

Tree Top Trials

Safety Management and Risk Assessment

**Updated
January 2024**

Safety Management System

HAZARD Management Matrix, including Risk Assessment

Risk Reduction Measures

1. Continuous Belay System
2. Instructors and Management Training and Qualifications
3. Course inspections and checks
4. PPE provision and checks
5. Prevention of Damage to PPE
6. Operation systems and controls of the course
7. Trees inspection and Monitoring
8. Retainers and Lanyards
9. Course design
10. Operating Procedures
11. Provision of Information
12. Access to the Course
13. General Husbandry on and in vicinity of Course
14. Control and Safety of Onlookers and Others
15. Dark operation Risk Reduction
16. Hazard specific Risk Reduction for Haz 13

Note 1: Instructors Training

EMERGENCY PREPAREDENESS

APPENDIX 1- Map of Access Point Warning Signs

APPENDIX 2- Additions to RISK ASSESSMENT following operational experience

APPENDIX 3- Additions to RISK ASSESSMENT for TTT in the Dark

The purpose of this document is to demonstrate to the reader the safety of the facilities at Craufurdland Estate, know as Tree top Trials. 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

		PROBABILITY				
CONSEQUENCE		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	Risk Reduction Actions	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"> Deliberately removing equipment or unclipping from the safety system then slipping, jumping or falling, either unintentionally or intentionally Being attached on to the safety cable (system) incorrectly Failure of part of the course infrastructure PPE failure, incorrect selection, use, fitting, etc Tree failure, falling over or onto the course, etc Slips and trips <p><i>This could happen whilst opening or closing the course, operating the course, participating on the course, carrying out inspections or carrying out a rescue.</i></p>	2- Very Remote	5- Catastrophic	10 Tolerable	<ul style="list-style-type: none"> Employees Course Users Contractors Onlookers Unauthorised users, Public 	See Procedure below for Major Injury	<ol style="list-style-type: none"> Continuous Belay System Instructors and Management Training and Qualifications Course inspections and checks PPE provision and checks Prevention of Damage to PPE Operation systems and controls of the course Trees inspection and Monitoring Retainers and Lanyards Operation systems and controls of the course Dark operation Risk Reduction 	Negligible

Haz 2	<p>Falling objects</p> <ul style="list-style-type: none"> • from the course • onto the course 	3 - Remote	4 Severe	12 Tolerable	<ul style="list-style-type: none"> • Employees • Course Users • Contractors • Onlookers • Unauthorised users, • Public 	See Procedure below for Major Injury	<ol style="list-style-type: none"> Instructors and Management Training and Qualifications Course inspections and checks PPE provision and checks Operation systems and controls of the course Trees inspection and Monitoring Retainers and Lanyards Operating Procedures Provision of Information General Husbandry on and in vicinity of Course Control and Safety of Onlookers and Others Dark operation Risk Reduction 	Negligible
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<p>Haz 3</p>	<p>Impact including: Course users swinging into something solid on the course At the landing (e.g. resulting in lower leg injury) Being struck by parts of the course Collision on Zip Wires At Zip landing</p>	<p>2 Very Remote</p>	<p>4 Severe</p>	<p>8 Tolerable</p>	<ul style="list-style-type: none"> • Employees • Course Users • Contractors • Onlookers • Unauthorised users, • Public 	<p>See Procedure below for Major Injury</p>	<ol style="list-style-type: none"> 1. Continuous Belay System 2. Instructors and Management Training and Qualifications 3. Course inspections and checks 4. PPE provision and checks 6. Operation systems and controls of the course 7. Trees inspection and Monitoring 8. Retainers and Lanyards 9. Course design 10. Operating Procedures 11. Provision of Information 15. Dark operation Risk Reduction 	<p>Negligible</p>
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Haz 4	Head impact on metal brackets at junctions or elsewhere on course	4 Frequent	2 Major	8 Tolerable	<ul style="list-style-type: none"> • Employees • Course Users • Contractors 	<p>Severity of Injury would require First Aid on ground on course or back at Kit Box/ Activity Centre Reception</p>	<ol style="list-style-type: none"> 1. Continuous Belay System 2. Instructors and Management Training and Qualifications 4. PPE provision and checks 5. Prevention of Damage to PPE 6. Operation systems and controls of the course 9. Course design 10. Operating Procedures 15. Dark operation Risk Reduction 	Negligible
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Haz 5	Entanglement in ropes nets, cables or chains and body parts trapped in moving parts of the course Zip wire	3 Remote	3 Hazardous	9 Tolerable	<ul style="list-style-type: none"> • Employees • Course Users • Contractors • Unauthorised users 	See Procedure below for Major Injury	<ol style="list-style-type: none"> 1. Continuous Belay System 2. Instructors and Management Training and Qualifications 3. Course inspections and checks 4. PPE provision and checks 6. Operation systems and controls of the course 9. Course design 10. Operating Procedures 11. Provision of Information 15. Dark operation Risk Reduction 	Negligible
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Haz 6	Unsuitable PPE: Incorrect assessment of loadings including premature failing or malfunctioning of PPE	2 Very Remote	5 Catastrophic	10 Tolerable	<ul style="list-style-type: none"> • Employees • Course Users 	See Procedure below for Major Injury	<ol style="list-style-type: none"> 1. Continuous Belay System 2. Instructors and Management Training and Qualifications 3. Course inspections and checks 4. PPE provision and checks 5. Prevention of Damage to PPE 7. Trees inspection and Monitoring 8. Retainers and Lanyards 9. Course design 	Negligible
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Haz 7	<p>Inadequate Supervision Incompetence Children rushing ahead Distracted attention of adult Distance between supervisor and children Inadequate patrolling</p>	4 Less Frequent	2 Major	8 Tolerable	<ul style="list-style-type: none"> • Course Users 	<p>No Emergency Preparedness specific to this hazard</p>	<ol style="list-style-type: none"> 1. Continuous Belay System 2. Instructors and Management Training and Qualifications 6. Operation systems and controls of the course 8. Retainers and Lanyards 10. Operating Procedures 11. Provision of Information 14. Control and Safety of Onlookers and Others 	Negligible
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Haz 8	Rowdy Groups	4 Less Frequent	2 Major	8 Tolerable	<ul style="list-style-type: none"> • Course Users 	No Emergency Preparedness specific to this hazard	<ol style="list-style-type: none"> 1. Continuous Belay System 2. Instructors and Management Training and Qualifications 6. Operation systems and controls of the course 8. Retainers and Lanyards 10. Operating Procedures 11. Provision of Information 14. Control and Safety of Onlookers and Others 	Negligible
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Haz 9	Unauthorised Users	3 Remote	5 Catastrophic	15 Intolerable	<ul style="list-style-type: none"> Unauthorised users 	See Procedure below for Major Injury	<ol style="list-style-type: none"> Continuous Belay System Instructors and Management Training and Qualifications Course inspections and checks Operation systems and controls of the course Trees inspection and Monitoring Course design Operating Procedures Provision of Information Access to the Course General Husbandry on and in vicinity of Course Control and Safety of Onlookers and Others 	Negligible
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<p>Haz 10</p>	<p>Impalement on object on course or vicinity of course, e.g. tree branch</p>	<p>2 Very Remote</p>	<p>3 Hazardous</p>	<p>6 Tolerable</p>	<ul style="list-style-type: none"> • Employees • Course Users • Contractors • Onlookers • Unauthorised users • Public 	<p>See Procedure below for Major Injury</p>	<ol style="list-style-type: none"> 2. Instructors and Management Training and Qualifications 3. Course inspections and checks 6. Operation systems and controls of the course 7. Trees inspection and Monitoring 8. Retainers and Lanyards 9. Course design 12. Access to the Course 13. General Husbandry on and in vicinity of Course 14. Control and Safety of Onlookers and Others 15. Dark operation Risk Reduction 	<p>Negligible</p>
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Haz 11	Extended exposure to suspension trauma	2 Very Remote	5 Catastrophic	10 Tolerable	<ul style="list-style-type: none"> • Employees • Course Users • Contractors 	See Procedure below for Person suspended from belay wire in harness	<ol style="list-style-type: none"> 1. Continuous Belay System 2. Instructors and Management Training and Qualifications 5. Prevention of Damage to PPE 6. Operation systems and controls of the course 8. Retainers and Lanyards 9. Course design 10. Operating Procedures 11. Provision of Information 15. Dark operation Risk Reduction 	Negligible
Haz 12	Spectator injuries while watching due to slip, trip, fall or collision with elements, nature fauna etc	3 Remote	3 Hazardous	9 Tolerable	<ul style="list-style-type: none"> • Employees • Course Users • Contractors • Onlookers • Unauthorised users • Public 	See Procedure below for Major Injury	<ol style="list-style-type: none"> 9. Course design 10. Operating Procedures 11. Provision of Information 12. Access to the Course 13. General Husbandry on and in vicinity of Course 14. Control and Safety of Onlookers and Others 	Negligible

<p>Haz 13</p>	<p>Failure of participant to apply karabiner(s) when using acro-connect on belay system</p>	<p>3 Remote</p>	<p>3 Hazardous</p>	<p>9 Tolerable</p>	<ul style="list-style-type: none"> • Course Users 	<p>See Procedure for Person suspended from belay wire in harness</p>	<ol style="list-style-type: none"> 1. Continuous Belay System 2. Instructors and Management Training and Qualifications 6. Operation systems and controls of the course 8. Retainers and Lanyards 9. Course design 10. Operating Procedures 11. Provision of Information 15. Dark operation Risk Reduction 16. Hazard specific Risk Reduction for Haz 13 	<p>Negligible</p>
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Haz 14	Failure of participant land safely at landing zone of zipline	4 Less Frequent	3 Hazardous	12 Tolerable	<ul style="list-style-type: none"> • Course Users 	<p>Participant stranded on tree to tree zip. Use of rescue rope by instructor</p> <p>Injury at landing zone- First aid as per SOP</p>	<ol style="list-style-type: none"> 1. Continuous Belay System 2. Instructors and Management Training and Qualifications 6. Operation systems and controls of the course 8. Retainers and Lanyards 10. Operating Procedures 11. Provision of Information 15. Dark operation Risk Reduction 	Negligible
Haz 15	Instructor unable to see participant to help with instruction etc	4 Less Frequent	1 Minor	4 Negligible	<ul style="list-style-type: none"> • Course Users • Employees 			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.

1. Continuous Belay System

Continuous Belay Safety System does not require Customer Course Users to Remove their K- Hook or Saferoller Trolley at any point.

- In harness set up the maillions will have Loctite applied and will be spanner tight to prevent tampering, or lanyards will be fixed to harness by 'Larch's Foot knot, or the use of a 'pin' operated karabiner.
- Customers are attached to the safety system at all times when off the ground (with exception of Stout Tree Climb (See separate note below))
- On all Courses the minimum height of 1.1 m wearing footwear to enable users to move their safety line around the safety system. Height markers installed. Instructors carry out check if unsure.
- Under 9 year olds to be accompanied by an adult (1:2) to assist with safety lines on Wildcats, whilst under 12 year olds (minimum of 9 yr) to be accompanied by an adult (1:2) to assist with safety lines on Pioneer/Complete experience courses. A minimum height of participants on Pioneer Courses is 1.4m
- Maximum weight of 19 stone / 120 kg due to load limits of course. Scales provided in Activity Centre Reception. There are also height marks posted on the door within the activity centre where participant's heights can be checked. . 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.
- Instructors will access the course using the Instructor Self Belay Safety Lines and system of use (see Training below).
- Only trained and assessed instructors will be allowed to supervise the Continuous Belay Courses this is to ensure they can handle difficult groups when under pressure.
- Instructors to be trained and assessed in moving customers on the Continuous Belay course.

2. 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
- There is always present on the course a minimum of 1 Instructor 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.
- All speed mallions are tightened by an instructor using a spanner, hence the mallion cannot be removed by the participant.
- Course Director must undergo a 3 day PPE inspection course so they are competent to inspect the relevant PPE.

3. Course inspections and checks

- Pre-use course checks and routine visual inspections are carried out by instructor when opening up the course 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 (2-3 monthly) are carried out and recorded by the Course Director or a competent person appointed by the Course Director. The course check reports are regularly reviewed by the Course Director.
- 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).
- The Tru-blue[®] and Quickjump[®] devices will be removed annually and sent to certified service provider for recertification, as per manufacturers requirements. In addition a detailed inspection of these devices is part of the operational inspection regime, as per the operating manual.
- Records of inspections and examinations, maintenance, testing and certificates of conformity are maintained. Daily Report and Operational 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 course, prior to opening the course to participants.

4. 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 Course Director , who has undertaken the 3 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
- Course Director to undergo a 3 day PPE inspection training course so they can identify problems with PPE. They 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 Course Director or a trained person appointed by the Course Director . The equipment reports are regularly reviewed by the Operations 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 3 day PPE course. PPE regs. (Note that an examination and inspection are different.)
- All PPE is documented and logged by the Course Director, including inspection and maintenance records. These records are checked periodically during the site audit by the Operations Manager. PPE regs.
- The Course Director 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 Course Director 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 Course Director.
- 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).
- Course Director must complete a 3 day PPE inspection training course so they can identify problems with PPE. Course Director 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.

5. Prevention of Damage to PPE

- No smoking whilst wearing harnesses
- No use of chemicals near PPE
- Use of experienced and competent course designers
- Records of materials
- PPE which is persistently subject to UV exposure and weather will be logged as PPE and replaced on a continuous basis at timing as required (specifically, all ropes used for instructor access using ASAP devices replaced annually. Straps used to secure Tru-Blu device bracket, replaced after 2 years of service, and the 2 straps changed alternate years.)

6. Operation systems and controls of the course

- All customers on the course will use the continual belay system.
- 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.

- Any tasks being undertaken apart from the normal day to day running of the course (opening, closing) must be carried out by a minimum of two people; this includes any work involving moving obstacles or moving off the normal route of the course (platforms and wires).
- All staff accessing the course, for any purpose must inform another member of Craufurdland staff of that action and be in contact with that member of staff by radio or phone, with an agreed 'call-in' duration to be dynamically risk assessed at the time of entry.
- Whistles are supplied on harnesses to allow customers to alert instructors if there are problems.
- 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

7. Trees inspection and Monitoring

- 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 arboriculturist, including a photographic record where necessary.
- Measures are taken to protect tree roots from compaction (e.g. using woodchip or fencing off).
- 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.

8. Retainers and Lanyards

- Course users must attach all loose items to themselves or have them secured within pockets.
- Information must be supplied to course users through the safety rules and advice and checked during the Safety Brief.
- When instructors are carrying out maintenance tasks at height, tools must be retained by using a retaining cord or lanyard.
- All individual PPE, including pulleys, must be attached to the course user.
- Equipment used for moving customers must be attached at all times.

9. Course design

- Design of the course must take into consideration the possibility of impact problems. Materials are finished to provide smooth, surfaces. Zip Wires and landing areas are designed at an angle and sag to arrive at an optimum landing speed.
- Landing sites are constructed to provide a soft and moveable surface of woodchip or wood peel.
- Where applicable; Zip landing sites are fenced to discourage members of the public and children wandering into them.

- Course designed to minimise the risk of entanglement or entrapment.

10. Operating Procedures

- Landing areas are to be prepared (raked or dug) on a regular basis to ensure they comply with guidelines
- Only 1 course participant is allowed on the zip wire at any one time. Safety Brief & Written Safety Rules and Advice.
- Only a maximum of 2 participant allowed to occupy any one platform at a time

11. Provision of Information

- Provision of suitable and sufficient information and training to course participants to ensure they are safe when crossing obstacles and descending zip wire. Written Safety Rules and Advice which must be read by or read to all course participants, Instructors Safety Brief given to all course participants, e.g. Course participants informed on landing technique to minimise risk of injury when completing a zip wire. Course participants recommended to wear suitable footwear. (Open toed footwear is not allowed)

12. Access to the Course

- When the course is “closed” or is to be left unmanned access points on course zones should be secured or made inaccessible. This will be by the means of any of the following or any combination:
 - Locked gated area around access point
 - Removal of lower access point ‘holds’ (e.g. removable staple foot holds)
 - Securing of ladder or stair by means of gate
 - Signage at entry point highlighting dangers of unsupervised and/or inappropriately equipped access.
- Where access to the course may be difficult to prohibit (i.e. on lower elements of the course) signage will clearly inform the dangers of unsupervised and/or inappropriately equipped access. It is the opinion of the risk assessment that lower parts of the ‘securing’ of lower elements of the course are likely to introduce great risk to potential unauthorised users rather than diminish it.

13. General Husbandry on and in vicinity of Course

- The routes of all zone courses is 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.
- Access to the areas under the courses where there are concerns with collision of participants and those on the ground, are roped off.

14. 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.

15. Dark operation Risk Reduction

- Operations of the Highwire course in the hours immediately after sunset, mean that there is limited visibility, however the natural adaptation of night-vision of the human eye will allow normal access on the course, combined with natural light and that provided at key points on the course . To mitigate any landing zone issue as described in Haz 14, Battery powered high power flood lights are placed facing the direction of travel illuminating the landing zones of the ziplines and also the cargo net at the Tarzan swing on the Buzzard zone. There is also flood lighting at the squirrel zone to allow easier training. Operationally there is also lighting at each climb on the course, which ensures that the K-Hook so put onto the belay line in the correct orientation.
- All instructors supervising groups participating in TTT in the Dark will be in possession of a powerful rechargeable headtorch which is kept charged. They will also be rescue trained instructors.
- Groups on TTT in the Dark are controlled with level 2 supervision at all times on the course.

16. Hazard specific Risk Reduction for Haz 13

- This hazard is one which can only be mitigated by reducing the probability of a user failing to do as instructed/trained for the specific use of the equipment in question. The two key areas which assist with this which have been reviewed vigorously are user training, which takes place on the Squirrel Course, which all users must complete twice before climbing.
- Training of existing staff has been given verbally, that the consequences of failure to apply the karabiner when using the acro-connect has a significant impact on the comfort of the user, with illustration of the difference in fall sustained with or without karabiner demonstrated visually.
- Signage on squirrel at point of training and on the course at point of use will have additional signs posted to stress danger of injury if failure to apply the karabiner. (see image in Appendix 2.)

This hazard is not about failure of equipment, which is dealt with elsewhere and is reduced to negligible by the rigorous inspection of the course by instructors, and by inspectors of course and equipment.

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.

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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).

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- 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**

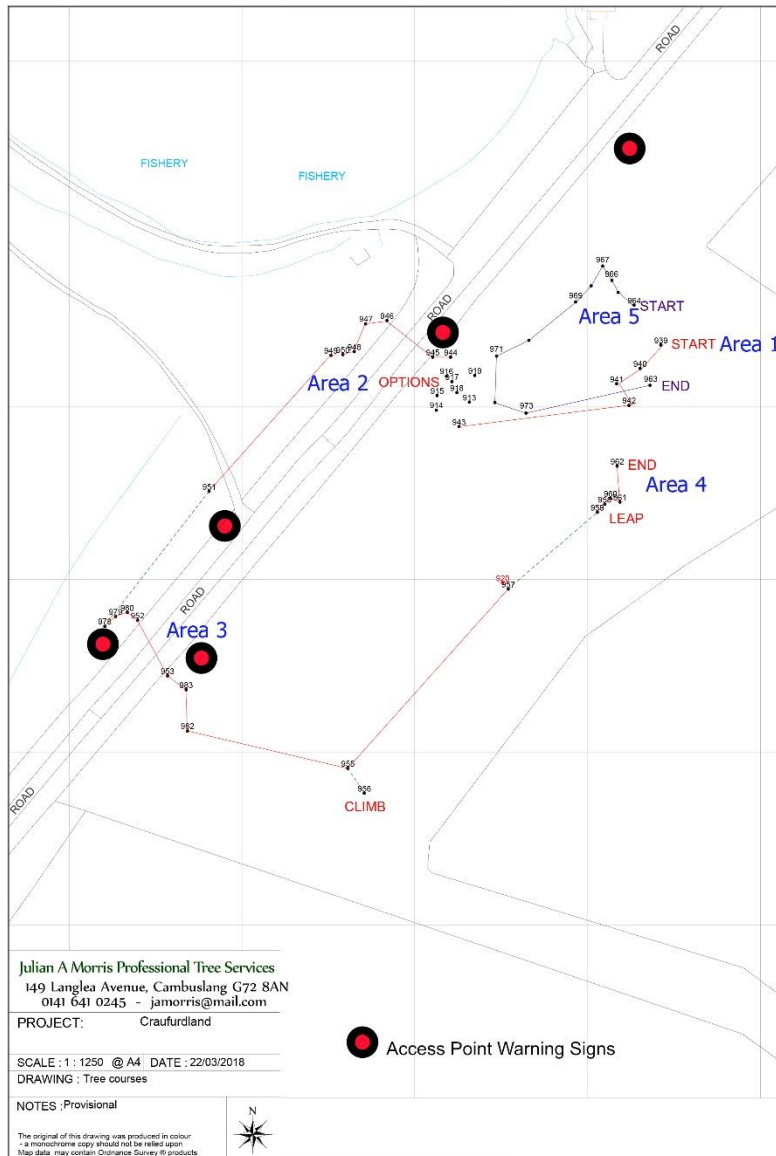
If time of suspension trauma is over the critical 15 min and the condition of casualty allows, the casualty should be lowered according to rescue methods to point above ground where suspension is maintained but that ground based medical staff may administer necessary medication to allow safe release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

- # 1to 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.

APPENDIX 1- Map of Access Point Warning Signs





Welcome to T.T.T.

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!!**

APPENDIX 2- Additions to RISK ASSESSMENT following operational experience

Following the hazard below occurring with a participant on the course, at the Tarzan Swing, the risk assessment is being updated to explicitly consider this hazard.

Haz ID	Hazard description	Probability	Consequence	Risk Assessment	Who might be affected	Emergency Preparedness or other control Measures	Residual Risk
Haz 13	Failure of participant to apply karabiner(s) when using acro-connect on belay system	3 Remote	3 Hazardous	9 Tolerable	Participants	<ul style="list-style-type: none"> See Procedure for Person suspended from belay wire in harness 	Negligible

Hazard specific Risk Reduction for Haz 13

This hazard is one which can only be mitigated by reducing the probability of a user failing to do as instructed/trained for the specific use of the equipment in question. The two key areas which assist with this which have been reviewed vigorously are user training, which takes place on the Squirrel Course, which all users must complete twice before climbing.

- Training of existing staff has been given verbally, that the consequences of failure to apply the karabiner when using the acro-connect has a significant impact on the comfort of the user, with illustration of the difference in fall sustained with or without karabiner demonstrated visually.
- Signage on squirrel at point of training and on the course at point of use will have additional signs posted to stress danger of injury if failure to apply the karabiner. (see image below.)

This hazard is not about failure of equipment, which is dealt with elsewhere and is reduced to negligible by the rigorous inspection of the course by instructors, and by inspectors of course and equipment.



ESSENTIAL
SAFETY
NOTICE

Have you connected
the Karabiner onto
your Harness!!

Failure to attach this
Karabiner can lead to
injury

APPENDIX 3- Additions to RISK ASSESSMENT for TTT in the Dark

The following hazards are identified as relevant to operation of the Pioneer experience during hours of dusk/darkness.

Haz ID	Hazard description	Probability	Consequence	Risk Assessment	Who might be affected	Emergency Preparedness or other control Measures	Residual Risk
Haz 14	Failure of participant land safely at landing zone of zipline	4 Less Frequent	3 Hazardous	12 Tolerable	Participants	<ul style="list-style-type: none"> Participant stranded on tree to tree zip. Use of rescue rope by instructor Injury at landing zone- First aid as per SOP 	Negligible
Haz 15	Instructor unable to see participant to help with instruction etc	4 Less Frequent	1 Minor	4 Negligible	Instructor		Negligible

Dark operation Risk Reduction

Operations of the Highwire course in the hours immediately after sunset, mean that there is limited visibility, however the natural adaptation of night-vision of the human eye will allow normal access on the course, combined with natural light and that provided at key points on the course . To mitigate any landing zone issue as described in Haz 14, Battery powered high power flood lights are placed facing the direction of travel illuminating the landing zones of the ziplines and also the cargo net at the tarzan swing on the Buzzard zone. There is also flood lighting at the squirrel zone to allow easier training. Operationally there is also lighting at each climb on the course, which ensures that the K-Hook so put onto the belay line in the correct orientation.

All instructors supervising groups participating in TTT in the Dark will be in possession of a powerful rechargeable headtorch which is kept charged. They will also be rescue trained instructors.

Groups on TTT in the Dark are controlled with level 2 supervision at all time on the course.