THE UNIVERSITY OF AUCKLAND
SCHOOL OF ENVIRONMENT

# Health and Safety Manual

CONTROLLED DOCUMENT
VERSION 1.1 – April 2017

# Contents

# Health and Safety Policy

Health and safety has a vital role to play in supporting and enabling education, research and knowledge exchange at our University. Working together we can make further improvements and sustain a safe and supportive environment in which both staff and students can flourish.

The University places the safeguarding of the health and safety of its community at the heart of its Strategic Plan including it as a strategic objective, 'A safe and healthy environment'. As the governing body of the University, the Council is committed to providing a safe and healthy workplace, for staff, students and visitors, which the University will achieve by:

- Ensuring that all our leaders demonstrate a serious commitment to sound health and safety working practices.
- Ensuring that all our leaders, staff and students share a mutual commitment to building and maintaining healthy and safe work, research and study practices.
- Receiving regular reports of our accident and incident rates, and other performance measures, which should be at or better than appropriate sector norms.
- Ensuring that our organisational culture is characterised by attitudes to health and safety which are proactive, responsible and based on mutual respect and regard.

Legislation imposes statutory duties on the University, its governors, its leaders and its staff, (generally and in relation to specific health and safety topics), whilst civil law imposes a wider duty of care to protect staff, students and other people from harm. But as a community the University must go beyond legislative compliance to a culture that is proactive in supporting the health and safety of all its members.

This transformation will require commitment from each and every member of staff and students, working with our health and safety policy and University practices, to build a culture of 'zero harm'. I know that I can rely on your support to achieve this result, for the benefit of all.

The University of Auckland believes that the health and safety of all members of its community is among its highest priority. The University is committed to the highest standards of health and safety through continual improvement and the control of risk whilst ensuring the continued delivery of world-class education and research. To achieve this, the University will ensure effective management of risk by setting and reviewing a quality-based occupational health and safety management system, and by allocating the resources necessary to attain these objectives. The University will also define clear management systems and ensure the engagement of all of our staff through consultation with them and their representatives, when considering the actions necessary to meet this policy.

It is the Policy of this University to:

1. Demonstrate excellent health and safety practice with legal compliance as a minimum
2. Develop a culture of mutual accountability
3. Implement policy and protocol requirements
4. Develop and continue to improve an occupational health and safety management framework based upon University protocols
5. Define health and safety responsibilities for role-holders
6. Consult and actively promote participation with staff, students and contractors to ensure they have the commitment, training, skills, knowledge and resources to maintain a healthy and safe environment
7. Implement effective communication and consultation systems for health and safety
8. Set targets and establish systems to measure, appraise and report on health and safety performance in partnership with staff and their representatives
9. Put in place mechanisms to continuously improve health and safety performance and learn from our incidents by encouraging staff to report accidents (including ill-health), incidents (including near misses) and non-conformity
10. Have a University level health and safety committee that meets regularly
11. Establish risk management systems to prevent injury and ill health
12. Institute a system whereby health and safety is considered during the design, planning and conduct of all activities at the University.

The effective delivery of the policy requires everyone to accept a personal responsibility for health and safety. The University will provide professional and competent support and advice to all members of our community.

A full copy of the University policy can be found here.

# Health and safety contacts in ENV

School of Environment Health and Safety Officer
Blair Sowman
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University Health and Wellness Manager
Ian O'Keefe
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University Hazards and Containment Manager
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Environment Health and Safety Committee
Blair Sowman – Technical Manager
Phone: +64 9 373 7599 ext 84128
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Paul Kench - Academic (HOS)
Phone: +64 9 373 7599 ext 88440
Email: p.kench@auckland.ac.nz

Jon Tunnicliffe – Academic Staff
Phone: +64 9 373 7599 ext 82320
Email: j.tunnicliffe@auckland.ac.nz

Andres Arcila - Professional Staff
Phone: +64 9 373 7599 ext 87417
Email: a.arcila@auckland.ac.nz

Student Health & Safety Representation
Students wanting to raise Health & Safety issues can do so directly to the Committee members or via their respective Undergraduate or Post-graduate Committees.

Registered Electrical Service Technicians
Colin Yong
Phone: +64 9 373 7599 ext 88860
Email: c.yong@auckland.ac.nz

National Radiation Licensees
Ilyas Qasim
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John Wilmshurst
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MPI Transitional Facility Operators

Blair Sowman – Manager
Phone: +64 9 373 7599 ext 84128
Email: b.sowman@auckland.ac.nz

Natalia Abrego - Deputy Operator
Phone: +64 9 373 7599 ext 82433
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Boat Skippers

Brendan Hall
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# ENV Laboratory and Workshop facilities and their hazards

| Lab | Room | Hazard<br>**HSNO** = HSNO rated lab<br>**TF** = Transitional Facility<br>**EQ** = contains hazardous equipment | Hazard Rating | Technician in Charge | Academic(s) in Charge | Induction process |
|---|---|---|---|---|---|---|
| **Building 302** | | | | | | |
| Teaching Laboratory – Dry | 302.130 | EQ | Low | Andres Arcila,<br>Neville Hudson | Barry O'Connor | General |
| Teaching Laboratory - Wet | 302.140 | EQ | Low | Andres Arcila,<br>Neville Hudson | Barry O'Connor | General |
| Sedimentology | 302.420 | EQ | Low | David Wackrow | Paul Augustinus | General |
| Dendrochronology | 302.450 | EQ | Med | Colin Yong | Gretel Boswijk | General |
| Ecology | 302.456 | HSNO, EQ | Med | Brendan Hall | Kevin Simon | General |
| Coastal and Hydrology | 302.460 | EQ | Low | Brendan Hall | Paul Kench | General |
| Climate | 302.485 | EQ | Low | Colin Yong | Jenifer Salmond | General |
| Geophysics | 302.489 | EQ | Low | Colin Yong | Jenifer Salmond | General |
| Particle Analysis | 302.491 | EQ | Low | David Wackrow | Paul Augustinus | General |
| Environmental Chemistry | 302.730<br>A, B, C, D | HSNO, EQ, TF | Med | Natalia Abrego | Luitgard Schwendenmann, Kevin Simon, Paul Augustinus | General, Laboratory and TF |
| Transitional Facility | 302.790 | HSNO, EQ, TF | Med | Blair Sowman | n/a | General, Laboratory and TF |
| **Building 301** | | | | | | |
| Earth Science Processing | 301.039 | EQ | Med to High | Andres Arcila | Phil Shane | General and Workshop |
| iTRAx | 301.053 | EQ | Med to High | Ilyas Qasim | Michael Rowe | General, Laboratory and x-ray |
| X-ray Preparation | 301.414 | EQ | Med to High | Ilyas Qasim | Michael Rowe | General, Laboratory and x-ray |
| X-ray Fluorescence (XRF) | 301.415 | EQ | Med to High | Ilyas Qasim | Michael Rowe | General, Laboratory and x-ray |
| X-ray Diffraction (XRD) | 301.416 | EQ | Med to High | Ilyas Qasim | Michael Rowe | General, Laboratory and x-ray |
| Postgraduate Rock Analysis Room | 301.511 | EQ | Low | Neville Hudson | n/a | General |
| Academic Rock Analysis Room | 301.525 | EQ | Low | Neville Hudson | Julie Rowland | General |
| Microscopy | 301.533 | EQ | Low | Andres Arcila | Phil Shane | General |
| Specialised Geochemistry Preparation (HF) | 301.535 | HSNO, TF, EQ | Med to High | Natalia Abrego | Michael Rowe | General, Laboratory and HF |
| Microscopy (Cryogenic and Gas) | 301.536 | HSNO | Low to Med | Andres Arcila | Phil Shane | Cryogenic safety |
| Geochemistry Preparation | 301.539 | HSNO, TF, EQ | Med to High | Natalia Abrego | Michael Rowe, Joel Baker | General and Laboratory |

# What to do in an Emergency

Appropriate forms of communication must be taken into the field. In most cases, personal cell phones are sufficient if coverage is adequate. Depending on where you are undertaking your field work, and the phone coverage in the area, you should consider taking a GPS or radio or EPIRB or PLB or satellite phone. The School of Environment has units you can carry with you and use in an emergency. This are monitored 24 hours a day. Satellite phones are available externally for hire.

## Communication

The details of contacts, itinerary, and participants must be documented and approved in one of the field work forms (see appendices 4, 5 and 6). In minor cases, email correspondence will suffice but it is preferred that a Field Work Form is completed and approved for all field activities and copies are distributed to the individual or group involved, the School contact(s), and external contact(s).

All correspondence must be approved and maintained by the Schools Health & Safety Officer. Establish a schedule of check-in calls if appropriate (especially if working in remote locations). Advise relevant people of any change in itinerary.

When field parties disperse for their activities, the field trip supervisor shall maintain a system which will facilitate the location of groups and individuals should they go missing.
At the end of each activity or day in the field, remember to account for all participants and notify your safe return to the relevant contacts.

For students undertaking their postgraduate field research, it is strongly advised that they keep in regular contact and discussion with their supervisor(s).

## Network of contacts

An effective network of contacts must be established. The contact numbers for these must be documented
on the relevant Field Trip form and distributed as to each contact. These contacts can include;

1. Field Researcher or Field Trip Supervisor involved
2. School contact(s)
3. Participants (if practical)
4. Emergency services
5. External contact(s) (optional) – (e.g. accommodation managers, land owners, family, etc.). These contacts must be capable and willing to take appropriate action should you need them or fail to return on schedule.

If necessary, a contact person can be entrusted to monitor the wellbeing of the individual or group involved, confirming their safe return. It is often most effective to have a local contact, family member or friend for this. The contacts must be aware of what steps to take should the field party not return as agreed. Should there be concern for the field party, there is a procedure outlined on the bottom of each field trip form.

## Emergency Management Plan

Do you and your field party have the expertise, capability, and resources to deal with an emergency? An appropriate emergency management plan must be formulated prior to the field trip being undertaken and this must be communicated to all participants. These factors are addressed on the back of the Communication Plan.

### The six basic steps to do in an emergency:

1. Safety
   Get yourself and others out of immediate or further danger.
2. First Aid
   Tend to serious injuries.
3. Contact emergency services
   Arrange for emergency services and/or medical attention if required.
4. Regroup
   Ensure all participants are accounted for and are safe. Tend to those in distress. Arrange evacuation if necessary.
5. Review and Plan
   Review the incident, noting any information that may be important. Discuss the continuation or non-continuation of the field trip.
6. Contact the School
   Contact the School (H&S rep or supervisor) and notify of the incident and any changes in your itinerary.

### If a field party fails to return or check in:

1. Attempt to contact them directly via standard means (text message, phone etc)
2. Failing that, attempt to contact them indirectly via landowner, accommodation etc

### If there is a growing concern for their wellbeing:

1. Continue trying to make contact with the field party
2. If practical and safe, undertake a basic search, following intended route and visiting intended sites
3. Contact the School of Environment Health and Safety Manager. It will normally be their responsibility to contact
   a. The University Health and Wellness Manager
   b. The School Manager or HOS
   c. The next of Kin
4. Contact the Police.

### Upon Police involvement:

1. Provide them with as much useful and accurate information as possible. This includes participants' names, age, gender, description, intended routes and destinations.
2. Cooperate with and assist search efforts.

**If the field party is sighted or returns, please notify all who were alerted immediately.**

# Information for Student Field Trip Participants

## Preamble

Field trips are held off-campus under conditions quite different from the standard teaching circumstances of the University. The trips require a high level of commitment and often a reasonable standard of fitness and health by the participants. Adoption of a fully professional attitude by all involved is essential to ensure that a high level of safety is maintained at all times, the reputation of the School and University is enhanced, and that a high quality learning environment is achieved.

To achieve an appropriate working environment, all students attending the field trip need to read, understand and agree to the following conditions.

## Health & Safety Responsibilities

All staff and students on a field trip must;

- Not take actions which place themselves at risk;
- Take all practicable steps to ensure the safety of others.
- Abide by all relevant university health & safety policies and guidelines, and
- Abide by all health & safety policies and guidelines as required by property owners, site management, accommodation providers or their authorized agents; and
- Complete all documentation requirements to ensure field trip programmes are properly recorded and all participants can be accounted for each session of each day.

Each participant must report immediately to staff all accidents, near-miss incidents, illness or potential hazards (including faulty equipment).

To ensure the health and safety of all participants, the appropriate health and safety information and forms will be distributed to participants advising of potential hazards and how they can be effectively managed.
Participants must complete all forms they are given and provide all relevant personal information which could assist staff in providing an appropriate learning environment and dealing with an emergency, namely:

- Medical conditions, disabilities, injuries or medication which may affect them on the trip,
- Other conditions - e.g., vertigo, claustrophobia, severe phobias.
- Inability to perform certain tasks safely - e.g., inability to swim, poor level of fitness, inability to understand English.
- Lack of appropriate attire or necessary equipment,
- Emergency contact details (next of kin, etc.)

This information will be confidential to staff involved with the trip and will be securely disposed of once it is no longer required (normally this will be following the completion of field trip requirements).
All accidents, near-miss incidents, illness or potential hazards must be reported immediately to staff.

## Communication

To ensure your safety, staff must know your whereabouts. Never go into the field or wander from the accommodation or field party on your own. When not under direct supervision, we expect students to work with other students close by with knowledge of where each other is.

You must always:

- Be aware of your location and how to reach safety (e.g., carry a map and compass in remote areas),
- Let somebody know where you are going so we know where to look for you,
- Keep to appointed pick up times and locations,
- Carry or be close to a communication link (radio or cell phone)

To confirm your safe return from the field at the end of the day please remember to SIGN IN. You must do this promptly and you must do this yourself. If you wish to leave the accommodation after hours (eg: to go for a run/walk) PLEASE advise a staff member of your intentions.

## Conduct

Please remember that while on this field trip you will be representing the University of Auckland and will be in vehicles carrying the University logo. It is expected that all participants conduct themselves in a responsible and sensible manner at all times.

Each and every student taking part in a field trip undertakes to:

- Abide by the provisions of the Disciplinary Regulations of the University at all times;
- Conduct themselves at all times so as to make a positive and constructive contribution;
- Ensure that their behaviour respects the rights of all participants at all times;
- Comply with the reasonable requests of the staff regarding conduct, safety, and allocated duties;
- Respect the property of others;
- Be aware of, and abide by, the rules of all field sites and accommodations.

## Discipline Statute

All staff and students on a field trip shall observe and comply with the provisions of the Statutes and Rules of the University including the Discipline Statute:

Staff and Students shall not wilfully:

- Act in a manner contrary to the good government of the University or so as to bring the University into disrepute.
- Impede the activities of the University, whether in teaching research or otherwise.
- Obstruct any staff member or other Authorized person in the due performance of the functions or duties of that staff member or Authorized Person while on the Field Trip.

All students shall comply with such directions:

- As may reasonably be given by a staff member or other Authorised Persons to maintain good order and discipline.
- Made by the person in charge of the Field Trip to preserve the safety of the persons engaged on the Field Trip or to prevent misconduct during the Field Trip.
- As may reasonably be given by a staff member or other Authorised Person to ensure that equipment and facilities used on the Field Trip are properly maintained and used so that the objectives of the Field Trip can be met.

## Environmental and Cultural Considerations

All activities must be conducted discretely with minimum impact on the environment and utmost respect for culturally sensitive sites. Where required, permission or consent must be sought from the appropriate parties (e.g., land owners, iwi, regional or local authorities).

- Do not litter! – dispose of all scraps and wastes appropriately.
- Where toilet facilities are unavailable, use discretion. Do not urinate/defecate into or beside fresh water. Excreta should be bagged and disposed of in an appropriate manner.

## Transport

In most cases, the School and University provides transport to field sites and will not allow students to use private vehicles to transport themselves or other students to field sites. Exceptions will only be considered on a case-by-case basis and must be approved by the course co-ordinator and Director.

## Leisure Time

All rules regarding safety and conduct also apply to after hours leisure activities during a field trip. Recreational activities must not be pursued where possibility of injury is high and/or access to emergency services difficult.

## Alcohol and Drugs

There is to be NO consumption of alcohol during fieldwork activities. In all cases, alcohol must not be consumed where impaired judgement may place the individual or others in a hazardous situation. Any permitted consumption is restricted to after hours ONLY. Where permitted, drink responsibly and in moderation - drunken behaviour will not be tolerated. All rules established by the field trip supervisor relating to the consumption of alcohol must be followed at all times.

The use of illicit substances is prohibited at all times.

## Sanctions

If any student fails to abide by their obligations as set out above by behaving in a manner inconsistent with these obligations, the student accepts that:

1. They may receive a penalty in their grades for the respective coursework;
2. They may be required to leave the field trip at a time specified by the staff in charge;
3. They forfeit any fees paid for the field trip;

4. They may be required to arrange and meet the costs of their transport back to the university, any costs relating to damage resulting from their failure to abide by their obligations, and any additional costs incurred by the university attributable to their behaviour;
5. Their failure to complete the field requirements may result in their failing the course and that the university shall not be held responsible for their failure in such circumstance;
6. The staff member responsible for the field trip shall be entitled to refer the student's behaviour to the registrar if they fail to abide by their obligations and that they may, as a result, face disciplinary action by the university under the provisions of the disciplinary regulations.

# Field safety

While on University business, all staff and students have a legal responsibility to adhere to all University Health & Safety policies and guidelines, and take all practicable steps to ensure the safety of themselves and others in the workplace, on and off campus.

The purpose of this document is to guide researchers and supervisors through the fundamental requirements of managing the safety of off-campus activities at all stages from planning through to a safe return. This document therefore applies to all University business conducted off-campus and includes;

- All academic research and contract activities
- All student research activities
- All teaching related field trips

It also applies to all School of Environment disciplines regardless of the location of the field activity (natural, residential, rural, industrial, metropolitan, or remote) and regardless of activity (sampling, interviewing, measuring, liaising, etc.).

This document is in accordance with the University of Auckland Field Work Safety Guideline (found on the School website and University staff intranet).
The University policy must be read and understood.

Before undertaking any field activities, you must have done the following;

1. Read & understood this document and the University Field Work Safety Guideline, and acknowledged this with your signature on the School's Health & Safety Declaration (Appendix 2). This is to be renewed on an annual basis.
2. Assessed the hazards and understand the hazard management tools for your specific hazards. Specific health & safety information or training must be sought to adequately assess and manage the hazards relating to any specific environments, activities, or equipment. A copy of this must be kept on file at the School's Reception.
3. Communicated your intentions by keeping key contacts informed of your whereabouts and wellbeing as often as necessary. This is facilitated by completing the appropriate field trip form and providing an itinerary (if applicable). A copy of this must be lodged with the School Health and Safety Officer.
4. All accidents and dangerous situations must be reported to the Health and Safety Officer as soon as possible.

## Approval of Field Activities

The Head of Department or Health and Safety officer is to approve the field activity and must ensure that adequate consideration is given to aspects of health and safety. The responsibility for safe conduct of the activity rests with the designated supervisor.

## Supervisor

The supervisor is generally the academic staff member teaching the course but may be any person who has the authority to influence or direct the actions of students, employees or others involved in the activity. In general there should be a ratio of 1 supervisor/leader per 20

participants. The supervisor is responsible for ensuring the party is complete at the end of fieldwork.

## Organisers of Field Activities

Organisers must have strategies for dealing with emergencies. The following may act as a guide:

1. The supervisor should know the whereabouts of the local emergency and support agencies such as police, ambulance, Department of Conservation and Mountain Safety, their contact numbers and/or radio call signs.
2. An emergency contact should be available at all times so immediate contact can be made in an emergency.
3. The names, and contact phone numbers of all group members should be known by the contact person along with full details of the location of the activity and methods of travel.
4. In remote areas, the itinerary and emergency contact person should be made known to the local police or DOC Ranger.
5. The use of portable radios or cell phones should be considered subject to the availability to recharge batteries. If such equipment is carried, then all members of the party must be trained in the proper use and routines.
6. Food and drink should be sufficient for the planned fieldwork, and an emergency supply (ie. chocolate, high energy bars, barley sugars) should also be included.
7. Fieldwork should be within the capability of the majority of the group, and should allow for the needs of individuals who may require extra assistance.
8. Escape plans should be formulated during the activity planning stage to allow withdrawal of the group or individuals in the event of injury, illness, forest fire or downturn in weather conditions.

## Permits

Permits may be required for some activities such as open fires in forest areas, or to gain access to restricted areas. Obtaining such permits is the responsibility of the field activity organiser. Contact should be made with manuwhenua, and areas of spiritual significance avoided

## Remote Field Activity

1. “Remote” is a flexible concept. If emergency or medical support is more than one hour away on foot, then the location should be considered remote.
2. The itinerary, a location map and a list of party members should be left with a nominated contact person.
3. Fieldwork in isolated locations or potentially dangerous situations must not be conducted alone.
4. Individuals acting independently of the main group of participants must keep the supervisor advised of their movements and maintain regular communication.
5. Persons working in remote areas should establish a regular communication procedure with the nominated contact person. Where possible radio communication should be used, and all party members should be trained in the correct operating procedures. Organisers of the remote field activities should establish and note the location of any “dead spots” where radio transmission is not possible or intermittent.

## Non-University Staff

From time to time non-University persons may be invited to participate in field activities. Such participation may only occur after approval by the Head of Department organising the activity. Such participants are to be briefed on all requirements and treated as though they were students or staff of the University.

# Vehicles

The following guide applies primarily to the use of School of Environment vehicles and is in accordance with University policy relating to all University owned vehicles and vehicles hired or leased by the University (Vehicles – March 2008).

Breaches of [the University] policy are deemed serious misconduct and may result in disciplinary action - including dismissal. (UOA Vehicle Policy 2.3)

## Use of University vehicles

University vehicles are to be utilised for travelling on official University business only. (UOA Vehicle Policy 3.2)
University vehicles will not be available for private use or third party hire. (UOA Vehicle Policy 3.4, 3.5)

## Eligible Drivers

- University of Auckland academic and general staff
- University of Auckland PhD students (with approval of the respective supervisor)
- School of Environment Masters students (with approval of the respective supervisor)
- Visitors and other drivers as approved by the Director or delegated authority.

No University staff member or other individual shall drive a University vehicle (whether owned, hired, or leased by the University) unless they have:

1. Read, understood and accepted this Vehicle Use Guide and the University Vehicle Policy,
2. A current, unrestricted, New Zealand Drivers Licence for the appropriate vehicle Class. Overseas licences will be accepted only in accordance with LTSA guidelines1 and with the approval of the School Manager.
3. Completed a Driver Agreement form and had it authorised by the School Manager. (UOA Vehicle Policy 4.1)
    a. Overseas licenses – refer to LTSA Factsheet 56
    b. New residents and visitors – driving in New Zealand (see www.ltsa.govt.nz/factsheets/index)

It is the authorised driver's responsibility to advise the appropriate manager and amend their Agreement if their licence is changed, cancelled or has penalties imposed, etc. (UOA Vehicle Policy 4.2)

ALL drivers seeking to transport more than 4 passengers are required to be formally assessed by a licensed driving instructor and gain special signed authorisation on the Driver Agreement. This can be organised through the School Technical Manager and can take 3-4 weeks to get an appointment.

ANY vehicle with more than 12 seating positions is deemed a Passenger Service Vehicle and may only be driven by a P endorsed driver.

Many offroad situations are suitable only for 4WD vehicles and drivers with offroad experience and training. Students requiring offroad vehicle use must first discuss the field work with their

supervisor and School of Environment Technical Manager. The School does not pay for 4WD or specialist driving courses. The cost is to be covered by the student or staff member who needs to do it.

## Safe Operation of Vehicles

The University is committed to road safety. All vehicles are to be operated carefully and in accordance to New Zealand law and other required procedures.

Vehicles must be operated within their specifications, especially in regard to passenger capacity, load capacity, and designed purpose.

University vehicles may only be used if they are fit for purpose. University vehicles may not be suitable for the transportation of sensitive, expensive or hazardous equipment and materials. (UOA Vehicle Policy 5.5)

Vehicles must not be used when known to be in an unsafe condition or where continued use may exacerbate existing damage or faults. Any problems or faults must be notified immediately to the Technical Manager.

All authorised drivers are responsible for ensuring their vehicle is in good and safe working condition for driving, and are additionally responsible for the safety of any passengers they may transport. (UOA Vehicle Policy 9.2)

While technical staff are responsible for ensuring that the School fleet is maintained, it is the driver's responsibility to conduct pre-trip checks prior to use. This involves checking;

- The warrant of fitness, road user charges and registration are current and will last the duration of the trip
- Tyres are correctly inflated (including the spare)
- Mirrors and seats are correctly adjusted
- All loads are securely restrained or fastened

It is the authorised driver's responsibility to ensure they are familiar with the particular operating procedures for the vehicle, e.g. a manual or an automatic gearbox, and that they are competent in this regard. (UOA Vehicle Policy 4.3)

Under no circumstances shall a University vehicle be operated while the driver is under the influence of alcohol or illegal substances, or where driving ability impairment has been indicated by a doctor, chemist or prescription and pharmaceutical guidelines. (UOA Vehicle Policy 5.3)

No smoking or consumption of alcohol or illegal substances is permitted in any vehicle being used for official University purposes by drivers or passengers. (UOA Vehicle Policy 5.1,5.4)

Reports of dangerous driving or poor driving ability will be dealt with seriously. The School will exercise measures to monitor driving behaviours and reserves the right to restrict vehicle access to any driver in the interest of safety.

Drivers are not to use mobile phones unless the vehicle is stationery (UOA Vehicle Policy 5.1).

Any use of the first aid kit or fire extinguisher must be reported to the Technical Manager.

All drivers must be aware of safe driving practices in relation to:

- Travelling long distances
- Towing
- Stowage of equipment
- Driving in hazardous conditions
- Carriage of hazardous substances (UoA vehicle policy 5.1)

A copy of relevant LTSA publications is available on the LTSA website www.ltsa.govt.nz/factsheets/index

## Administrative Matters

Vehicle use will be charged out to all except School internal operations and teaching;

- MSc thesis work – charged to the research allocation at School rates,
- PhD thesis work – charged to the PReSS and School research funds at School rates,
- Academic internal research - charged to research fund or allocations at School rates,
- Academic external research – charged to research funds at EFR rates,
- Commercial work – charged to Uniservices projects or client at market rate.

These rates apply to similarly to use by other Departments.

Any penalties or fines imposed, including speeding, traffic infringements and parking ticket fines, are the responsibility of the authorised driver. Any further charges incurred by the University as a result of non-payment of fines are also the responsibility of the authorised driver. (UOA Vehicle Policy 10.2)

## Vehicle options

Choice of vehicle for a particular trip must be based on fitness for purpose and the most cost effective option available. The School has a number of options available:

- 1x Manual 4WD (Toyota Hilux)
- 1x Automatic 4WD (Toyota Hilux)
- 1x Manual Van (Toyota Hiace)
- 1x Automatic 7-Seater (Toyota Highlander)

## University vehicles

The School runs a small fleet of vehicles of varying types and the wider University has pool vehicles available through numerous departments and service divisions. These options must be explored first before considering the other external options. (UOA Vehicle Policy 13)

Vehicles to be used on field activity are only to be driven by staff with the licence classification appropriate for the type of vehicle and number of passengers. No alcohol or drugs are to be consumed while the driver is in control of the vehicle.

## Taxis

A taxi should be utilised when it is the most cost effective way to achieve a transport requirement. Pre-printed taxi vouchers or a Taxi card are available for a particular taxi company and should be used whenever possible in preference to a subsequent claim for reimbursement. (UOA Vehicle Policy 15)

## Rental Cars

A vehicle should be rented when it is the most cost effective way to achieve a transport requirement. Consideration should first be given to:

- Utilising an existing University owned vehicle
- Utilising a taxi

The University has a preferred supplier for rental vehicles, with preferred rates in place. All bookings must be made through the University's preferred travel manager. (UOA Vehicle Policy 14)

## Use of Private Vehicles

Use of private vehicles for University business is not encouraged and is only an option if it is the most time and cost-effective method of travelling and all other requirements of the University Vehicle Policy have been met. (UOA Vehicle Policy 16.1)

If a private vehicle is approved for use on University business it must have valid insurance cover for the intended use (minimum Third Party Liability), have a current WOF, be fit for the purpose, and carry a first aid kit. It is the PAC Manager's responsibility to ensure that there is full compliance with these requirements. (UOA Vehicle Policy 16.2,11.2)

Mileage claims [by staff] are to be submitted at department level for approval and payment. The rate of payment is as per the IRD Approved Motor Vehicle Mileage Rates, available on the Financial Services website. (UOA Vehicle Policy 16.3)

There is no insurance cover for students using private vehicles e.g. to attend field trips. Use of student vehicles for University field trips should therefore be viewed as the exception rather than the rule. (UOA Vehicle Policy 11.3)

If planning a teaching field trip, the use of private vehicles must be considered carefully and is not recommended. Students intending to drive their own vehicles or be transported by another student to a field site must complete a Driver Agreement Form (Appendix 10) or a Student Passenger Agreement Form (Appendix 11). These must be submitted to the School vehicle coordinator for approval.

## Booking, Use, and Return of School Vehicles

School vehicles must be booked prior to use. Advance bookings for can be made through the School Reception and Vehicle Coordinator. Do not take a vehicle without confirming that the vehicle is available. After hours return of the vehicle should be arranged prior to taking the vehicle.

University vehicles are issued with a vehicle-specific fuel card. These can be used to obtain a discount from Caltex or BP. These cards will allow the purchase of fuel and oil only. Misuse of

fuel cards constitutes serious misconduct that will result in disciplinary action. Please retain all receipts in the Fleetcard envelope. (UOA Vehicle Policy 7.6,7.8)

Drivers and passengers are reminded that School vehicles display the University insignia and therefore represent the University of Auckland at all times whilst on excursions. Drivers and passengers must exhibit responsible and respectable conduct.

University vehicles must be locked when parked. Under no circumstances are keys to be left in an unattended vehicle. Drivers are to remove all valuable items from the vehicle whilst parked or ensure valuables are placed out of sight to remove temptation from would-be thieves. Personal items should not be left in University vehicles. UOA will not assume responsibility for any loss or damage to personal items. (UOA Vehicle Policy 9.5, 12.2, 12.3)

Vehicles must be returned on or before the time as arranged during booking. Please ensure that; • the log book has been filled out fully and legibly (UOA Vehicle Policy 3.3)

- The vehicle is clean and in sound condition
- The fuel tank is at least 1/2 filled
- All windows and doors are securely locked and all lights are off,
- The keys, fuel card and log book are returned to reception.

Return of a vehicle in dirty condition may incur a $60 cleaning fee.

Any problems with the vehicle must be reported promptly to the Technical Manager.

## Accidents and Insurance

All University vehicles are covered by the University's Insurance Policy, managed by the University's Risk Manager.

Any incident or accident involving a University vehicle where damage has occurred must be reported to the Technical Manager and to the Risk Manager, within 12 hours of the incident. The Technical Manager will report the accident to the Fleet Manager immediately.

In the event of an accident:

- The driver must NOT admit liability for the accident.
- Record details of how the accident happened, the weather, the time, date and location,
- Get contact details of any witnesses,
- Exchange details with any Third Party (name, address, vehicle details)
- Establish the owner of any damaged property.

Any accident where anyone is injured, or where there is doubt as to the circumstances, or where there may be doubt, or issue, over who is at fault, or where property is damaged and the owner has not been identified, should be reported to the Police within 24 hours.

An insurance claim form will need to be completed and submitted to the Risk Manager and the Insurer. This is available from the Financial Services website.

No repairs should be undertaken without first contacting the fleet management services provider. Costs of a replacement vehicle are not covered by insurance.

If an accident occurs while the authorised driver is under the influence of intoxicating liquor or drugs, and/or not holding a valid appropriate licence for the vehicle type, and/or carrying unauthorised or dangerous goods inappropriately, the presence of which was the sole cause, or a material contributing cause, of the accident or damage, then the University's insurance is invalid and the driver will be held personally liable. This is also a matter constituting serious misconduct and will result in disciplinary action.

If a University vehicle is stolen the theft is to be reported to the Police immediately and to both the University's Risk and Security Managers. A Vehicle Claim form is to be completed. The Fleet Manager must also be notified.

# Risk Assessment and Management

## Risk Assessment – at the planning stage

The first step in planning a safe field trip is to conduct a risk assessment. This involves identifying hazards or potential hazards which may impact you (or your field party). You can do this by discussing your field work with your supervisor or the trip coordinator. Appendix 13 of this manual contains a register of known hazards and what can be done to control them. This register is a *living* document and will be updated regularly when new hazards are identified.

It is important that those completing a risk assessment must be capable and experienced enough to identify the hazards at the planning stage and during the course of the trip. If necessary, do a reconnaissance trip to survey the site and talk to local residents and authorities to gain their support, advice, and approval.

### Environment

- What actual or potential physical hazards exist at the site?
- Specific settings will pose their own specific hazards (e.g., alpine, metropolitan, coastal or offshore settings).
- Some sites are managed under another set of health & safety regulations (e.g., mining or quarry sites, farms, industrial sites). If so, you must follow the site's procedures as long as they do not compromise the University's H&S own standards.

### Expected physical conditions

- Identify and plan for likely conditions that will affect the safety of the activity.
- This especially includes weather, tides, and daylight.
- Use available resources such as Metservice and Swellmap to gain as up-to-date and accurate forecasts as possible, and heed all warnings appropriately.

### Equipment

- Identify all the equipment to be used on the field trip and determine whether the transport or use of the equipment has the potential to cause harm.
- Is there a special Health & Safety guideline or procedure already in place for the equipment?
- What sort of person protective equipment (PPE) do you require? Hard hat, steel toed shoes, glasses, gloves or high visibility vest?

### Activities

- Identify all the proposed activities for the trip and identify what potential hazards may be created by these activities.
- Is there a separate Health & Safety guideline or procedure in place for the activity?
- Are there enough participants to perform the activity safely?
- Does the work require someone with a current first aid certificate?
- How many first aid kits do you require?

### Social/Cultural considerations

- Are you placing yourself or others into a potentially hazardous situation in your interaction with individuals or groups?
- For private or managed sites, it is essential to obtain information and permission from the landowner/ occupier/ manager and comply with their requirements (e.g. DoC permits).
- Where appropriate, contact should be made with appropriate people to ensure that cultural etiquettes are followed and areas of spiritual significance duly observed.

### Participants

- The field trip supervisor must assess the fitness and abilities of all participants (including themselves) and identify potential problems. This involves requesting relevant information from all participants which may impact the safety of themselves or their colleagues. This includes:
    - Medical conditions or injuries and associated medication,
    - Other conditions - e.g., vertigo, claustrophobia, severe phobias,
    - Insufficient skills to perform tasks required - e.g. inability to swim, poor level of fitness, inability to understand English,
    - Lack of appropriate attire or necessary equipment.
- It is the responsibility of the individual participants to disclose this information. Confidentiality must be respected where possible. Under the Privacy Act (1993), all documented information must be destroyed immediately after its required purpose is fulfilled.
- The participation of visitors on field trips must be considered carefully and given special approval. All such participants are to be treated as visitors to the University workplace. The participation of children must be considered very carefully in regard to child safety and their impact on the trip.

### Transport

- What modes of transport are to be used to get to and from the site?
- Is the route safe (consider onroad and off-road conditions)
- Participants and equipment must be transported legally and safely.
- Driver fatigue must be considered and managed appropriately.

## Eliminate, Isolate, Minimise

Once each hazard has been identified, there must be a plan to manage them. The standard three dimensions of hazard management for significant hazards are;

### Elimination

- Total removal of the hazard. In the field, this option is often not possible.

### Isolation

- Containment or avoidance of the hazard. A field trip or field activity may have to be modified to avoid direct interaction with the identified hazard.

### Mitigation

- Minimizing the threat posed by a hazard through proactive hazard management (e.g. obtaining skills, safety equipment, safety procedures, etc.)

## Information for hazard management

### Hazard information

All participants must seek or be provided with relevant hazard information including;

- Specific hazards likely to be encountered during the activity;
- Special attributes or skills required by each participant;
- Any particular clothing, protective clothing, footwear, bedding, and food/drink requirements, • what to do in an emergency.

This information should be discussed with all the participants. If any hazards are missing (or incorrect) in Appendix 13 of this document then let the Health and Safety officer know. They will be able to correct and update the hazards for the next person. A field trip form needs to be completed for every field trip and the hazards section completed as being read and understood by the coordinator/leader and all participants.

### Appropriate attributes or skills

All work undertaken must be within the mental and physical **capability** of the every participant. Each participant must have the **skills** and experience to identify and manage the hazards effectively or be supervised by suitably skilled people.

For certain activities, environments or equipment, a form of official training and **certification** may be required (e.g., height safety certification, alpine safety course, offroad driving or first aid certification).

### Suitable resources

Specialised resources required for particular activities must be provided (e.g., caving equipment or translators). Safety equipment must be fit for purpose. Personal safety equipment provided by participants must be inspected and documented as fit for use by suitably a qualified person/agent.

### Participants

There must be suitable numbers of participants to undertake the activity safely. Participants must avoid working in the field alone especially in remote areas, around water, or high risk urban areas.

### Appropriate level of direct supervision

For teaching field trips there must be at least one supervisor allocated to each field trip, preferably two. The staff-student ratio must reflect;

- The optimum direct supervision required to effectively manage a hazard, and
- The optimum support required to effectively manage an incident.

For lowest hazard fieldwork, a ratio of at least one supervisor per 20 participants is recommended.

### External Providers

If a field trip involves the engagement of external contractors, such as boat/kayak/rafting, helicopter, light aircraft, 4 Wheel drive operators, they must be requested to provide their Health & Safety Policy/Plan. Such documentation should include Maritime or Civil Aviation certifications/registrations and reference checks (this may include a check with the local safety agency). Operators should not be used if they are unable to supply appropriate documentation.

### First aid qualified staff

Depending upon the situation, there should be at least one qualified first aider per 20 participants, with a fully stocked field first aid kit. Careful consideration should be made for trips where participants disperse into separate groups or individuals. It is recommended that people regularly involved in field activities attend a first aid course appropriate to their needs (e.g. outdoor first aid). The School does not cover the cost of first aid training for students. This needs to come from a MSc or PreSS account, or from your supervisor.

### Communication Plan

Appropriate communication networks must be established to ensure that,

- Individuals or field parties can be contacted or located if missing,
- Emergency situations can be resolved as quickly as possible.

### Emergency Management Plan

Consideration must be made as to what action would be taken in the event of injury or other emergency. This is discussed below.

## Hazard Assessment and Management as an ongoing process

Risk assessment and management must be maintained for the duration of the field trip to ensure continued safety. This means actively monitoring external conditions and the condition of the participants and keeping participants informed of potentially hazardous situations as they develop.

### After-hours

The field trip supervisor is responsible for those under their supervision for the entire field trip, including “after hours”. While field trip supervisors cannot always be held responsible for the after-hours activities of those in the field group, all practicable steps must be taken to ensure the safety of the group (e.g. by laying down rules of conduct).

### Alcohol and drugs

The University does not endorse the consumption of alcohol on field trips. This needs to be considered along with the extent of potential consumption, the impact on other field trip participants and general public, safe transport, and management of adverse situations.
The use of illicit drugs is not permitted.
The use and effect of prescription drugs must be considered in any participant’s suitability to attend the trip.

## Identifying hazards

The School undertakes regular inspections to identify hazards, however these do not cover all areas.

The areas covered are:

- Emergency management
- General office safety
- Electrical safety
- Workshop safety
- Laboratory safety
- Radioactive, X-Ray, UV and laser safety
- Vehicle Safety
- Field Safety
- Working at heights

If you notice a new hazard, or something you think could cause harm please notify one of the technicians or the Health and Safety officer immediately. Some examples of what could be noted (using the form in Appendix 14)

- Areas used and their physical condition
- Workplace layout
- Locations of materials and how they are stored
- The types of equipment used
- Knowledge and training
- Protective clothing condition

Once a hazard has been identified then the School can work towards fixing it or making it safe. If you do not say anything then there is a chance the hazard could be missed.

# Boat Safety

## General Information

The School of Environment has the following boats;

- GESter – a 3.8 metre Naiad RIB with 30hp outboard,
- Madame Yak – a 3 metre Fyran aluminium dinghy.

### Maritime Safety Policy

All potential boat users must first have approval of the Technical Manager.
GESter is managed by Brendan Hall (technical staff member) and operates under a Maritime Operator Safety System (MOSS) and can only be skippered by the following approved persons under the MNZ Part 35 exemption through Leigh Laboratory.

- Brendan Hall

### Access to boats

- The boats are open for use within the School of Environment and can be hired by other Departments.
- Boats will not be hired out to persons or organisations outside of the University of Auckland.
- Boats will not be lent to students below graduate thesis level.

### Users

It is the responsibility of the user to ensure the safe road transport of the boat and the prompt return of the boat, trailer and accessories, in the condition in which they were released. Standard operating procedures are issued to the user to ensure this.

### Hire Rates

| | GESter | Madame Yak |
|---|---|---|
| 1 Day | $100 per day | $50 per day |
| 2-7 Days | $75 per day | $40 per day |
| 7-14 Days | $60 per day | $30 per day |
| >14 Days | POA | POA |
| Skipper (for external and contract work) | $100 per hour | $60 per hour |

## Madame Yak

3 metre Fyran aluminium dinghy, for three people max, powered by oars only.
Madame Yak is NOT to be powered by outboard at any time (MNZ regulations)

### Assigned Operating limits

- Inland waters only (estuaries, lakes, etc).
- No more than 1km from land, in calm weather/ water conditions, daylight hours only.

### Minimum Required Equipment

- 3 x lifejackets (for skipper and all crew members)

- 2 x oars + rowlocks
- Anchor + warp
- Communication (cell phone, VHF, or EPIRB)
- First Aid kit

## Skipper

The skipper is responsible for the safety of the boat and crew members during the trip. The skipper must be involved in the planning of a boat trip and will have absolute authority and responsibility in Health and Safety related decisions.

Depending upon the conditions and level of supervision available, Madame Yak may be required to be skippered by persons who are suitably qualified or experienced and have the following;

1. Current Maritime Safety Authority Certification or Boatmaster certificate.
2. Restricted Radio Operators Certificate.
3. Current First Aid Certificate.

Prospective skippers may be accompanied by an appropriate School of Environment staff member to ensure they are familiar with the operational specifics of boat.

The skipper must;

- Ensure that an on-shore contact has been arranged (see Communication)
- Obey all the Rules of the Road at Sea.
- Take careful note of the weather and tide conditions before leaving.
- Inform passengers of boating hazards, basic boat safety and the location and use of the first aid kit, communication devices, etc. before getting underway.
- Ensure all crew wear lifejackets at all times.
- Identify passengers who cannot swim and ensure their safety is considered.
- Be familiar with all the relevant Health and Safety policies and procedures relating to the work being undertaken.

## Planning Considerations

Sole occupant trips are to be avoided. Where practicable, carry a minimum of 2 people on board. This is mandatory for graduate students. The trip must stay within the bounds of the assigned operating limits (see above).

Never carry more passengers than the vessel is rated for and do not overload the boat with equipment. Limit the load and passengers such that the intended onboard activities can be performed safely in the prevailing conditions.

## Communication

Boat users must inform at least one on-shore contact of details of their trip such that, should they go missing, their absence will be recognised and appropriate action will be taken. Ways to do this include;

- Organise on-shore contacts before embarking on each trip (complete a field trip form).

Ensure that adequate means of communication are taken in case of emergency, whether it be VHF radio, UHF radio, cellphone (assuming cellphone coverage is available), EPIRB, or flares.

## Maintenance

Responsibility for maintenance lies with the Technical Staff.
Report all damage/malfunctions as soon as possible to the Technical Staff.

Technical Staff must complete and sign the boat checklist before releasing Madame Yak for use to ensure the boat and accessories are in good condition. Similarly, the Technical Staff will inspect the boat on its return. The boat will not be released for use where the condition of the boat or equipment is considered unsafe or unreliable.

# Chainsaws

Prior to any work being performed, any operator of the ENV chainsaw must first;

1. Have attended an approved chainsaw safety course and earned certification to Unit Standard 6916 and 6917;
2. Obtain the permission of the Health and Safety Officer and be prepared to demonstrate a satisfactory level of experience;
3. Ensure the technician in charge of the chainsaw has checked it over.
4. Has read, and is familiar with the Worksafe New Zealand COP guide to safety with chainsaws

All operators of the ENV chainsaw must;

1. Abide by the codes of practice in Unit Standards 6916 & 6917;
2. Be accompanied on-site by at least one person during the work, preferably first aid qualified;
3. Have a first aid kit on-site during the work;
4. Carry a cell phone or other means of communication;
5. Understand the type and capabilities of the chainsaw they are using;
6. Never operate the chainsaw when tired or otherwise impaired;
7. Check for hazards in the area before undertaking any work.

Protective Equipment

It is mandatory to wear the following equipment;

- Hearing protection – earmuffs class 5;
- Eye protection - safety goggles if dusty, visor if risk of flying debris;
- Gloves or safety mitt;
- Hard hat;
- Boots with good tread and steel caps – long preferable;
- Long heavy trousers – no shorts;
- Chainsaw Chaps that should be to standard AS/NZs 443.3:1997;
- No loose clothing.

Safety checks & Maintenance

Before use, the following checks must be made:

- Petrol – fill with 2 stroke (50:1);
- Air filter checked;
- Chain bar oil – fill;
- Check straightness and wear of guide bar;
- Tighten chain;
- Check sharpness of chain;
- Ensure all components are in the correct place;
- Check safety features.
- The chainsaw will be given an annual service by a professional service agent.

## Other points of significance

There are a few health hazards associated with chainsaw use that you need to be aware of:

- Exhaust fumes can make you feel drowsy and cause you to lose concentration. Use chainsaws in well ventilated areas only;
- Hearing loss can occur after just a few minutes. Wear the correct Class 5 earmuffs to prevent damage.
- Vibration disease (white finger) can be caused by excessive vibration reducing blood flow to finger extremities. Follow manufactures instructions.

# Electricity in the field

## 230VAC Electrical Installations and Appliances

The use of 230VAC in the field must be carefully considered and extra precautions taken as the potential for serious or lethal accidents is greater than normally encountered indoors. Please consult an Electrical Registered technician for any advice.

### Portable appliances (single phase)

All 230V portable electrical appliances (e.g., power tools) must be served by an isolating transformer or residual current device (RCD) to prevent electrocution. Domestic extension cables and connections are not suitable for work in damp or wet conditions.

### Generators

- Do not fill the fuel tank while generator is running and be careful not to spill fuel on the hot muffler as accidental fire may result.
- Operate generators in dry, well ventilated conditions – place the generator where fumes from the exhaust and fuel will dissipate and not affect people in the vicinity. If possible, transport generator and fuel separate to passengers and driver of vehicle.
- Keep the exhaust and cooling air inlet free of obstruction (>1 metre) and well clear of combustible materials (>2 metres) to avoid accidental fires and engine overheating.
- Do not connect the generator output to a household electrical circuit.
- Do not touch the engine-generator assembly when your hands are wet. Electric shock is possible.

### Power supply installation in the field

All power supplies installed in the field must be completed in accordance with the requirements of current Electrical Regulations and the relevant New Zealand Electrical Code of Practice. In many cases a registered electrical contractor will be required.

## 12 VDC Supplies and Instruments

12 Volt DC power is not likely to cause serious harm by electrocution in most applications seen in ENV. However there are associated dangers created by misunderstanding and misuse.

### Rechargeable Batteries

Charging – Use a battery charger that is suited to the battery to be charged. Do not overcharge batteries through using an inappropriate charger or charging for too long on an unregulated charger as this will damage them and may cause them to overheat, distort and leak, or explode.

Handling – Do not allow the terminals or terminal leads of a battery to touch or short circuit as this damages the battery and may cause injury. Avoid handling batteries in areas where flammable gases may ignite.

The electrolyte fluids in batteries are poisonous, highly corrosive and often release flammable gases. Therefore, handle batteries with due care, ensuring that the batteries are well ventilated and isolated from ignition sources. Ensure there is fresh water nearby to flush any splashes from skin or eyes.

Storage – always charge a battery before putting into storage and ensure the area is well ventilated.

Disposal – all batteries should be disposed of properly. Lead acid batteries can usually be disposed of at metal recyclers or battery manufacturers. Do not dismantle, open or destroy any batteries.

Unwanted batteries can be left with technical staff in the “battery graveyard” in HSB360 for proper disposal.

## Solar panels

- Keep solar cells covered when working on wiring – solar panel terminals are live when left uncovered, even on dull days. Cover the solar panel with a thick blanket or similar to block out sunlight.
- Use a solar regulator – on the larger solar panels, a suitable voltage regulator will need to be installed to protect batteries from being overcharged.
- Do not allow power terminals to touch or short circuit.

# Electrofishing

Electric fishing is a method of catching fish in rivers and small lakes for surveying fish and macro invertebrate populations. Executed properly it does not harm the fish, but only stuns them for a short time. The operator carries a powerpack on their back and has a wand with an anode on the end. Fish are attracted to the anode and are momentarily stunned. They may then be caught in a net.

Because of the high voltages used, there is an ***electrocution hazard***; read the ENV Use of electricity in the field document in conjunction with this one.
As this work is conducted in streams or rivers, the associated ***water hazards*** exist; read the ENV rivers, streams and wading document in conjunction with this one.

There are many safety features incorporated in the equipment but the operators need to be trained and certified.

These machines can be lethal if used incorrectly.

All EFM operators must be signed into the Health & Safety Register.

## Primary Safety Rules

1. Electrofishing Machines can only be operated by a certified operator.
2. There must be at least 2 trained persons present, one of which must be a certified operator.
3. There must be at least two certified First Aiders present.

## Operational Safety

1. All operational procedures will be familiar to certified operators and are documented in the Operation Manual.
2. Always check machine and safety interlocks at the waterside before using.
3. Always start at the lowest voltage setting.
4. Do not work in the rain.
5. Wear neoprene or rubber waders that have been tested for leaks
6. Wear electrical rated insulating linesman gloves with tough overgloves for tear protection.
7. Nets and other tools must have nonconductive handles, not covered metal.
8. Ensure that bystanders stay at least 20 metres away and keep out of the water
9. Persons with pacemakers must be kept away.
10. The safety of workers and possible spectators is paramount – if in doubt, stop fishing.
11. The machine must be tested by NIWA once a year.
12. The operator must have a stable footing before operating instrument.

## Additional Safety Requirements

All field work must be done in accordance with the following School guidelines;

- Field Safety Guide, and
- River, Streams, and Wading.

## Ethical Considerations

- Always use the lowest possible voltage setting to avoid unnecessary damage to any species.
- Keep physical damage to the environment to a minimum.
- Consent or permits from landowners must be sought where ever possible.

# Field deployment and structures

School of Environment research and teaching activities often employ the use of instrumentation that is mounted or deployed upon some form of supporting structure or framework.

There are numerous health and safety considerations that must be assessed before a structure or instrumentation is deployed in the field. The safety of all people directly involved (e.g., staff and students) as well as those potentially affected (i.e., general public) must be considered carefully.

### Consideration of Direct Effects

- Can the act of deployment (and subsequent dismantling) be performed safely?
    - Wear appropriate safety gear (e.g., hard hats, gloves, steel capped boots etc.)
    - Ensure adequate numbers of people are available to help
    - Watch out for power lines
- Are conditions safe enough for the deployment (e.g. Weather, swell)?
- Does the deployment obstruct or have the potential to obstruct an access way or public area? (e.g., waterway, road, surf zone, facility)
- Does the presence or any part of a deployment pose a potential hazard to any person or property?
- Does the deployment pose a hazard to those who may tamper with it?

### Consideration of Indirect Effects

- What are the possible outcomes if the deployment fails or cannot be retrieved? (e.g., if a mast topples will it damage private property or become entangled in power lines? If a marine deployment is lost or buried could it become a navigation hazard?).
- Will the presence of the deployment affect the ambient conditions of the environment such that a potential hazard is created (e.g., if a structure affects water flow, will it cause abnormal erosion or sedimentation?).

### Keep all relevant parties informed

It is the duty of those involved in the deployment to inform relevant parties (whether they be landowners, neighbouring residents, local iwi or the general public) of any hazard that a deployment may pose or has created. This may be achieved through public notifications in local newspapers, public meetings, erection of signage, or contacting people directly.

### Be visible if necessary

Similarly, measures must be taken to highlight the presence of a deployment where its presence may be considered to be a hazardous obstruction. This may be achieved through use of fluorescent flagging, colourful signage, buoys, night lighting or strobes, or simply a sturdy barricade or fence. Special consideration must be given to the safety of a deployment at night.

In some cases, it is prudent to conceal equipment from likely vandalism or theft, however, equipment must not be hidden or concealed at the expense of Health and Safety considerations.

## Public Relations

As a matter of course, the relevant Regional and Local Authority should be consulted before erecting structures or deploying instrumentation on non-University sites. For instance, the School has an agreement to notify the ARC of all intended deployments of coastal equipment. Non-approved deployments in certain locations may result in prosecution.

Likewise, permission must be sought for use of private land from the relevant landowner/ manager/ occupier before undertaking such work.

## Environmental considerations

The environmental effects associated with the erection of a structure for monitoring or sampling should be assessed and discussed with the relevant Regional Authority before construction. Factors usually considered are;

- The impact of the physical presence of the structure on natural physical and ecological processes, tangata whenua, and public access,
- The impact of the activity (e.g., noise, visual impact) on natural ecological processes, tangata whenua, local residents.
- Effects on agricultural and horticultural activities should be discussed with the respective land owners.

## Equipment Considerations

For a deployment to be successful, it must be

- Secure - fixed instrumentation and structures must be adequately secured or anchored such that they will not fail, be damaged or lost as a result of reasonably expected conditions.
- Locatable - the deployment must be able to be located (through use of a "pinger", buoyage, tether, flags, etc.) Especially when using expensive equipment or mobile remote equipment.
- Retrievable - plan for the retrieval as much as for the original deployment.
- Labelled - a return address or at least owner's name must be attached or engraved onto the deployment in case of loss or theft.

## Insurance

The user or technical staff must notify the Insurance agent of the details of the intended use of equipment deployments worth (in total) $250,000 or more. It is recommended that similar notification be given for any equipment that is to be taken overseas.

## Discouraging vandalism

The possibility of vandalism to deployed equipment must be considered especially where the site is open to public access. Damage may range from accidental damage to intentional vandalism and theft. The best defences against vandalism are inconspicuous or camouflaged/hidden equipment, equipment made inaccessible or within secured properties.

# Geophysics Safety

## Road safety

The surveys may be carried out along roads, be careful of the traffic and wear a fluorescent vest (provided) at all times; put out road cones if necessary. Some situations may require a traffic management plan, so the Technical Manager or other qualified traffic controller should be consulted during the planning stage.

## Equipment

Do not use equipment on high poles (e.g. GPS antenna, magnetometer head) or layout long cables if there is thunderstorm activity in the area and be aware of power lines, electric fences, etc.

Be careful of sharp edges on all metal equipment.

## Safety practices for seismic surveys

The shot shells used are blanks, however they are explosive devices and you must treat them accordingly.

## Transport and storage of shells (for staff)

Shells must be protected from impact, store and transport in the metal box marked "Danger – shells".

- Handle shells carefully, keep them in the metal box provided, do not throw them or drop anything on them.
- Insert the firing pin into the pipe only when the pipe is screwed into the ground and remove the pin before screwing the pipe out of the ground.
- Drop the firing pin at arm's length i.e. keep your head and body well clear in case of 'bounce back'.

## Safety practices for electrical surveys

- Do not turn on the current until you have positive confirmation from both people moving the current electrodes that they have installed the electrodes and are well clear of them.
- Be sure to turn the transmitter off completely before asking for the electrodes to be moved.

# Rivers, streams and wading

According to the NZ Mountain Safety Council, rivers present possibly the greatest hazard in the bush and mountains. This must also extend to all waterways in rural and urban environments as well. The School considers working around waterways among the most potentially hazardous activities that staff and students will encounter on a working basis and therefore treat it very seriously.

The primary hazards associated with rivers and streams are;

- Drowning
- Slipping (losing footing and control)
- Being caught by snags or whirlpool currents
- Polluted water
- Hypothermia

As with all fieldwork and other off-campus activities, staff and students must complete the requirements as covered in the School of Environment *Field Safety Guide*.

Most importantly,

- Avoid working alone.
- Assess and identify hazards and manage them appropriately.
- Construct a robust communication plan and itinerary and stick to it, within reason.

### Choose the safest place to work

You will first need to assess the river and decide on the safest place to undertake the given activity.

1. Potential changes in conditions
   Be very wary of changing conditions such as rainfall, water levels, and stream flows especially in gorges and other highly confined flow channels. Check weather reports and plan ahead accordingly. Exit water if sudden downpour occurs. Check for the possibility of dam controlled waters and if so, obtain a schedule of spill times.

2. Assess the speed of the river
   Throw a stick into the fastest current and try to keep pace with it, walking along the bank. If this is more than walking pace, then entering the water is potentially dangerous. Do not work in heavy rain.

| Surface Velocity (m/s) | Depth | | | | |
|---|---|---|---|---|---|
| | Shin | Knee | Mid Thigh | Full Thigh | Over Groin |
| > 1.0 | Single manning | Single manning with personal floatation device | Double manning with personal floatation device | Double manning with personal floatation device and throw bag | Double manning with personal floatation device and throw bag |
| 1.0 to 0.5 | Single manning | Single manning. Personal flotation device is discretionary | Double manning with personal floatation device | Double manning with personal floatation device and throw bag | Double manning with personal floatation device and throw bag |
| < 0.5 | Single manning | Single manning | Single manning with personal floatation device | Single manning with personal floatation device | Single manning with personal floatation device |

***Note**: These provisions are applicable only to able-bodied persons in normal daylight, good visibility and firm bed conditions.*

3. Assess the depth of the water
   Think very carefully about entering water above thigh depth. Consider the height of other members of your group. Do not enter turbulent water or areas where you cannot see the bottom.

4. Try to assess the river bed
   Avoid cloudy or dirty water which hides the bottom. Beware of slippery or cobbly river beds.
   Beware of soft or sticky river beds which can restrict your movement and ability to exit. Avoid areas with debris, logs, snags or boulders.

5. Entry and exit points
   Ensure that you can enter and exit the water easily and safely (and escape if necessary). This is especially important if crossing a river. Steep banks are often associated with deep water.

6. Look downstream and assess the "run-out"
   If you fall in, where will you end up? Avoid deep pools, rapids, culverts, waterfalls, logs and debris, whirlpools, convergences with other waterways. Can you reach safety easily?

## Preparation

1. Physical ability
   Ensure that you and your group have the knowledge, ability and strength to cope with the task at hand and potential hazards that may arise. How well can you and your group members swim? Attending a river safety course is highly recommended.

2. Clothing
   Wear sensible outdoor clothing that is warm and reasonably snug fitting but does not restrict mobility. Wear shorts or tight fitting longs – NO baggy trousers! Pack a towel and spare change of warm, dry clothing. If appropriate, wear a wetsuit or waders.

3. Footwear

   Wear sturdy footwear with thick tough grip soles such as boots or comfortable sneakers. These should protect you from slippery surfaces and sharp objects and provide sturdy support for your feet and ankles. Definitely no bare feet or jandals.

4. Rescue equipment

Consider what kind of rescue equipment may be useful (e.g., rescue rope, rescue tube, etc).

## Wader Safety

The School owns numerous sets of neoprene waders for use in shallow water activities. They are suitable for keeping you warm, dry, and clean however they are a bulky garment and can pose a hazard in themselves. Most importantly, if you fall into the water and fill your waders, some can become incredibly heavy and cumbersome making the risk of drowning much higher. Identify the type of waders you have before making judgement.

If wearing waders, there are a few basic but essential rules;

1. Waders are for shallow water work ONLY (up to waist depth max.). Be very careful when working around deeper water.
2. A life jacket must be worn when wading in water above knee depth.
3. A wading belt should be worn over waders at waist level or higher to restrict the amount of water that enters them should you fall in. Some waders have positive buoyancy when full of water and used with a belt.
4. DO NOT wear waders when working on boats.

It is highly recommended that you try wearing a set of waders in a swimming pool and submerging yourself to test your ability to cope in an emergency. Should you fall into deeper water, do not attempt to swim – immediately tuck your knees up to your chest (this traps air into the waders) and roll onto your back. Either tread water or float in an upright position. You should be able to use a backsculling action to return to shore. If being carried by the current, face downstream (feet first). If possible, attend a wader training course.

## River Crossings

The knowledge and ability to cross rivers safely is essential to working in all rivers but cannot be covered here. Again, a river safety course is strongly recommended. A useful overview is covered in "Bushcraft Manual - Outdoor Skills for the NZ Bush", a NZ Mountain Safety Council publication (the technical staff have a copy on file). It is recommended that you also read relevant sections in The National Environmental Monitoring Standard for working in and around water (http://www.lawa.org.nz/media/16575/nems-code-of-practice-2013-06.pdf).

## Hygiene

- Due to prevalence of waterborne organisms such as coliform bacteria and giardia, do not drink directly from streams.
- Similarly, prevent the spread of didymo by observing required disinfection procedures,
- Practice good hygiene by washing hands after contact with soil or water,
- Never discard waste or defecate into streams or rivers.

Miscellaneous

- Obtain appropriate consent to discharge tracer dyes into waterways.
- Enhance your vision of the stream bed by wearing Polaroid sunglasses.
- Decide on what other equipment is necessary when working around water
    - PFDs
    - Communication Equipment
    - Maps
    - First Aid kit
    - Torch

# Vibrocorer

All vibrocore operators (those supervising coring operations) must be signed into the H&S Register and are responsible for informing all assistants of the procedures required in the safe operation and handling of the equipment.

### Identified hazards

- Vibration hazard from vibrating head and tube
- Noise from vibrating head and tube
- Heavy lifting of equipment and full core barrel
- Electrocution due to mishandling of core barrel around powerlines, electric fences, electrical storms, penetration of underground services
- Falling core barrel or tripod
- Sharp metal edges
- Winch failure
- Poor ventilation from drive unit exhaust gases or fuel
- Open drive unit coupling
- Hot drive unit exhaust
- Saw used in core splitting operation
- Core pipe storage rack

A minimum of three fit people are required for vibrocoring, or four if using the Uwitec, especially at the core retrieval stage. The equipment is heavy to transport on foot so share the burden as much as possible and exercise care with heavy lifting. Make sure to read the Worksafe documentation on manual lifting before undertaking any work.

Handling of the vibrating head while in operation should be kept to a minimum. Over exposure to the intense vibration in the head and core barrel may result in chronic injury or disorder. According to the literature, the highest risk frequency band for high intensity vibrational equipment is 4 to 8 Hz while the vibrocorer operates at 212Hz primary frequency, however, numerous subfrequencies can be emitted. The rubber cable may be handled quite safely if required but, again, not for extended periods of time.

Once the core barrel has penetrated about one metre, the head and core barrel can stand unsupported. Applying body weight directly onto the vibrating head may be hazardous and is not recommended.

### Wear the correct attire

- Hard hat (essential) - to protect against falling core barrel or tripod, 3 are provided;
- Leather gloves (highly recommended) - to protect hands from sharp metal edges of the core barrel, the winch cable, and to provide slight relief when handling the vibrating head, several pairs are provided;
- Hearing protection (highly recommended) - to protect ears from the loud vibration of the vibrating head and tube, 3 pairs are provided;
- Boots or similar sturdy footwear (highly recommended), not provided;
- Overalls (recommended) - not provided.

Ensure adequate ventilation - do not run drive unit in poorly ventilated or confined areas where exhaust gases may affect operators. Also, endeavour to transport drive unit and fuel separate from drivers and passengers of vehicles (e.g. in a trailer or utility compartment).
Thoroughly assess site before coring - at all costs avoid establishing a core site close to powerlines, underground services and, to a lesser degree, electric fences. Be wary of weather and tides where necessary and do not operate during electrical storms!

Take care when retrieving core with winch - wear gloves, keep your face away from the cable under tension, use reverse winching to release initial tension when slackening winch. Work at a smooth, steady pace.

Be careful of the drive unit - do not put fingers near the drive unit coupling point when operating the drive unit without the cable attached, be careful not to touch or allow fuel to spill onto hot exhaust manifold.

Transporting core barrels - the core barrels are 7.5 metres long and cumbersome and must be transported securely. According to the LTSA, an overhanging load can legally extend 3 metres forward of the front edge of the driver's seat and 4 metres rear of the rear axle. Any overhang greater than 1 metre must be flagged with a white, yellow, orange or red marker or rag. A two-point roof rack is generally suitable for transporting 7.5 metre length core barrels so long as the barrels are secured properly and don't flex or bounce in transit.

Student use - students must be accompanied by a technical staff member or an appropriate staff member whenever using the vibrocorer, at least until they have acquired an acceptable level of proficiency to supervise accompanying assistants.

Splitting the core barrels – the splitting of full core barrels uses a handheld tile cutter and wooden jig dedicated to splitting cores.

- Core splitting must be conducted under the supervision of a technician or other competent staff member at least until proficiency is proven.
- It is recommended that another staff member is present on Level 3 in case of emergency.
- Eye and ear protection must be worn, the door must be open and it is recommended that the extractor fans be turned on.
- Clean the equipment and workshop floor after use.
- When slicing the sediment core with the guitar wire take care with sharp metal edges and the wire itself use leather protective gloves if necessary.

Storing the core barrels – cores are stored on a rack in the workshop above the machinery and are transported outside via the workshop window.

- At least two people are needed to transfer core pipe (one outside, one inside).
- Be very careful of the pedestrians in the alleyway. Redirect them while moving the pipe.
- Exercise care while climbing on/off and standing on the bench.
- Do not overload the rack – storage rack is for 12 lengths only.

As a matter of courtesy, all people in the immediate vicinity of the proposed field site should be consulted before the vibracoring commences since the noise can be very disruptive and may disturb livestock or social events, etc.

Maintenance

- Annual service of drive unit by Wacker Machinery Ltd.
- Periodic check of all equipment for damage.

See Wacker HD 3.7 operator's manual/parts book – Wacker Construction Equipment (see Technical
Staff)

# Working in coastal environments

The School conducts a significant amount of teaching and research in coastal environments in New Zealand and overseas. There are a myriad of hazards in the coastal environment, the most significant being drowning. Of the 100 or so drownings per annum, almost 60% are in the coastal environment.

As with all fieldwork and other off-campus activities, staff and students must complete the requirements as covered in the School of Environment Health and Safety Manual.

Most importantly,

- Assess and identify hazards and manage them appropriately.
- Construct a robust field work plan and itinerary and stick to it, within reason.
- Avoid working alone.

### Deploying equipment in water and surf

Deploying instruments in the water can be a dangerous activity especially when in rough conditions such as surf zones. The main rules when deploying instruments are;

- At least one experienced staff member must be present to co-ordinate the activity.
- At least one person remains up-current from the work as a safety observer, and carries a dive knife and rescue tube.
- At least one person is to remain as an on-shore observer who is able to identify potentially hazardous situations and call emergency services if necessary.
- Special consideration must be given to the weather, swell, and tidal conditions at the time of deployment and retrieval – an instrument deployed too deeply may be near impossible to retrieve due to burial, higher water level (e.g., due to low pressure systems or higher tides), or increased swell height.
- Deployments in the surf zone or in flowing water are set in waist deep water maximum. Still water deployments can be installed safely in chest deep water. Deeper water deployments must be done from a boat or similar.
- Ensure a robust system of communication (e.g., radios or hand signals) is set up between in-water participants and on-shore observers to facilitate a smooth deployment.
- See also *Deploying Equipment in the Field* in the Field Equipment section of this manual.

# Appendix 1: Relevant Documents

Approved Code of Practice for Safety in Excavation and Shafts for Foundations - http://tinyurl.com/jnb2w5h

Bushcraft Manual - Outdoor Skills for the NZ Bush - NZ Mountain Safety Council publication

Energy Safety - http://www.med.govt.nz/energysafety

Field Activity Guidelines (in development) –

Health and Safety Policy - http://tinyurl.com/jjoxvd3

How to report an accident or near miss http://tinyurl.com/zwttmo9

LTSA Driver Fatigue http://tinyurl.com/gw3hq3z

LTSA Driving in New Zealand http://tinyurl.com/ja77ztp

LTSA Safe loading and towing http://tinyurl.com/jzhpdym

Manual Handling - http://tinyurl.com/zylxo85

River Safety - http://tinyurl.com/jhn82tb

Safe Work at Heights - http://tinyurl.com/z6sefq2

School of Environment Deploying Equipment in the Field - http://tinyurl.com/za6h5ab

School of Environment ElectroFishing - http://tinyurl.com/gvvnwua

School of Environment Field Safety Guide - http://tinyurl.com/z8habgt

School of Environment Geophysics Safety - http://tinyurl.com/josyhso

School of Environment Information for Student Field Trip Participants - http://tinyurl.com/jfo8g7k

School of Environment Madame YAK (3m Dinghy) - http://tinyurl.com/gnqg8yj

School of Environment Rivers, Streams and Wading - http://tinyurl.com/zh8b4jx

School of Environment Student Field Trip Acknowledgement Form - http://tinyurl.com/jnqd4xo

School of Environment Toyota Gearvan Guidebook http://tinyurl.com/ha4ck3h

School of Environment Toyota Hilux Guidebook http://tinyurl.com/h84smoc

School of Environment Toyota Minibus Guidebook http://tinyurl.com/jnxbdmr

School of Environment Use of Boats - http://tinyurl.com/hxmowlp

School of Environment Use of Chainsaws - http://tinyurl.com/h242xnt

School of Environment Using Electricity in the Field - http://tinyurl.com/gpee3ne

School of Environment Vehicle guideline http://tinyurl.com/zswl7gp

School of Environment Vibrocorer - http://tinyurl.com/jfy7y5t

School of Environment Working in Coastal Environments - http://tinyurl.com/jlkb3ap

The National Environmental Monitoring Standard for working in and around water

University of Auckland Fieldwork Safety Guideline - http://tinyurl.com/zz956nu

University of Auckland Vehicle Policy http://tinyurl.com/j56bumm

Working with ladders http://tinyurl.com/zz7wtv6