



**CSIRO AUSTRALIA TELESCOPE NATIONAL FACILITY
NARRABRI**

Paul Wild Observatory

**OCCUPATIONAL HEALTH & SAFETY
MANUAL**

Michael Dahlem

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This document contains information about Occupational Health and Safety at the Australia Telescope Compact Array at Narrabri

Note: See related document "Narrabri Emergency Procedures"

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OCCUPATIONAL HEALTH & SAFETY INFORMATION
Paul Wild Observatory Narrabri

(refer also to ‘Occupational Health and Safety Information - CTIP & ATNF’)

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1. INTRODUCTION

1.1 Scope of this Manual

Attaining and maintaining high standards of occupational health and safety (OHS) in the workplace must be fundamental goals for employer and employee alike, and well-defined policy and responsibilities are needed to ensure that workplace practices are consistent with such goals.

This manual concerns OHS at the Paul Wild Observatory Narrabri. The information it contains has been compiled on behalf of the Observatory OHS Committee. It gives a general overview of safety at the Narrabri Observatory. In areas where more detailed information is required it refers to the relevant documents (all of which are listed in Appendix 3). This document serves as a single reference to all these related documents.

Any comments or suggestions should be directed to the Chairman of the Committee or the Observatory Safety Officer (see Appendix 1).

Safety at the Mopra Observatory is outlined in the “*Mopra Safety Manual and Emergency Procedures*”.

SITE EMERGENCIES

Information sheets with basic rules of behaviour in an emergency are posted on pinboards in each building of the Observatory. For more information on emergencies refer to the “*Narrabri Emergency Procedures*” document.

2. OHS PERSONNEL AND POLICIES

This Section outlines in general terms the existing OHS policies within CSIRO and ATNF as one of its Divisions, as well as the roles of key staff members in the area of OHS. More specific information on the practical implementation of these policies at the Narrabri Observatory follows in the subsequent Sections.

2.1 General: OHS Responsibilities of OICs and Employees

As employees of the Commonwealth Government we operate under the *Occupational Health and Safety (Commonwealth Employment) Act 1991*. In the CSIRO this is implemented through the *Agreement Between CSIRO / Unions (April 1996)* together with the *2003 CSIRO Occupational Health & Safety Policy Statement (2003/06)*. These define the responsibilities of the Chief Executive, Deputy Chief Executives, Branch Secretaries, Officers-In-Charge (OICs), and OIC's Supervisors and individual employees.

It is also CSIRO policy that sites should conform to the standards prescribed by the relevant State or Territory with respect to the various laboratory, industrial, electrical and building codes.

Finally, no employee shall interfere with, remove, displace or render ineffective any safeguard, safety device, personal protective equipment or other appliance provided for safety purposes, except when necessary as part of an approved maintenance or repair procedure.

2.1.1 CSIRO OHS Resources

CSIRO OHS information is available via the Intranet (<http://www.csiro.au/intranet/index.asp>), which is accessible to all staff. The OHS pages can be found by following the "OHS" link to <http://www.csiro.au/services/humanres/essentials/safely/index.html>. On this site one can also find links to relevant external sites, such as e.g. Comcare, Chemwatch, Australian Standards online and others. More ATNF Narrabri specific OHS resources are listed in Appendix 3.

2.1.2 OHSE Network

There is a CSIRO-wide exchange of information between OHSE Officers of all Divisions and CSIRO Corporate. All divisional OHSE Managers are listed on a page under the OHS homepage on the CSIRO Intranet (see above).

2.2 OHS Personnel at the Paul Wild Observatory

Safety is everybody's responsibility. If you see any unsafe equipment, situations or practices, or have any suggestions for improvements in occupational health or safety, talk to your Safety Officer or your OHS Committee. However, your immediate supervisor is often the most appropriate person and, if possible, you should approach this person first.

All accidents and near misses must be reported to the Safety Officer.

2.2.1 Narrabri OHS Committee

Under the terms of the *Occupational Health and Safety (Commonwealth Employment) Act 1991* each CSIRO division is required to maintain a committee to represent the OHS interests of the staff and management. In the case of the ATNF a Safety Committee exists at each of its sites at Epping, Parkes and Narrabri. The Narrabri Safety Committee consists of members from both management and staff, who ensure, together with the Officer-in-Charge and the Safety Officer, the safety of the work places and work practices of all staff and report back to the OIC on progress made.

The Safety Committee meets on a bi-monthly basis. Input from staff, via their Health and Safety Representatives (HSRs) is invited well in advance of each meeting. All discussions, decisions, actions etc. of the meetings are documented in minutes, which are made available to staff shortly after the meetings and kept in a central repository by the OHS Secretary for future reference.

The current members of the OHS Committee are listed in Appendix 1.

2.2.2 Safety Officer

The Safety Officer has the task and responsibility to provide a safe work environment and to ensure safe work practices on behalf of the OIC and the Safety Committee by coordinating OHS-related activities at the Observatory.

The current Observatory Safety Officer is listed in Appendix 1.

2.2.3 ATNF OHSE Manager

The OHSE Manager is a professional OHS staff member with responsibilities extending over the CSIRO Australia Telescope National Facility. Although not always on site at Marsfield s/he can always be contacted directly via the telephone, which is equipped with an answering machine and a pager. The ATNF OHSE Manager coordinates OHS-related work across all ATNF sites and advises site Safety Officers in their duties.

The current ATNF OHSE Manager is listed in Appendix 1.

2.2.4 Health and Safety Representatives (HSRs)

Health and Safety Representatives (HSRs) are staff members representing the employees' interests on OHS-related issues. They are often (but not necessarily) members of the Safety Committee. If there are serious safety concerns that the Observatory staff feel are not addressed properly by those responsible for OHS on site (see list in Appendix 1), HSRs have the power to shutdown work in the affected area until the dispute is resolved and a solution found that is considered safe by all sides.

2.2.5 List of Narrabri OHS Personnel

A list of OHS personnel at Narrabri is provided in Appendix 1. **Key OHS personnel on site must not fulfil more than one of the following functions at the same time: Fire Captain, House Warden, First Aid Coordinator and the Communications Officer/Switchboard Operator** (including their deputies).

2.2.6 "Who is Who" in OHS

OHS in all CSIRO Divisions is a line management responsibility, as outlined in the CSIRO OHS policy documents mentioned above. OHS information or concerns should normally be brought to the attention of your immediate supervisor, who will/may be assisted in implementing changes by the site Safety Officer and/or the OHS Committee (see below), who act on behalf of the Officer-in-Charge (OIC). The OIC is responsible to the ATNF Director (who is assisted on safety matters by the ATNF OHSE Manager), who in turn reports to the CEO of CSIRO (who, again, has assisting OHSE Staff). If all the representatives of the employer (ATNF) fail to implement adequate safety measures, staff can consult their Health and Safety Representatives to ensure that adequate measures are taken or, if not, that work in an area deemed unsafe is suspended. In practice, however, all should work together to ensure that all safety concerns are dealt with appropriately in a timely manner.

2.3 General OHS Policies at the Paul Wild Observatory

Guidelines for Occupational Health and Safety are often site-specific. Therefore, as an extension to the OHS policies defined by CSIRO, more specific policies were developed for the Observatory.

2.3.1 OHS Inductions

To ensure that everybody staying at the Observatory, either to work here as staff or contractor, or as a visitor, is adequately informed about OHS, everybody must undergo an appropriate OHS induction, depending on what they come to do at the Observatory and whether they might, e.g., stay overnight or not. More information follows in Sec. 6.3.

2.3.2 OHS Training

So as to maintain a high standard of Occupational Health & Safety at the Observatory, staff are undergoing regular OHS training in the areas listed in Sec. 6.4. To keep track of OHS training of staff, a list of courses attended and certificates earned is maintained by the OHS Secretary, together with the ATNF OHSE Manager.

Staff members serving in key functions during emergencies (namely the Fire Captain, House Warden, First Aid Coordinator and the Communications Officer/Switchboard Operator) are expected to have detailed knowledge of the current safety procedures governing their functions. All others undergo less frequent or more specialised safety training.

2.3.3 Risk Management

So as to ensure that inherent risks in the work performed at the Observatory are properly assessed and subsequently minimised by control mechanisms, all work activities are investigated in terms of Occupational Health & Safety. Such an assessment is called an HSEACW (Health, Safety and Environment Assessment and Control of Work). These are described in Sec. 6.1.

2.3.4 Incident Reporting

The primary goal of OHS is to prevent incidents in the first place. However, even the most sophisticated safety measures can never entirely exclude the possibility of accidents or near misses happening. In order to learn from incidents, it is important to carefully register and report them and to use the insights thus obtained to develop safety measures helping to prevent them from occurring again in the future.

The incident reporting mechanism is uniform across the whole of CSIRO. A general description of this process follows in Sec. 6.5.

2.3.5 Specific OHS Policies

HARD HATS POLICY

In some work areas protective headgear is required. This is specified in part 1 of Appendix 2.

LOCKOUT TAGGING

For some work on antennas these must be demobilised and tagged to prevent personal injury or damage to equipment. Tags are attached to carabiner hooks for use on the red emergency stop mushroom buttons (“E-stops”) of the antennas or to lockout clips pinned into SWEO circuit breakers if used to perform a full current isolation on an antenna or turret drive (see the document on “*Narrabri Antenna Work Induction*” for details).

WORKING ALONE POLICY

Special care must be taken when working alone at the Observatory. The tasks listed in Sec. 3.5.1 are considered working alone and safety mechanisms are described that have been devised to minimise the residual risk of work performed alone.

NB: Working alone at the Mopra Observatory is described in a separate document (as part of the “*Mopra Antenna Work Induction*”).

HANDLING OF LASERS

Lasers are potentially harmful devices. Therefore, restrictions to their use and control mechanisms have been put in place to avoid personal injuries. These are outlined in Sec. 3.5.3. Details on laser first aid are given in the document “*Divisional Procedure – Laser Exposure Emergency (Narrabri)*”, which is part of the “*Narrabri Emergency Procedures*”. The ATNF Laser Safety Officer in Epping is responsible for laser safety at all ATNF sites.

WORKING AT HEIGHT

Working at height, with a risk of falling and sustaining injuries from the fall, is an area where special protective gear, such as harnesses and/or lanyards may be required. Only authorised and properly trained personnel are allowed to perform such work, with the appropriate equipment. More details will follow below.

3. OHS GUIDELINES FOR THE NARRABRI OBSERVATORY

3.1 Local Environment

New staff, contractors or visitors may not be familiar with the environment of the Paul Wild Observatory, which is located in a rural area of inland Australia. All new arrivals on site are therefore given information on the local fauna, flora, climate, etc. so as to avoid personal injury. Details are provided in the document “*Welcome to Visitors*”.

3.2 Site in General

FIRE DANGER

NO OPEN FIRES ARE PERMITTED AT THE NARRABRI OBSERVATORY without explicit approval by the Officer-in-Charge!

ACCESS TO HYDRANTS AND HOSES, CORRIDORS AND PASSAGE AREAS ARE TO BE KEPT CLEAR AT ALL TIMES.

Information on fire safety at the Observatory is compiled in Sec. 4.

CONTRACTOR/VISITOR SIGN-IN/SIGN-OUT

So as to be able to account for everybody in the event of an emergency all those visiting the Observatory that are not registered via our online accommodation booking system must sign in at reception prior to commencing their work/stay and out again before leaving.

NO SMOKING POLICY

Smoking is not permitted in any building, vehicle, or enclosed area owned or operated by the CSIRO. This rule also extends to areas outside buildings near doors, windows, or air intake ducts where air may be drawn into buildings, vehicles, etc. Smoking is also prohibited anywhere on the structure of the antennas and near the fuel station and fuel storage shed.

ALCOHOLIC BEVERAGES

Alcoholic beverages on site are prohibited while on duty.

DRIVING ON SITE

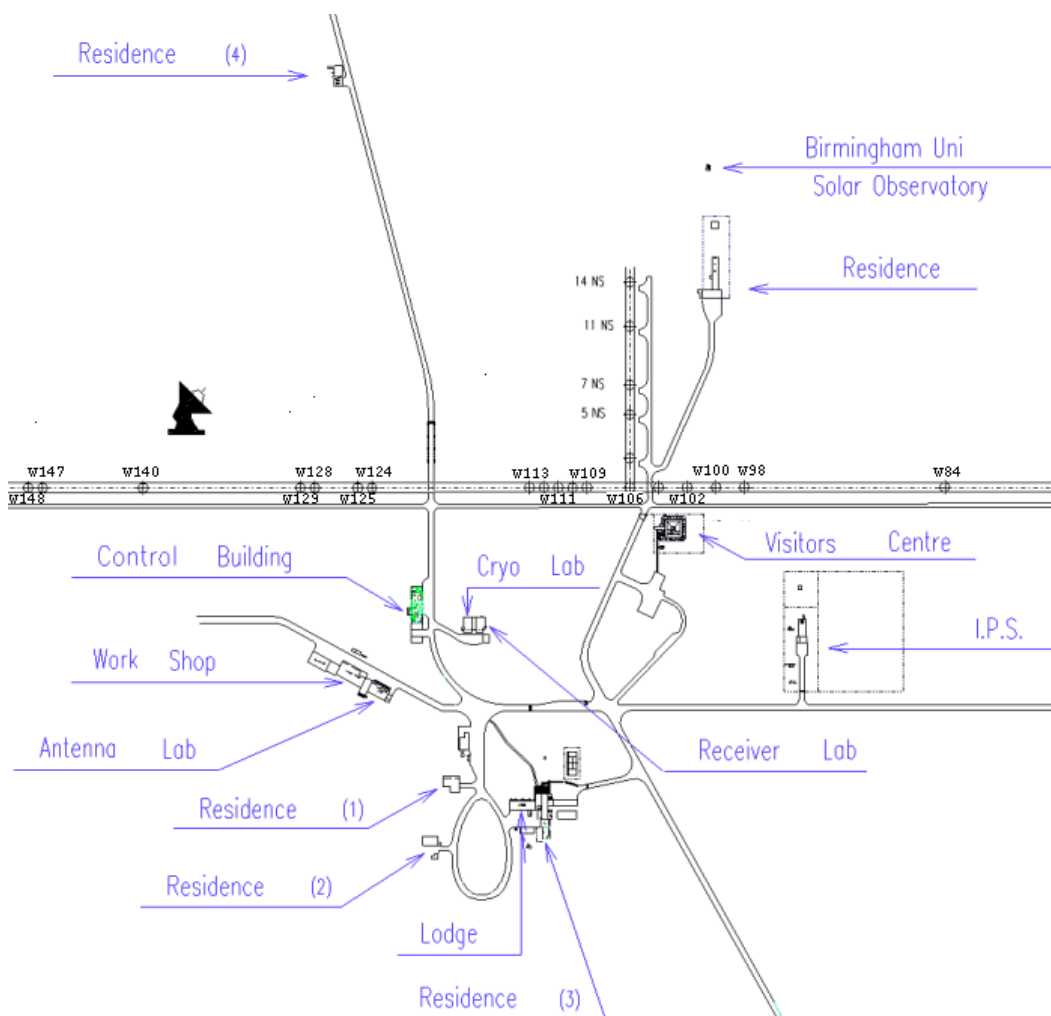
Drivers in the central area of the Observatory should drive particularly carefully, because there might be pedestrians or animals on the roads, while there is only minimal lighting at night (see map on next page; more vehicle drivers' safety information is provided in Section 3.5.7).

CYCLING ON SITE

Bicycles on site are for use in the central area only (see map). They should be used with care to avoid falls and damage to the bicycles. Cycling helmets are available upon request at reception (in the control building).

FAMILY VISITS

While visiting the observatory, children under the age of 14 years must be kept under constant supervision by their parents/carers. When planning an observatory trip with children, visitors should consider the "boundary conditions" first, i.e. the number of children taken along, age and personality of children and the capability of the second carer when one is working, so as to ensure their safety at all times.



3.3 Personal Safety at the Workplace

3.3.1 Clothing/Personal Protective Equipment

GENERAL DRESS RULES

Staff should maintain an appropriate standard of dress for the work being done. All staff are required to wear suitable footwear and, when on the structure of the antennas, shoes with non-slip soles are mandatory.

PROTECTIVE CLOTHING

Protective clothing for various work activities and environments is available and must be worn if so directed. More details follow below.

PERSONAL SAFETY EQUIPMENT

Personal safety equipment is stored in the safety cabinet, next to the First Aid cabinet, in the breezeway between the Antenna Lab and the Workshop building (see map). Missing or damaged equipment should be reported to the Safety Officer.

SAFETY GLASSES

Safety glasses or face shields are to be worn when handling dangerous chemicals, including charging lead-acid batteries. They are to be worn with any grinding or machining work. Safety glasses or toughened prescription glasses are to be worn, at the discretion of the Workshop Supervisor, by personnel visiting or using workshop areas. Safety glasses are available for visitors to the workshop, located in the workshop near grinders, or from the Safety Officer.

SAFETY FOOTWEAR

Safety footwear must be worn near workshop machines or when handling or using heavy materials or equipment.

SAFETY HARD HATS

Safety hard hats are to be worn whenever there is a danger from falling objects, or where there is limited headroom and consequently a possibility of head injury. Safety hard hats must be used in all areas designated as hard hat areas (see Appendix 2).

HEARING PROTECTION

Ear muffs or plugs must be worn whenever noise levels are excessive. Machines and situations in this category are indicated with signs.

RESPIRATORS

Respirators or breathing masks are to be worn whenever the risk of toxic fume inhalation is serious, e.g. when spray-painting. Dust masks are to be worn when sanding etc. Various types of respirators and masks are available, and the Safety Officer will advise on the correct type to use.

APPROVED SAFETY HARNESS

If you intend to work in an exposed high position, contact the Safety Officer who can advise you on the use of safety harnesses and related equipment.

3.3.2 *Various*

USE OF MICROWAVES

When signs are attached to the microwaves at the lodge asking not to use them, their use is prohibited, because it might interfere with observations of the Array in the 2.4 GHz band.

OBSERVER'S "MAD DASH"

To avoid the risk of injury or other health problems, nobody on site is allowed to work (or observe) for more than 16 hours per day. Observers should not embark on a long drive by car right after a long observing run without getting sufficient sleep first (cf. Sec. 3.5.7 on "Motor Vehicle Safety").

3.4 Safety rules for specific parts of the Observatory

3.4.1 *Safety at the Antennas*

Details on antenna safety are described in the antenna safety induction documents. The following is a brief summary.

Access to an antenna is not suitable for persons suffering from vertigo. Therefore, persons accessing an antenna for the first time should always first be asked whether they have fear of heights. If uncomfortable, persons should not access the upper parts of the antennas.

Because of the unusual nature of a radio telescope (i.e. it is large and powerful and moves, often in an unpredictable way) it is not easy to fully safeguard the personnel whilst on the structure without some degree of special care on their part. Therefore, some of the following are guidelines rather than rules.

No person should proceed onto the moving telescope structure without first informing the Observatory Operations Group, and, for periods of maintenance, leaving an appropriate message on the whiteboard in the Compact Array Control Room. In the absence of a group member, the Duty Astronomer or affected observer should be consulted. Before proceeding onto the moving parts of the antenna an E-stop should be pressed and a lockout tag attached to it. The antenna gate, which also has the function of an E-stop, should be left open. Tagging instructions are given as part of the "*Antenna Work Induction*".

If the Array antennas had been stowed for reasons of maintenance, antenna inspections etc, the Operations Group should be consulted before the Array can be used again for observing.

Personnel should familiarise themselves with the locations of emergency-stop mushroom buttons and other safety and first aid equipment on the telescope structure.

Particular care should be taken regarding objects falling from the structure. Firstly, extreme care is necessary to ensure that even small objects do not fall off the structure. Secondly, as a rule, personnel should not be underneath others working on the structure. **It should be noted that anywhere on the structure, and within a 15-m radius on the ground below the telescope, a hard hat must be worn (Appendix 2).**

Suitable non-slip footwear must be worn whilst working on the structure, and when necessary the safety harness must be used.

To minimise the risk of misalignment or damage to the panels of the antennas' reflecting surface, the following restrictions now apply at both the Compact Array and Mopra.

1. General access to the antenna surface is prohibited.
2. When access to the surface is essential the following rules will be followed:
 - (a) wear clean (grit free), soft soled shoes;
 - (b) tread only along the rivet lines where the surface is supported;
 - (c) allow at most one person on any single panel;
 - (d) protect the surface from falling objects or placement of heavy objects on unsupported areas.

Visitors are not permitted on the telescope structure unless accompanied by an authorised staff member, and must be wearing the appropriate personal safety equipment. An antenna must be stowed and inoperative before any visits on the moving structure.

Special care should always be exercised when on the telescope structure (including in the Pedestal and Vertex Rooms) as remotely controlled equipment may move without warning.

SUBREFLECTOR ACCESS

Access to the antenna subreflectors is restricted to authorised and properly trained personnel. Access to the subreflector must in each individual case be granted by the responsible Group Leader and a safety harness must be used.

3.4.2 *Confined spaces*

Some areas of the Observatory, such as e.g. the cable pits along the telescope track, fall within the definition of "confined spaces". Working there requires special precautions, as outlined in the "*Working in Confined Spaces*" rules (in preparation).

3.4.3 *Compact Array Control Building*

A fire escape for the upper floor is located at the rear of the building, and appropriate exits to the external upper floor verandah are designated (see "*Narrabri Emergency Procedures*"). All working in the Control Building should be familiar with these details.

Parents are discouraged from bringing their children to the Control Building. Children under 14 years of age must always be accompanied by adults.

3.4.4 *Engineering Workshop, Cryogenic Laboratory*

Protective clothing must be worn if directed.

Workshop aisles are to be kept clear of obstructions at all times.

Unauthorised use of workshop machinery by non-workshop staff is prohibited.

Welding bays are considered to be restricted areas with only authorised access permitted.

Approved goggles must be worn for gas welding, brazing and cutting. Suitable shields must be worn whenever electric welding or observing this process.

Food and drink must not be prepared or consumed in any of the workshops or laboratories where chemicals are used.

3.4.5 Visitors Centre

A personal emergency button located in the Visitors Centre office is available for use in any emergency. First aid kits (one of which is accessible to the public) and fire safety equipment, including sensors connected to the site fire alarm system, are also in place.

3.5 Safety rules for specific work activities

3.5.1 Standard Operating Procedures

A number of areas have been identified in which work is potentially hazardous, without some of those performing the tasks always being fully aware of the potential implications. Therefore, special “standard operating procedures” (SOPs) have been put in place in these areas. This list only summarises what these areas are; more details are described elsewhere (in an SOP document that contains the individual procedures). Only authorised/qualified staff or contractors are permitted to do this kind of work.

AREAS WHERE SOPS APPLY

At the Narrabri Observatory the following activities are governed by SOPs. If in doubt, ask the Group Leader supervising the work to be performed or the Safety Officer.

- Work involving lasers
- “Hot work” (welding)
- Penetration work (digging & drilling)
- Handling of material suspected of containing asbestos
- Hoist operation on the antennas
- Work with compressed air
- Work with toxic substances, such as e.g. pesticides, fungicides, herbicides (see below)
- Work with cryogenic substances
- Work on the PABX telephone computer system
- Work on/with the HIAB and elevated work platform trucks

A document outlining SOPs for these tasks is in development. In the interim group leaders supervising these work activities must be asked for specific permission.

3.5.2 Working Alone Rules

Working alone poses additional risks on staff if something goes wrong. Therefore, all work performed by staff on site has been categorised according to the level of inherent risk involved.

Different working alone rules apply for work practices with different inherent levels of risk. Activities considered to have a high inherent risk must not be performed while working alone. Details are outlined in the “*Narrabri Working Alone Policies*”, which form part of the “*Antenna Work induction*” document.

3.5.3 *Electrical Safety*

Under CSIRO Policy Circular 2003/12 only persons authorised by the OIC may work on electrical installations and electrical appliances. All work must comply with the rules set out in the policy circular, the local supply authority rules and in accordance with AS3000.

Electrical installations, including appliances wired directly into the 240/415V installation, may be worked on only by licensed electricians. For all repairs or work of this nature the site electrician should be contacted. Details are provided in a separate document (“*Electrical Work Authorisation*”).

Access and clear space is to be maintained around electrical distribution boards at all times.

3.5.4 *Laser Safety*

Lasers and equipment connected to lasers, such as optical fibres, may be used and handled only by authorised staff. For those dealing with laser equipment, there are a few “golden rules” to abide by:

- NEVER look at a fibre connector with the naked eye, or with magnifying optics (unless absolutely sure that the fibre is not connected to an optical source).
- NEVER disconnect a fibre optics cable without authorisation. Only designated people are authorised to remove fibres. Authorisation to handle laser equipment may be given only by the OIC, the Deputy OIC, or the Leader of the Electronics Group.
- REPORT any eye exposure to laser radiation (see Sec. 5.3.4 on Laser First Aid). Any incidents involving laser damage are notifiable.

If in doubt, contact the ATNF Laser Safety Officer.

ANTENNA RECONFIGURATIONS

Although several types of laser are in use at the Narrabri Observatory, in practice laser equipment is handled by staff only during antenna reconfigurations. During a reconfiguration one has to deal with the connections from the L81 modules (in the antennas) to the patch panel rack and the L84 module in the phase reference rack (both in the screened room in the Control Building). These are “Class 3B” lasers (which means that “eye damage may occur with exposure to beam”). A detailed risk assessment and risk control mechanisms for laser handling during antenna reconfigurations are provided in the document “*Narrabri Reconfiguration Process – Fibre Optics*”.

The lasers used for ethernet communications (“Class 1”, meaning “eye safe”) are neither potentially harmful nor ever handled by staff.

3.5.5 *Hazardous Substances*

Only staff authorised by the OIC are allowed to handle hazardous substances, such as pesticides, herbicides, acids, flammable materials, etc.

ASBESTOS

At the time when most buildings at the Observatory were built asbestos was a commonly used building material. No record was kept on where it was used though. Therefore, although an effort has been made to remove asbestos, unknown residual amounts of materials containing asbestos might still exist around the site. Whenever asbestos – or a material suspected of containing asbestos - is encountered, work in the affected area must stop immediately, access to the area by others prohibited and the OIC and/or Safety Officer notified without delay. Appropriate action will be taken according to the “*Narrabri Asbestos Policy*”. Work may only resume when it is clear that there is no danger of asbestos contamination.

TOXIC CHEMICALS

A “*Hazardous Goods Register*” of toxic, corrosive or flammable chemicals and their location on site is maintained by the Safety Committee Secretary. Only small, working quantities of these chemicals should be stored in laboratories; larger quantities should be held in special storage arrangements. In the event of any toxic chemical spill the Safety Officer is to be informed immediately. Note that some cleaning agents, such as e.g. hydroxyl solutions, are classified as hazardous chemicals!

FLAMMABLE LIQUIDS

Flammable liquids should be used and stored only in minimal quantities in the laboratory, workshop etc. Larger quantities must be stored in suitable containers with a maximum of 20 litres capacity in the flammable liquids store.

CRYOGENIC SUBSTANCES

These are not to be used by unauthorised people.

GAS CYLINDERS

Gas cylinders should be restrained in bottle trolleys or stands when in use. Spare bottles should be stored secured in an upright position.

COMPRESSED AIR

Only authorised staff may use compressed air. It must not be directed towards any person's body.

3.5.6 Working at Height

Working at height (in an exposed position, e.g. on an antenna, or using the cherry picker or HIAB) requires special authorisation by a Group Leader, as well as protective gear and training. Work at height must not be done while working alone (see Sec. 3.5.1).

3.5.7 Site Shotgun

The Observatory is located in a rural area, with a lot of wildlife on the premises. For this reason a gun is kept on site. Only a staff member with a gun licence appointed by the OIC is authorised to keep the key to the gun cabinet and to use the gun if required.

3.5.8 Motor Vehicle Drivers' Safety

The technical safety of Observatory vehicles is ensured by a regular maintenance schedule, as outlined in the “*ATCA Vehicle Maintenance Plan*”. Vehicles should be treated with care and any damage reported immediately to our Engineer or the Leader of the Engineering Services Group.

Observatory vehicles may only be driven by authorised personnel with the appropriate licences, exclusively for business purposes, and only for their intended use (i.e., for example, fleet vehicles are not to be used to go off-road, into rough terrain).

No vehicle shall exceed the posted speed limits, either off- or on-site.

Drivers must adhere to local traffic rules, in particular with regard to consumption of alcohol or drugs. No person may drive an official vehicle whilst suffering from any disability that may impair their control of the vehicle.

While traveling in a CSIRO vehicle, drivers should alternate every two hours or, if traveling alone, stop for a break every two hours.

The use of mobile phones while driving an Observatory car is not permitted.

3.5.9 Food handling & processing, general Lodge duties and personal hygiene

Food handling/processing and general Lodge duties

Kitchen personnel and supervisors involved in preparing meals must have attended a food handling course or have a similar level of training. This includes training in temperature control and cross-contamination avoidance procedures that also apply to general duties associated with the Lodge such as cleaning, laundry and maintaining rooms.

Food is processed according to Australian health standards.

No food must be stored in fridges around the Observatory that is beyond its “best by” date. Old food or items whose owner is unknown will be removed by local staff without notice.

All food that is stored for use later must be wrapped properly and, if required, refrigerated.

No food must be left out in the open at the Observatory that might attract pests (such as ants or cockroaches) or get mouldy and thereby create a health hazard.

Food and catering storage areas should be separated from any other activities.

It is recommended to provide single use, sealed items in areas such as tea rooms and conference rooms (e.g. satchels for sugar, biscuits, etc.). Paper towels should be supplied in catering areas for hand wiping and general use.

Visitors/staff in the Control Building should clean their dishes in the sink in the Conference Room.

Sinks for washing hands should be separate to sinks for processing food or cleaning dishes.

More details on food handling and processing are given in an HSEACW about these work activities.

Problems or concerns should be brought to the attention of the Head of the Visitor Services Group and/or the Safety Officer.

Hygiene at the Observatory

Buildings and workplaces, including some equipment (such as e.g. telephone handsets, computer keyboards, desks etc.) are cleaned regularly by Observatory staff. Cleaners should be trained in safe handling of refuse and correct cleaning methods.

To avoid the spread of germs or diseases, everybody at the Observatory is requested to wash their hands after using the toilets or handling items that may be contaminated by disease or chemicals.

Problems or concerns should be brought to the attention of the Head of the Visitor Services Group and/or the Safety Officer.

4. FIRE SAFETY

The Observatory is equipped with smoke and heat detectors. When a detector is activated, the fire alarm is activated, but a **fire brigade is not called automatically**. Therefore, if required to control the fire, the fire brigade must be notified by phoning 0-000 and requesting the service. For more information on fire emergencies, refer to the “*Narrabri Emergency Procedures*” document.

4.1 Fire Fighting Team

The Observatory has a volunteer Fire Fighting Team under the command of the Fire Captain or Deputy Fire Captain, the members of which are listed in the document “*Fire Fighters*”. The role of the Fire Fighting Team is outlined in the “*Narrabri Emergency Procedures*” document.

4.2 Fire Fighting Equipment

The Safety Officer maintains a list of fire fighting equipment (extinguishers and hoses) on site. The different categories of equipment in use are listed below. The locations of fire extinguishers and hoses in and around buildings on site are marked on the information sheets displayed on pinboards in each building.

4.2.1 *Sensors, Bells and Alarm Panels*

All buildings and antennas are equipped with both smoke and heat sensors, which report their status to fire alarm panels in those buildings. These, in turn, route information to the central fire alarm panel in the Control Building. When reporting an alarm condition, the fire alarm panels will activate sirens/bells in the area of an alarm and on the Control Building.

4.2.2 *Fire Fighting Vehicle*

The Observatory has a fire tender equipped with a 1500 litre water tank, a pressure pump, a 25 mm hose and a foam fire extinguisher. The tender may be towed only by a vehicle with sufficient weight (such as a dual-cab ute) that during the fire season will always be left attached to it, with the key in the ignition.

4.2.3 *Extinguishers*

The site is equipped with four types of extinguisher and two sizes of water hose. The types provided at each location are the ones most suitable for that situation. They are:

- Carbon Dioxide (CO₂) (**red with black band**) for use with electrical and flammable liquid fires, oil, fuel etc.
- Dry chemical (**red with white band**) for general use (very effective).
- Water (**9 litre - red**) for burning timber, paper, plastics etc, but not suitable for electrical and flammable liquid fires.
- Foam (**9 litre – red with blue band**) for flammable liquids and gases, but not suitable for electrical fires.

4.2.4 *Hoses*

Small-bore black rubberised fire hoses are located around the grounds on reels. These are not for electrical or chemical fires.

Large-bore lay flat hoses (38 mm) are located outside the Lodge, Workshop, NML and at site residences. Also, 25 mm reels are located at the Lodge, Workshop, Control Building, Visitors Centre and NML.

4.3 Fire Safety Measures

To minimise the risk of fire at the Observatory and the damage potentially caused, several preventative steps are taken in addition to the above.

4.3.1 Management of Combustible Fuel

PRESCRIBED BURNING ('burning off') shall not be carried out within the grounds without the appropriate permission from the Rural Fire Service, OIC and warnings to neighbouring properties.

- The amount of combustible material around the site is kept low by keeping areas around buildings free of debris, slashing grass in the central area and ensuring that the vegetation on site does not become too dense.
- As part of the combustible fuel management a herd of sheep is kept on the property by a farmer to graze.
- Flammable materials are stored appropriately.

4.3.2 Site Maintenance

The following protective measures are in place:

- Fire breaks have been created to inhibit the progress of bush fires through the Observatory.
- Air vents and other cavities on buildings are equipped with metals screens against embers.
- Escape routes are kept clear of debris and maintained in good condition.
- Evacuation routes are kept in good repair to allow vehicles to pass in case of an emergency.

4.3.3 Water Supply

- An elevated tank is used to store water for emergency situations (and daily use).
- A sufficient quantity of water is (will be) kept in store, with adequate throughput and pressure to fight a fire.
- A backup generator will be connected to the pressure pump to maintain water pressure during power outages.

5. FIRST AID

FIRST RULE: If you feel unwell please let someone know promptly.

5.1 Emergency First Aid

If an **AMBULANCE SERVICE** is required, ring **0-000**.

If possible (if you think that local staff can help you, or to let somebody know that you have just called emergency services on 0-000 **during normal week day working hours**), ring also the **Switchboard on extension 91 or 4000**.

Basic information on how to treat snake and spider bites is provided in a First Aid poster in the “*Narrabri Emergency Procedures*” document.

If you go to the assistance of a person who has received an electrical shock, **make sure that the power is disconnected first**.

5.2 Observatory First Aid Officers

Lists of key personnel during emergencies are reproduced in the antennae and all buildings. Any of the First Aid Officers listed there should be contacted in the event of a situation requiring first aid. If necessary, the Officer will call for a doctor or ambulance. First Aid is supervised by the First Aid Coordinator.

The current Observatory First Aid Officers are listed in Appendix 1.

5.3 First Aid Equipment

5.3.1 First Aid kits

First Aid kits have been placed in the following locations:

- Control building
 1. Control Room (large kit)
 2. Reception (large kit)
- Lodge
 1. Kitchen (large kit under bench + wall unit)
- Electronics Lab
 1. Cryogenics Lab (wall unit)
 2. Receiver Lab
- Antenna Lab/Workshop buildings
 1. Antenna Lab Storeroom (wall unit)
 2. Car Workshop (large kit)
- Visitors Centre

1. Near entrance (wall unit)
2. Sales counter (large kit)

- Antennas

Small First Aid kits are located in the cupboards in the pedestal rooms of all antennae.

- Vehicles

Basic car First Aid kits are available in all vehicles. One large kit each was placed in the Observatory bus and the cherry picker (elevated work platform truck).

5.3.2 *Other First Aid equipment*

General First Aid requirements and supplies are located in the First Aid cabinet in the breezeway between the Antenna Lab and the Workshop. A stretcher and air splints are located in a second cabinet next to it.

5.3.3 *Emergency shower*

An emergency shower is also available in the breezeway between the Antenna Lab and the Workshop (see map of central area above).

5.3.4 *Laser First Aid*

Staff handling laser equipment should have had retinal photographs taken before laser work begins. This will allow the assessment of potential eye damage at a later time and whether it might be related to the laser work performed.

If laser exposure is suspected, one should immediately contact a First Aid Officer. After possible exposure of the eye, a medical examination including fluorescein angiography should be immediately carried out by a qualified specialist ophthalmologist. Details are given in the “*Divisional Procedure – Laser Exposure Emergency (Narrabri)*”, which is included in the “*Narrabri Emergency Procedures*” document.

6. RISK MANAGEMENT

Providing a safe work environment entails several key steps that can be called “risk management”, namely identifying hazards, minimising the inherent risks posed by them via various methods and educating staff on optimal work practices so as to minimise the residual risk involved in any kind of work.

The following subsections describe the identification and mitigation of inherent risks in work activities, staff training and the incident reporting mechanism separately.

6.1 Health, Safety and Environment Assessment and Control of Work

All work processes are investigated in terms of potential hazards for the safety of staff. This assessment is formalised in a so-called Health, Safety and Environment Assessment and Control of Work (HSEACW). Therefore, an HSEACW must exist for all work performed at the Paul Wild Observatory. In addition to the relevant safety induction, each staff member performing certain tasks goes through the HSEACW governing these activities with the supervisor and signs the document, if agreeing with the practices outlined there.

6.1.1 Generic health and safety assessment of work

Many basic activities (such as, for example, staying in the Lodge overnight) are considered to have a low inherent risk. These are covered by a general HSEACW, the so-called “*Non-technical Work*” HSEACW, which is kept by the OHS Committee Secretary. There is a second generic HSEACW covering routine technical work, entitled “*Narrabri/Mopra Site & Technical Services*”.

6.1.2 Specific Health and Safety Assessments

Other activities have higher inherent risks, requiring further control mechanisms to reduce these risks to a minimum. A list of the existing HSEACWs for the Narrabri Observatory is kept by the OHS Secretary. All work performed by staff must be assessed in the form of HSEACWs and staff must have signed the relevant HSWACWs for that particular type of work.

6.2 Testing and Maintenance of Equipment

In order to ensure the safety of all working at the Observatory, the site and equipment on site (including safety equipment) are maintained on a regular basis.

MAINTENANCE AND TESTS OF EMERGENCY COMMUNICATION DEVICES

Devices which are used for emergency communications and for staff working alone, such as mobile phones, are tested on a regular base.

MAINTENANCE OF FIRST AID KITS

First Aid kits are checked and, if required, refilled by the Safety Officer once per year, or when reported by staff to have been used. **When using First Aid equipment, staff must inform the First Aid Coordinator.**

MAINTENANCE OF FIRE EXTINGUISHERS AND HOSES

Fire extinguishers and hoses are maintained on a regular base by an external contractor. The contractor has been provided with a list describing the location of all extinguishers and hoses on site. **When using fire fighting equipment, staff must inform the Fire Captain.**

MAINTENANCE OF FIRE ALARM PANELS

Fire alarm panels are maintained on a regular base by an external contractor. In cases where systems have been customised to suit our needs, the maintenance is done by Observatory staff.

VEHICLE MAINTENANCE

Vehicles are maintained at regular intervals, as detailed in the document “*ATCA Vehicle Maintenance Plan*”. First Aid kits in cars are maintained as part of the vehicle maintenance. **When noticing faults or problems with a car, staff must report this to the Engineering Services Group.**

MAINTENANCE OF ELECTRICAL EQUIPMENT

To ensure the safety of electrical equipment, checks of the safety of devices are performed at regular intervals. This includes checks such as measuring the impedance of power leads and the use of double converters.

SITE MAINTENANCE (FIRE SAFETY)

Note that it was mentioned above (Sec. 4.3) that site maintenance is performed in view of keeping the combustible fuel loads low as a preventative measure against bush fires.

6.3 OHS Inductions

Everybody on site must have either an appropriate safety induction or be under constant supervision. What is the appropriate level of safety induction is outlined in the document “*ATNF Narrabri OHS Induction Procedures*”. The basic rules are:

- If you are **under constant supervision** by someone who has had an induction, you can be exempted from an induction.
- **Children under 14 years of age** are exempt from inductions, but must be kept under constant supervision by a person who is not observing or otherwise working at the time.
- **Everybody else** on site must undergo a Narrabri Observatory General Safety induction.
- **Duty Astronomers and others accessing antennas** must also undergo a Narrabri Observatory Antenna Safety for Visitors induction.

- Those **performing major work** on antennas or **working alone** on site (although this is in general discouraged, see working alone procedures above) must first receive an Antenna Work induction.
- **Contractors** must either undergo a Contractors' Safety induction or be under constant supervision by qualified staff. Depending on their work an antenna safety induction at the appropriate level might also be required.

The appropriate form sheets can be found in a binder in the computing area in the Control Building. However, inductions can only be given by authorised Narrabri staff (see “*ATNF Narrabri OHS Induction Procedures*”). **If you have not had an induction yet, follow the instructions to get one immediately! Without induction you are not authorised to remain on site.**

Inductions are valid for 2 years, after which a refresher is given, if required.

A list of the inductions for each staff member, visitor and contractor is kept by the OHS Secretary (as part of our electronic database).

Some activities are not covered by the scope of our OHS inductions and therefore require additional training. This specialised training of staff is summarised in the following section.

6.4 Staff OHS Training

Regular OHS training is necessary for staff to achieve and maintain an adequate level of up-to-date knowledge about OHS at the Observatory. The OIC, Safety Officer and direct supervisors of staff decide which level of knowledge is required in individual cases.

6.4.1 Fire Fighting Training

The level of fire fighting training attended by staff depends on the role they play during a fire emergency and their level of confidence and competence in the use of fire fighting equipment.

The Fire Captain and the Deputy Fire Captain attend regular fire training. They must be trained in the use of the fire tender and in driving the primary fire fighting vehicle with the tender in tow.

Other members of the Fire Fighting Team are trained in the basic use of fire extinguishers, hoses, fire tender, rakehoes, etc.

Other staff members take part in a fire drill once per year. The outcomes of fire drills are used to cross-check the feasibility and adequacy of guidelines given in the “*Narrabri Emergency Procedures*” document, which also provides (amongst others) more details on the response to a fire emergency.

6.4.2 Evacuation Drills

All staff take part in an evacuation drill once per year. Visitors and others on site at the time participate in the exercise as well.

Specifically, evacuation drills are used to train staff in key functions during emergencies (the Fire Captain, House Warden, First Aid Coordinator and the Communications Officer/Switchboard

Operator) and the way they work together during emergencies and to cross-check the feasibility and adequateness of procedures defined in the “*Narrabri Emergency Procedures*” document.

SWITCHBOARD/EMERGENCY COMMUNICATIONS TRAINING

One particularly important part of emergency evacuation drills is the training of the Communications Officer / Switchboard Operator in case of an emergency, because they, together with the House Warden, coordinate the response to the emergency. The roles of the Communications Officer / Switchboard Operator, Zone Wardens and the House Warden are defined in the “*Narrabri Emergency Procedures*” document

6.4.3 *First Aid Training*

There are no requirements for staff in general to obtain First Aid training. Nevertheless, a large number of staff members have First Aid certificates. Only staff members with a First Aid certificate are eligible to serve as First Aid Officers or as the First Aid Coordinator (see Appendix 1).

6.4.4 *Car Driving Skills*

Staff members driving certain vehicles (Observatory bus, cherry picker, HIAB) need special licences. Others driving Observatory vehicles might require special training as well, such as e.g. courses on defensive, off-road, 4WD driving. Specific training might also be required to drive the fire vehicle pulling the fire tender.

6.4.5 *OXY VIVA Training*

An OXY VIVA device is kept on site for resuscitation of persons. Two staff members are (going to be) trained to use it in case of an emergency.

6.4.6 *Special Courses*

Staff members working in areas with special safety requirements (such as cryogenics etc., see above), take part in training courses teaching them proper work practices. These courses should also include segments on special OHS considerations/requirements. A list of courses attended by staff is kept by the OHS Secretary.

6.5 Incident Reporting Mechanism

An incident is defined not only as a situation that led to injury or damage, but also one that could potentially have led to either of those.

As mentioned above, the incident reporting mechanisms in place at the Narrabri Observatory are the same as all across CSIRO. Equal treatment of incidents all across CSIRO ensures uniformity of the response to incidents and also that different Divisions can learn from each other’s experiences. The relevant document describing these mechanisms is CSIRO Policy Circular 2003/02 (“*OHSE Incident Reporting, Recording & Investigation Procedure*”). So as to avoid duplication, the contents of this document are not repeated here, but only a very short summary of some of the most important statements is given.

All staff who witness or are involved in an incident are obliged to report the incident as soon as practicable to their supervisor.

All incidents must be investigated to establish *root* causes so action can be taken to prevent a recurrence and to ensure CSIRO's statutory obligations are met. The seriousness of the incident will dictate the level of investigation and the staff involved.

Another useful piece of information in this document is the "process map" showing a flow chart of events following an incident (Sec. 2.8, p. 9). Specifically, the distinction between the response to a "minor incident" (limited extent of damage or injury) and a "notifiable incident" (serious bodily harm up to catastrophic event) is outlined there and timelines are set within which one must respond to an incident. PC 2003/02 contains, as appendices, the necessary forms to be filled out when reporting an incident.

Major incidents being "notifiable" to EXTERNAL institutions ensures that an independent authority is involved in a review of the seriousness of an incident and potential shortfalls in safety precautions.

If an injury is found to be caused by the work performed or equipment used when an incident occurred, there may be claims by staff members for compensation. Such claims can only be brought forward if a doctor has been consulted who can establish if the cause of the injury is actually the work activity. The document describing the procedures to follow in regard to compensation claims is CSIRO Policy Circular 2004/02 ("*Rehabilitation and Compensation*").

The relevant documents can be accessed via the CSIRO OHS web pages (see Appendix 3). Additional information is always available from the Safety Officer, the Personnel Officer or the ATNF OHSE Manager.

APPENDIX 1: SITE OHS CONTACT LIST

Site OHS&E Staff Contact List

Site Safety Officer

Michael Dahlem #4023

Fire Control Officer

Eric Darcey #4035

Chairman, Site Safety Committee

Phil Edwards (OIC) #4050

Site Safety Committee Members

Phil Edwards (Chair), Michael Dahlem (Safety Officer), Brett Hiscock (Deputy OIC), Tim Wilson (Engineering Services Group Leader & Site Environmental Officer), David Brodrick (HSR and Union Representative), Clarrie Leven (HSR), Scott Munting (HSR)

Health and Safety Representatives and their Designated Work Groups

David Brodrick #4038
Control Building, Lodge, Visitors Centre

Clarrie Leven #4066
Antennas, Antenna Lab, Workshop

Scott Munting #4041
Cryogenics/Receiver Lab

Comcare Claims Manager

Kylee Forbes #4024

First Aid Officers

David Brodrick #4038

Scott Munting #4041

Robin Wark #4052, #4030 (ah)

Occupational Health, Safety & Environment Co-ordinator

Alison Jones #4645

Site Environmental Officer

Tim Wilson #4010

Site OHS Staff Contact List - continued

After Hours Contacts

Officer-In-Charge:	Phil Edwards	6792 5314 0427 904 050
Site Safety Officer:	Michael Dahlem	6793 5369
Observatory Fire Captain:	Eric Darcey	6792 4885 0427 904 035
Engineering & Site Services:	Tim Wilson	6792 4248 0438 292 365

Other On-Site On-Call People – After Hours

Brett Hiscock		#4036
Jock & Marg McFee		#4026
Robin Wark	#4030	

APPENDIX 2: HARD HATS POLICY AND LOCKOUT TAGGING

HARD HATS

Hard hats MUST be worn by people when they are:

1. Within a perimeter of radius **15 metres** around each **Compact Array antenna**;
2. Within **15 metres** of the **Cherry Picker** when it is in operation; or
3. Within **10 metres** of the **HIAB** crane when it is in operation.

Phil Edwards

Officer-in-Charge, Narrabri (10 January 2007)

APPENDIX 3: RELATED OHS RESOURCES

CSIRO OHS information can be found via the CSIRO web pages at the following URLs:

<http://www.csiro.au/services/humanres/essentials/safely/> (external)

<http://www.csiro.au/intranet/index.asp> (internal)

Almost all documents referred to in this manual regarding OHS at the Narrabri Observatory are stored electronically in the OHS area on ningadhun-cj:

- *Occupational Health and Safety Manual (this document)*
- *Mopra OHS Manual and Emergency Procedures*
- *Narrabri Emergency Procedures*
- *Narrabri OHS Induction Policies*
- *Narrabri Working Alone Policies*
- *Welcome to Visitors*
- *Narrabri Reconfiguration Process – Fibre Optics*
- *Electrical Work Authorisation*
- *Hazardous Goods Register*
- *Narrabri Observatory Working Alone Rules*
- *ATCA Vehicle Maintenance Plan*
- *Narrabri Asbestos Policy*
- *Working in Confined Spaces*
- *All HSEACWs*
- *Fire Fighters*

Some of the above might also have been made publicly available via our web server. Some additional files are available only via the public web pages, from the URL <http://www.narrabri.atnf.csiro.au/ohs>:

- *Narrabri General Safety for Visitors*
- *Narrabri Antenna Safety for Visitors*
- *Mopra General Safety for Visitors*
- *Mopra Antenna Safety for Visitors*
- *Minutes of OHS meetings*

Printed copies of some documents are available from our Administration:

- *Incident Reporting & Claims*
- *Safety Assessment Forms*
- *Database of Complying Contractors*
- *Comcare Files*

The PMM (Personnel Management Manual #4) is available from the Library.