope rescue techniques. Instructors are all First Aid trained. Craufurdland's training objectives and rescue procedures have been developed in conjunction with an external specialist technical advisor who holds ERCA accreditation for course Inspection, Training and Rescue Training. Assessment of rescue trained instructors is only carried out by externally trained and qualified persons, who have ERCA based qualifications for assessing Rescue Training.

## **EMERGENCY PREPAREDENESS**

The following types of emergency are considered to be those which could potentially be considered to be plausible on the Treetops Trials site and as such require specific instructions, process and policy.

- Major Injury

- The staff member (#1) who finds or is made aware of the injury must be first on scene, with first aid kit, and will administer first aid, only after relaying seriousness of injury to second member of staff (#2) via radio. If casualty is found by #1, then #2 should be radioed to bring first aid equipment as required, and a third member of staff contact emergency services..
- #2 will inform emergency services of situation immediately by calling 999. If free to do so #2 will proceed to the location of the casualty with phone and relay details of the injuries and condition of the casualty. If signal will not allow or any other reason a third member (#3) of staff is to be dispatched to the site of the casualty with a radio and will relay condition of casualty to #2 on phone to emergency services
- #1 to stay with casualty until external assistance arrives. They should call upon whatever assistance necessary
- Person suspended from belay wire in harness
  - The staff member (#1) who finds or is made aware of the incident must be first on scene, with first aid kit, and rescue kit. It is vital to establish the length of time the casualty has been suspended, as leg-loops may act as tourniquet.

**In a case that period of suspension trauma is:**

- known to be for more than 15 min (maximum),
- will exceed 15min before effective rescue could be reasonably expected to be completed, or
- is unknown,

**in all these cases, paramedic assistance will be required before taking off belay system and loosening harness.**

- Rescuer will administer first aid, only after relaying seriousness of injury to second member of staff (#2) via radio. If casualty is found by #1, then #2 should be radioed to bring first aid equipment and rescue equip as required, and a third member of staff contact emergency services if necessary (see above).
- Rescue may be attempted if condition of casualty allows and time of suspension trauma is known, and will be less than critical 15min to reach ground, **OR**

If time of suspension trauma is over the critical 15 min and the condition of casualty allows, the casualty should be lowered according to rescue methods to point above ground where suspension is maintained but that ground based medical staff may administer necessary medication to allow safe release from harness and suspension trauma.

- #1 to stay with casualty until external assistance arrives, or casualty have recovered to a point which they can be safely accompanied back to the Lairds Table. They should call upon whatever assistance.

- Course Evacuation
  - Course evacuation is required when weather, or other natural phenomena (e.g. fire) threaten the safe operation and participation of the Treetop Trails Courses.
  - Instructors should quickly access the number of participants on any part of a course and instruct in a firm and controlled manner the exit route which participants should take to descend the courses as quickly and safely as possible. DYNAMIC RISK ASSESSMENT must to be applied by instructors carrying out a course evacuation. Instructors as a minimum must consider:
    - The quickest route off the course may be the normal direction or to return to the access point.
    - Judgement regarding ability of individuals must be made of which direction might be quickest
    - Judgement of the speed with which obstacles may be tackled must be considered.
    - Evacuations should be controlled, and the overloading of obstacles and in particular ziplines NOT allowed through controlled movement of participants.
    - Judgement on whether a rescue lower, would be the quickest way to evacuate a participant may be considered, however the additional risk in placing the instructor on the course must be assessed.