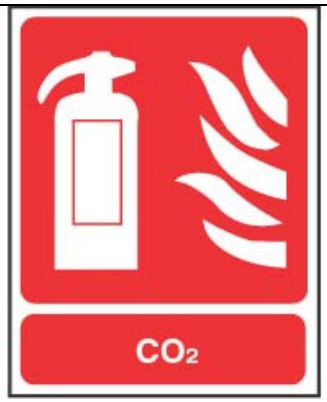
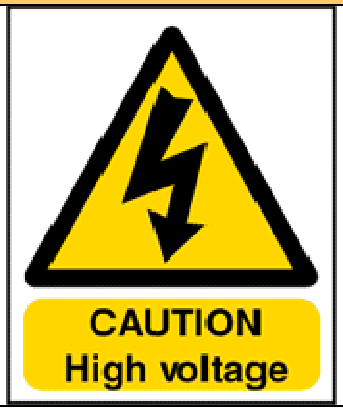


CENTRAL LASER FACILITY
SAFETY, HEALTH & ENVIRONMENT

EMERGENCY TELEPHONE NUMBERS

Fire Brigade, Ambulance	2222 (or from a mobile 01235 778888) (24 hour)
Security Wardens	5545 (or from a mobile 01235 778888) (24 hour)
Site Safety Officer	5329 (or from a mobile 07770 858085) (Working hours)
Occupational Health Centre	6666 (Working hours)
First Aid (R1, R2, R7)	1330 (Working hours)
	1192 (Working hours)
	1865 (Working hours)
	1268 (Working hours)
	1426 (Working hours)
	1957 (Working hours)
	1267 (Working hours)
	1407 (Working hours)
First Aid (R26)	1413 (Working hours)
	1975 (Working hours)
First Aid (R92)	01235 778177 (Working hours)
	01235 567718 (Working hours)
	01235 567730 (Working hours)
	01235 567732 (Working hours)



Edition 15 – October 2014

Queries relating to this document should be addressed to B Wyborn (Tel: 01235 44 5589, Email: brian.wyborn@stfc.ac.uk)

BEFORE CARRYING OUT THE FOLLOWING ACTIONS
YOU MUST OBTAIN AUTHORISATION FROM THE APPROPRIATE PERSON:

- **Work on or near cranes – permits to work required (see page 8)**
- **Operate lasers (see page 12)**
- **Work on electrical apparatus (see page 13)**
- **Work with hazardous substances (see page 15)**
- **Work with biological materials (see page 16)**
- **Work with ionising radiations (see page 16)**
- **Connect, disconnect or modify toxic or high pressure gas supplies and vents (see page 17)**
- **Lift or move heavy loads (see page 18)**
- **Use machine tools (see page 19)**
- **Work with cryogenic liquids (see page 19)**
- **Work with naked flames or an alternative heat source (see page 19)**
- **Work alone in any area where there are hazards (see page 20)**
- **Work long hours i.e. more than 12 hours in a day (see page 20)**
- **Enter TAP Interaction or Compression Chambers or operate their vacuum system (see page 23)**
- **Build, alter or change use of buildings (see page 20)**
- **Work on roofs (see page 22)**

IMPORTANT DO's:

- **Stop and think about the hazards associated with the work you undertake – mentally assess the risks and if significant undertake a documented Risk Assessment**
- **Obey all safety signs**
- **Wear required Personal Protective clothing or Equipment (PPE)**
- **Observe the Highway Code on site and off**
- **Keep below the site speed limit of 20 mph**
- **Only park in designated parking areas**
- **Know the escape routes and assembly areas for your location**
- **If entering an area with a specific hazard ensure that you know any special precautions that must be taken**
- **Dispose of any items in an appropriate safe manner**
- **Follow any instructions issued for safety reasons**
- **Report accidents, near misses, dangerous situations, environmental incidents and shortcomings in the Safety, Health and Environmental (SHE) arrangements**

IMPORTANT DONT'S:

- **Eat or drink in work areas where there may be contamination present which could be ingested thereby leading to serious problems/sickness e.g. chemical, radiation, biological etc.**
- **Enter a controlled area without permission**
- **Misuse or abuse items provided for safety reasons**
- **Modify, in any way, interlock or control systems unless authorised to do so**

CONTENTS

1) INTRODUCTION

Rutherford Appleton Laboratory (RAL) is a research laboratory with a very broad programme of work. There are consequently a broad range of hazards present at the laboratory with which you may be unfamiliar.

The policy of STFC is to provide, as far as is reasonably practicable, healthy and safe working conditions for all who work at the laboratory whether or not they are employees, and to require that all these workers follow safe methods of working. The STFC Health and Safety Policy has been published (December 2013). It documents our health and safety policy, standards, organisation and arrangements http://www.stfc.ac.uk/SHE/Resources/pdf/HealthandSafetyPolicy.pdf

The Health and Safety at Work Act 1974, Management of Health and Safety at Work Regulations 1992, Provision and Use of Work Equipment Regulations 1998, and Workplace (Health, Safety & Welfare) Regulations 1992 are relevant overarching safety legislation. Other specific regulations are listed under relevant sections.

Health, Safety and Environmental instructions are issued through corporate Safety, Health and Environment (SHE) Notices, safety advice through corporate SHE Information posters, and sharing of learning from SHE incidents through What Why Learning Posters. STFC SHE Codes provide instructions and advice on the key SHE hazards that exist in STFC. These can all be viewed on the laboratory's internal web pages http://www.stfc.ac.uk/SHE/default.aspx . (see also Appendix 1).

The purpose of this Safety Package is to provide more specific instructions as to how the RAL safety arrangements are to be applied within the Central Laser Facility (CLF) to the principal hazards found there and to list persons responsible for safety in the different areas.

The last version (Edition 14) of the CLF's Safety Package was produced several years ago. Since then a number of staff and building changes have occurred. Also some additional safety information needed to be added. This version of the Safety Package replaces all previous editions and amendments. The instructions in this safety package supplement and carry the same force as, but in no way rescind, replace or modify, the relevant STFC SHE Codes and Notices.

2) RESPONSIBILITIES

John Collier, the Director of the CLF, is responsible for all safety matters within the department and through him responsibility rests with line management. Every supervisor must take such executive actions necessary to safeguard the personnel (whether visitors from universities and other organisations, contractors or employees) under their supervision.

A four-tier Safety Committee structure has been set up:

(i) The STFC SHE Committee monitors the capability of the STFC SHE management system, approving all changes to policy and supporting codes, reviewing performance and driving improvement.

(ii) The RAL Safety Committee provides an independent scrutiny on health and safety management and performance to RAL management and promotes co-operation and communication between departments, managers, employees and trade union representatives. It fulfils the statutory responsibility for STFC to consult formally on safety matters with the trade unions and employee representatives. The membership includes safety representatives from the Trade Unions and representatives from the departments. Brian Wyborn is the CLF representative.

(iii) The ISIS, CLF & Scientific Computing Safety Committee has the objective of inspecting and monitoring of safety performance and bringing to bear on local problems the best experience to promote safe working and good health of all employees. The membership includes safety representatives from the Trade Unions and representatives from the three departments. Brian Wyborn and Dave Clarke are the CLF representatives. Michelle King is the secretary. Susan Clark is the Safety Tour Organiser. Rob Clarke is a CLF staff representative.

(iv) Safety is a standing item on the CLF Senior Staff meeting agenda. The Director, Division Heads and Group Leaders attend the meetings where SHE incidents, tours, audits and other safety related matters are discussed and actions monitored. Brian Wyborn is the CLF Departmental Safety Contact.

In addition the CLF management produce, and monitor progress against a Departmental SHE Improvement Plan (See STFC SHE Code 07)

All personnel (whether visitors from universities and other organisations, contractors or employees) who work at the CLF have a responsibility to take reasonable care to avoid injury to themselves and others who may be affected by their acts or omissions. All personnel have a duty to co-operate with line management to achieve a healthy and safe workplace, must comply with safety rules and standards of STFC and the CLF, must refrain from any intentional or reckless acts which adversely affect safety and must inform CLF management of any dangerous situations and shortcomings in health and safety arrangements.

For particular hazards present in the CLF responsible and authorised persons have been appointed. These are listed later in the package.

Each area of the CLF has an appointed Area Manager who has overall responsibility for the safe operation of the area. They appoint Area Safety Co-ordinators and deputies. These are listed later in the package. In addition major CLF projects will manage safety, often having safety committees.

The Safety Health and Environment (SHE) Group has advisory and executive functions to assist managers and employees on aspects of SHE protection as laid out in the STFC Health and Safety (and Environment) Policies.

3) CLF SAFETY PROCEDURES

This Safety Package is supplied to all members of the CLF staff, visiting scientists, sandwich students etc. and to all users working at the CLF. Users must register with the User Office each time they begin a session of work at the CLF. The User Office will ensure that the user is supplied with or has already got an up to date edition of the Safety Package. Users must undergo and pass the CLF on-line safety training and test which can be found at:
(http://www.stfc.ac.uk/CLF/Using+our+facilities/User+safety+information/13693.aspx)

An up to date version of the Package is available from the User Office or via the CLF's Web at http://www.clf.rl.ac.uk/User+Area/User+safety+information/13697.aspx or the CLF server at M:\Safety\CLF Safety Package.

Upon receipt of this package personnel must read it and act upon the contents therein. Copies of related Regulations, Codes of Practice, National Standards, STFC SHE Codes, Health & Safety Notices, and local rules are not included in this package but where relevant reference is made to them.

Staff and users must contact the Area Safety Co-ordinators before starting work in an area. The Co-ordinator will make personnel aware of the specific hazards in the area and will discuss and agree procedures for safe working. Where appropriate, nominated and authorised persons are appointed for ensuring that particular safety procedures are carried out by staff and users.

Users are responsible for the safety of their own experiment but a CLF member of staff (Link Scientist) is overall responsible for ensuring the safety of the users, their experiment, equipment and materials etc whilst at RAL. Experimental safety starts at the proposal stage where every effort must be made to identify any hazards (equipment, sample or procedure related) associated with the proposed programme of work. Users must discuss all safety issues they are aware of with the appropriate link scientist or area co-ordinator in the first instance and with specifically named CLF personnel where appropriate.

Users must notify the CLF in advance of any equipment or materials they wish to bring to RAL for their experiment. Failure to do so can lead to the delay or cancellation of the experiment. Such equipment must conform to RAL safety standards. Special rules for registration, inspection and monitoring apply to electrical equipment, lasers, high voltage apparatus, pressure and vacuum systems, radioactive materials, lifting equipment and hazardous substances (e.g. chemicals and biological agents).

Group leaders of visiting teams should agree arrangements in advance for the supervision of inexperienced or junior personnel.

For attached persons such as MSc, Sandwich and Vacation students a written project definition should be produced and signed by both the student and their supervisor. Based on the student's knowledge, experience etc, it may also be necessary to make a written risk assessment defining the limits of the student's work and for additional training to be undertaken.

Persons authorising visitors onto site are responsible for their safety and ensuring that they are made aware of general RAL safety procedures, that they are not exposed to unnecessary hazards and that they are sufficiently supervised whilst on site.

Those responsible for projects and experiments should ensure that before the start of any work the potential hazards are assessed and discussed with those involved, taking into account the necessary precautions and sources of advice. Where the potential hazard, or the age of those involved, or other criteria, make it appropriate, the assessment and where necessary a safe system of work, should be in writing and the responsible person and, where appropriate, the others involved, should sign the assessment. Any subsequent changes to the project or experiment should be reflected in the assessment.

A copy of all Standing Orders, Risk Assessments etc. should be available locally to the risk and upon request.

The training of all CLF staff and visitors in their safety duties is essential to the proper implementation of the STFC Health and Safety Policy. Individuals and line managers should ensure that appropriate training is undertaken. All employees are required to attend a general safety course soon after joining and then regular refresher courses. Specialist training should be arranged where necessary.

Those responsible for personnel whose work exposes them to hazards for which health surveillance and health screening is required must ensure that they are subject to the relevant health surveillance and screening for the hazards they work with (See STFC SHE Code 24).

Personnel who have a health problem which could affect their work and cause a hazard to themselves or others, must ensure that their Line Manager, the Area Safety Co-ordinator and the Occupational Health Centre are made aware of the problem and of the appropriate procedures to be taken in the event of a problem.

STFC has established a framework of audits and inspections to provide feedback that Policy and Codes are being implemented and are fit for purpose. On receipt of the findings of audits, and inspections, those responsible should, as appropriate, act on the recommendations raised in a timely manner. (See STFC SHE Code 30).

Safety related incidents/matters should be communicated via relevant line management to the appropriate level and to the department safety representatives if necessary.

This is a research laboratory with a broad programme of work. Experimental arrangements change frequently. There will be hazards with which you are unfamiliar. You must therefore make yourself aware and maintain awareness of the hazards in the area you are working in, adhere to the instructions given in this document and follow any instructions given locally.

4) GENERAL RAL SAFETY

The procedures to be followed in the event of a Fire or Site Emergency are given in STFC SHE Code 32, and in the event of accidents and illness in STFC SHE Code 5. These are summarised below. SHE Code 32 also gives some basic rules for fire prevention. In addition RAL and CLF have drawn up an Incident/Emergency Response Plan, this is summarised in Appendix 2.

Fire

If you discover a fire:-
a) Break the nearest break-glass alarm.
b) Warn others of the fire locally.
c) Call 2222 (or 01235 778888 from a mobile), report to Security the nature and exact location of the fire.
d) Use appropriate fire extinguisher if it is safe to do so. Report any extinguisher used so that it can be replaced. Please note that a CO_2 system is installed in the Vulcan Pulsed Power Room and specific operating procedures are in place.

When you hear the fire alarm:-
a) Leave the building immediately by the nearest exit, if possible close doors and windows and leave equipment in a safe state.
b) Do not use the lift.
c) When outside go to the assembly area. For a fire in R1 or R104 this is on grass to the east of R61 (Assembly Point M). For R2 the assembly area is to the North of the Vulcan Capacitor Room (Assembly Point B). For R7 the assembly area is to the South of the building (Assembly Point O). For R92 the assembly point is in front of the building (Assembly Point K). For R26 the assembly point is to the East of the building (Assembly Point U). Please make yourself familiar with these locations (see site plan in this package).
d) Check for the presence of colleagues and give names of unaccounted persons to the Senior Fire Officer or other appropriate person.

Fire Safety Basics

These basic rules for fire safety will minimise the potential for a fire starting and maximise the safety of all working at STFC sites in the event of a fire.

1. Fire Awareness: those responsible for the safety of others must discuss fire safety arrangements with new starters;
2. Smoking: is prohibited within all STFC buildings - smokers are required to be at least five metres away from any part of any building when smoking, and to dispose of all waste in receptacles provided;
3. Food preparation: “open element“ grills (including those incorporated in Microwave Ovens), hot plates, gas stoves, burners with naked flames, deep fat fryers etc are only permitted by exception in “Offices”, “Kitchens” and “Tea/coffee Points” with approval from the respective site Fire Safety Advisor;
4. Heating: portable “open element” electric heaters are very strongly discouraged. If additional heating is necessary contact Estates Groups who will review heating requirements:
5. Storage: In principle, storage of materials in stair wells is prohibited, except by prior approval of the Fire Safety Advisor:
6. Corridors: escape routes should not be blocked or used as storage areas under any circumstance. No more than ~30% of any corridor walls should be covered by combustible materials for example notice boards, adverts, posters, displays etc;
7. Doors: Fire doors should be kept accessible at all times. Fire doors should only be held open by automated devices designed to allow doors to close on alarm. Viewing panels: in office, workshop and laboratory doors should be kept clear above a height of 1.5m, to allow anyone “searching” the building in an emergency to see in;
8. Ceiling tiles: All ceiling tiles should be replaced following work on false/suspended ceilings. Missing or damaged ceiling tiles should be reported to the Estates Groups; and
9. Vehicle Access: Only park in designated areas on STFC sites. Never block access routes or positions outside buildings where access may be required in the event of an emergency for the Fire Brigade or Ambulance Service.
10. All staff and visitors who spend on average greater than 2 days/week over a 3 month period at RAL must attend the mandatory Fire prevention and extinguisher use training and a refresher every 5 years.

Site Emergency

This refers to a release of a significant amount of radioactive material or other toxic material.
A klaxon will sound - an interrupted note lasting one and a half minutes for warning
- a continuous note lasting two minutes for the all clear.

On hearing the warning klaxon:-
a) If outside enter the nearest main building.
b) Close all windows and doors, skylights and louvres.
c) Close down ventilation plant or fans that draw air from the outside.
d) Remain inside and obey instructions given by the building warden or Emergency Controller.
e) Do not use the telephone system except for calls connected with the incident or other emergencies.

In the event of a Fire Alarm during a Site Emergency do not go to the normal fire assembly point. Instead, use the quickest safe route to the nearest building where no alarms are sounding, staying under cover as far as possible.

Injury or Illness

In the event of a minor injury or illness during working hours - contact a local First Aider (see contact details below).
If the identity and location of the nearest First Aider is not known see web http://staff.stfc.ac.uk/she/firstaid/RAL/Pages/default.aspx, or contact Security 2222 (or 01235 778888 from a mobile) to summon assistance;

In the event of a serious injury or illness.
a) Contact Security on 2222 (or 01235 778888 from a mobile).
b) Give description of incident and exact location, they will determine whether emergency services are summoned without delay and despatch local First Aiders to the incident.
c) Cope with the immediate emergency to make the casualty safe .
d) If you have a medical condition that may be relevant in a first aid situation, for example, diabetes, please let your First Aider know as a precautionary measure. This information will be treated in strictest confidence.

First Aid

A First Aid Team provides support in emergency situations, especially in those first minutes before the emergency services arrive, and to treat minor conditions where highly qualified medical help is not needed.

N.B. The above procedure does not prevent those with minor first aid requirements, minor cuts etc, contacting their local first aider directly.

Your nearest First Aiders and contact details are below (see http://staff.stfc.ac.uk/she/firstaid/RAL/Pages/default.aspx)

Donna Wyatt	R1	07798 850323 (short code x 1330)
Rob Heathcote	R1	07775 731247 (short code x 1192)
Darren Neville	R1	07979 548371 (short code 1865)
Tony Kershaw	R2&R7	07768 577792 (short code x1268)
Kevin Jones	R2&R7	07917 517756 (short code x 1426)
Rob Searle	R2&R7	07917 556370 (short code x 1957)
Leslie Jones	R2&R7	07768 577191 (short code x1267)
Adrian McFarland	R2&R7	07788 877108 (short code x1407)
Martin Prime	R26	07789287888 - Short code 1413
Matt Viljoen	R26	07823533407 - Short code 1975
Anil Verma	R92	01235 567732
Victoria Green	R92	01235 567718
Maria Rosa	R92	01235 778177
Jo Nettleship	R92	01235 567730

STFC SHE Code 36 outlines the STFC policy with respect to first aid management and the provision of first aiders to deal with injuries and ill health occurring at work.

Accident or Dangerous Occurrence Reporting

All accidents resulting in injury or near miss incidents must be reported promptly to line and area management and a report entered in 'SHE Enterprise', the incident reporting database - http://hsweb4.dl.ac.uk/sheenterprise. Major incidents should be reported within 12 hours and all others within 2 working days. All incidents occurring on council sites and those involving staff whilst working or travelling offsite on Council business should be reported. See STFC SHE Code 05 for details. There is also a short online training package 'BiteSize SHE' available for this SHE code.

Line managers must conduct appropriate local investigations of any incident for which they are the responsible manager and report their conclusions as to the root causes of an incident and any proposed actions to mitigate against a recurrence to their line management, copied to the SHE group. For Serious or Potentially Serious (SoPS) incidents a written report will be required and for those incidents involving death, serious injury, or the potential for such a Board of Enquiry will be convened to investigate.

Risk Assessments

The Management of Health & Safety at Work Regulations 1999 requires employers to make suitable and sufficient risk assessments for any work activity or procedure where hazards exist. Significant findings must be recorded. STFC SHE Code 06 lays out the procedures at RAL.

Risk Assessments range from:
Low - Mental Risk Assessment – the thought process that all sensible individuals undertake every moment of every day when assessing the risks associated with activities from crossing a road to lifting a heavy load.
Medium - "On The Job" (OTJ) Risk Assessment - An on the spot risk assessment, which many are used to doing mentally, when changes or additions to planned work occur, or if carrying out a quick task. The quality of mental risk assessments can be improved by using a very simple pro-forma designed to prompt the consideration of a wide range of hazards, called an OTJ RA.
High - Documented Risk Assessment - STFC uses a standard methods either qualitative or quantitative, to undertake and document risk assessments for activities with significant risks
HAZOP/HAZAN Assessments - Historically associated with the process industry Hazard and Operability (HAZOP), Hazard Identification (HAZID) and Hazard Analysis (HAZAN) should be applied to some major projects within STFC. These techniques provide a structured and systematic method of assessing current or planned processes or operations to identify and evaluate potential SHE hazards thereby informing design and operation.

Those responsible for projects or experiments must ensure that before the start of any work the potential hazards are assessed and discussed with those involved, taking into account the necessary precautions and sources of advice. The risk assessment of significant risks should be documented and entered into 'SHE Enterprise', the central risk assessment database (http://hsweb4.dl.ac.uk/sheenterprise).

Permits to work

Permit-to-work systems are used for work in certain areas of the CLF particularly where there could be a hazard, for example from electrical installations, radiation, work on cranes, hot working, work at heights or in confined spaces. Personnel should consult with the relevant Area Safety Co-ordinator before starting this type of work.

Personal Protective Equipment (PPE)

The use of PPE should only be considered a last line of safety when other physical guards and controls cannot be implemented.

The Personal Protective Equipment (PPE) at Work Regulations 1992 requires employers to provide suitable personal protective equipment where appropriate. Such PPE must be maintained in good working order, adequate instruction in its use provided and employers also need to ensure that PPE is used properly. (See STFC SHE Code 04 Appendix 2 for specific guidance).

Where relevant PPE has been provided i.e. goggles, overalls, gloves, shoes etc, it should be used. Any loss or defect in PPE should be reported as soon as possible.

Work Equipment

Work at the CLF involves the use of a large amount of work equipment. Work with powered, electronically controlled and hand operated work equipment has the potential for serious personal injury and significant damage to property if the work equipment is not managed safely.

The Provision and Use of Work Equipment Regulations (PUWER) 1998 impose specific legal duties on the STFC to provide, inspect, maintain and operate safe work equipment.

The STFC aims to pro-actively manage the risks associated with the selection, purchase, installation, use, modification, maintenance and repair of work equipment to minimise the potential for work equipment failures through STFC SHE Code 04.

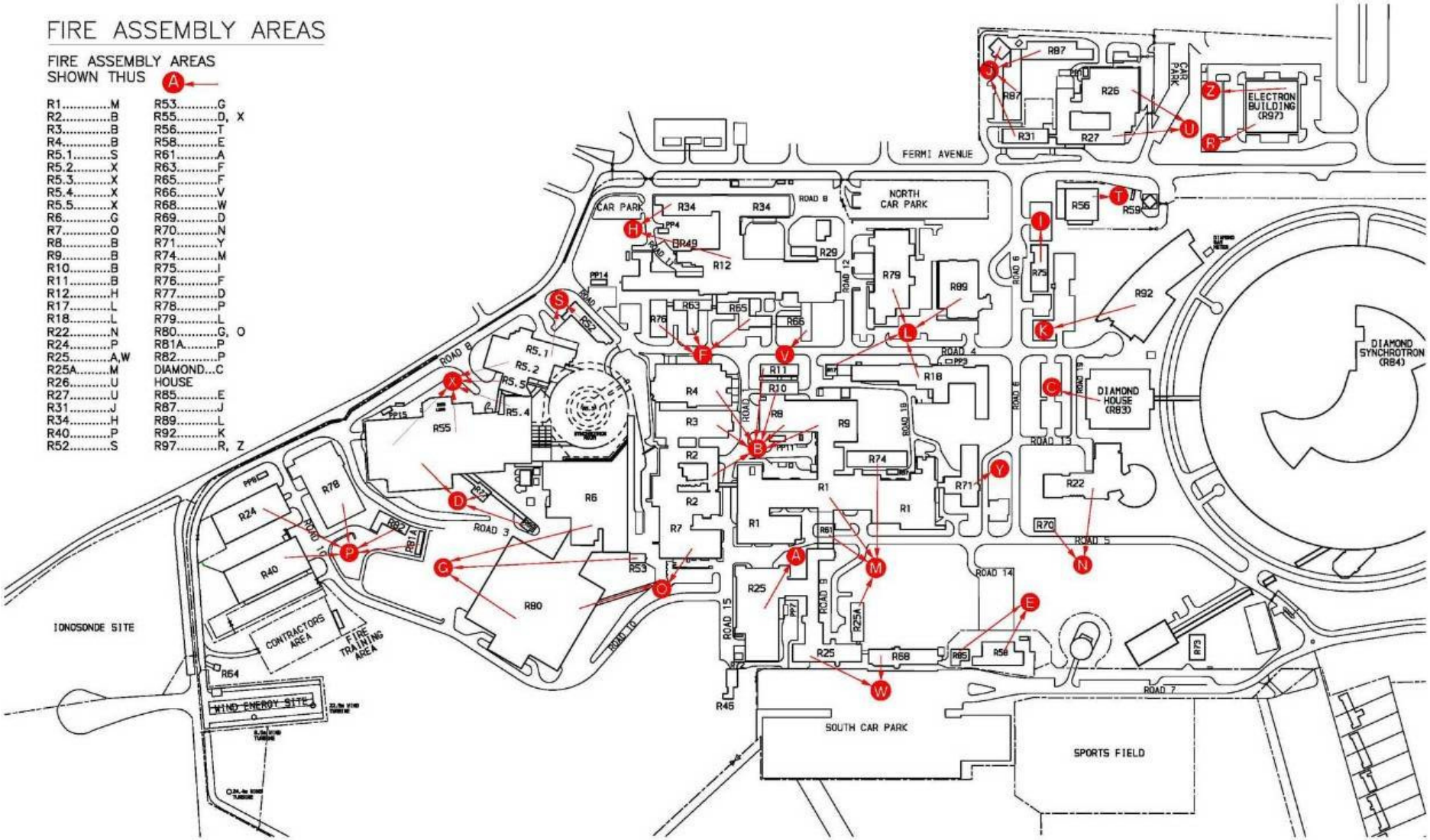
While this code addresses the general requirements to ensure that any item of equipment can be used safely, the appendices to this code outline controls for the management and use of specific types of equipment not covered in other codes, for example ladders, fume hoods (LEV's), and Personal Protective Equipment (PPE).

SITE PLAN

FIRE ASSEMBLY AREAS

FIRE ASSEMBLY AREAS SHOWN THUS A

R1	M	R53	G
R2	B	R55	D, X
R3	B	R56	T
R4	B	R58	E
R5.1	S	R61	A
R5.2	X	R63	F
R5.3	X	R65	F
R5.4	X	R66	V
R5.5	X	R68	W
R6	G	R69	D
R7	O	R70	N
R8	B	R71	Y
R9	B	R74	M
R10	B	R75	I
R11	B	R76	F
R12	H	R77	D
R17	L	R78	P
R18	L	R79	L
R22	N	R80	G, O
R24	P	R81A	P
R25	A,W	R82	P
R25A	M	DIAMOND	C
R26	U	HOUSE	
R27	U	R85	E
R31	J	R87	J
R34	H	R89	L
R40	P	R92	K
R52	S	R97	R, Z



5) AREA MANAGERS AND SAFETY CO-ORDINATORS

The arrangement of safety responsibilities within the CLF has been described earlier in this package. The Area Safety Co-ordinator is responsible for the day to day safe operation of the area in all aspects. They must consult with the relevant responsible and authorised person on particular hazards. In particular, co-ordinators are responsible for authorising all work with safety implications within their area. It is also the co-ordinator's responsibility to assess the safety aspects of proposals to work in their areas, to maintain user safety awareness, and to ensure that any appropriate Standing Orders, Risk Assessments etc. have been prepared, displayed and personnel are aware.

The following people have been appointed as Area Managers and Area Safety Co-ordinators:

Facility (Bldg)	Area	Manager	Co-ordinator	Deputy Co-ordinator
CLF R1	CLF Visitor Centre	B Wyborn	M King	L Miles
Vulcan R1	Control Room	I Musgrave	A Kidd	D Pepler
" "	Laser Areas 1, 2 & 3	I Musgrave	A Kidd	D Pepler
" "	Laser Area 4	I Musgrave	A Kidd	D Pepler
" "	South Control Room & Support Areas	R Clarke	R Heathcote	M Notley
" "	Target Area West	R Clarke	M Notley	M Galimberti
" "	Target Area East	R Clarke	M Notley	R Heathcote
" "	Pulsed Power Room	I Musgrave	P Holligan	M Pitts
" "	Front End Rooms	I Musgrave	D Pepler	
" "	Target Area Petawatt	R Clarke	R Heathcote	M Notley
" "	Target Area Petawatt Control Room	R Clarke	R Heathcote	M Notley
" "	Target Area Petawatt Mezzanine and store rooms	R Clarke	R Heathcote	M Notley
" "	TAP Plant Room	B Wyborn	P Rice	S Blake
" "	Vulcan Plant Room 2	B Wyborn	B Landowski	S Blake
" "	Vulcan Plant Room 3	B Wyborn	B Landowski	S Blake
" "	AO Development Lab	I Musgrave	C Hooker	B Parry
" "	Vulcan HAPPIE lab	I Musgrave	M Gallimberti	B Parry
" "	Large Optics Storage	I Musgrave	T Winstone	
" R2	Clean Rooms and Interferometer Room	I Musgrave	T Winstone	A Frackiewicz
	Amplifier Test Area	I Musgrave	T Winstone	D Robinson
" "	Darkroom	I Musgrave	D Pepler	T Winstone
LSF R92	User Control Room G.58	D Clarke	P Matousek	A Parker
" "	SORS	D Clarke	P Matousek	A Parker
" "	Nanoprobes & FLIM	D Clarke	P Burgos	S Botchway
" "	Raman/AFM Lab G.61	D Clarke	S Roberts	S Needham
" "	Laser Office	D Clarke	P Matousek	
" "	Bio Lab	D Clarke	S Botchway	S Roberts
" "	Chemical Lab	D Clarke	B Coles	I Clark
" "	Analytical	D Clarke	B Coles	I Clark
" "	Loan Pool	D Clarke	I Clark	G Greetham
" "	ULTRA Laser 1 (G.44)	D Clarke	G Greetham	I Clark
" "	Tweezers (G.45)	D Clarke	A Ward	I Clark
" "	User Control Room (G46)	D Clarke	A Ward	I Clark
" "	ULTRA R&D Area (G.47)	D Clarke	I Clark	G Greetham
" "	ULTRA Laser 2 (G.48)	D Clarke	G Greetham	I Clark
" "	User Control Room (G.52)	D Clarke	I Clark	G Greetham
" "	ULTRA Raman Area (G.49)	D Clarke	I Clark	G Greetham
" "	ULTRA IR Area (G.53)	D Clarke	G Greetham	I Clark
" "	User Control Room (G.31)	D Clarke	S Botchway	S Webb
" "	Sample Area (G.32)	D Clarke	S Botchway	S Webb
" "	Sample Area (G.34)	D Clarke	S Botchway	S Webb
" "	User Control Room (G.35)	D Clarke	S Botchway	S Webb
" "	Laser Area	D Clarke	S Botchway	S Webb
" "	Sample Area (G.37)	D Clarke	S Botchway	S Webb
" "	User Control Room (G.38)	D Clarke	S Botchway	S Webb
Target Fab R1	Target Fabrication Labs	M Tolley	C Spindloe	
ESG R1	Dark Rooms	R Clarke	R Heathcote	
" R2	Rad Lab	R Clarke	R Clarke	R Heathcote

Eng. R1	Cellar	B Wyborn	S Hook	S Blake
" "	Mechanical Workshop	B Wyborn	S Hook	S Blake
" "	TAT's Assembly Area	B Wyborn	D Neville	P Rice
" R2	Pulsed Power Area	B Wyborn	M Pitts	P Holligan
" "	Test Cap Bank	B Wyborn	P Holligan	M Pitts
" R7	Electrical Workshop	B Wyborn	M Pitts	G Wiggins
" "	Electrical Store	B Wyborn	M Pitts	G Wiggins
" External	Mechanical Stores	B Wyborn	B Landowski	S Blake
Gemini R7	Control Room	R Pattathil	C Hooker	S Hawkes
" "	Laser Areas 1 & 2	R Pattathil	C Hooker	S Hawkes
" "	Astra Gemini Laser Area 3	R Pattathil	C Hooker	
" "	Storage Area (mezz)	R Pattathil	C Hooker	S Hawkes
" "	Target Area 2	R Pattathil	C Hooker	D Symes
" "	Target Area 2 Control Room	R Pattathil	C Hooker	P Foster
" "	Gemini Control Room	R Pattathil	C Hooker	S Hawkes
" "	Gemini Viewing Room	R Pattathil	C Hooker	S Hawkes
" "	Gemini Target Area 3	R Pattathil	C Hooker	P Foster
" "	Gemini TA 3 Control Room	R Pattathil	C Hooker	P Foster
" "	Gemini Services Area	B Wyborn	D Neville	S Blake
Artemis R7	Artemis Laser Area	C Hernandez-Gomez	E Springate	C Cacho
" "	Artemis Control Room	C Hernandez-Gomez	E Springate	C Cacho
" R1	Artemis Prep Lab	C Hernandez-Gomez	E Springate	C Cacho
R&D R2	10 PW Front End	I Musgrave	Y Tang	
" "	10 PW component facility	I Musgrave	M Galimberti	
" "	Laser R&D Development Lab	I Musgrave	C Hooker	
CALTA "	DiPOLE lab	K Ertel	P Mason	
" "	DiPOLE-100 lab	J Greenhalgh	J Hill	

6) BUILDING FIRE MANAGER & BUILDING WARDENS

The CLF Building Fire Manager for R1, R2 and R7 is Brian Wyborn.

The following people have been appointed as Building Wardens to function in the areas stated in the event of a Fire or Site Emergency. For further information see STFC SHE Code 32.

Area	**Building Wardens**
Building R1	
Vulcan	A Kidd, M Galimberti
Ground floor W wing	D Wyatt, T Strange
Building R104	
Ground floor	S Banerjee, N Wallace, J Standbridge
1st floor	D Haddock, P Foster
2nd floor	P Brummitt, S Blake, D Carroll, R Bickerton, L Miles
Building R2	
Clean Rooms, Interferometer Room and R&D Labs.	A Frackiewicz, P Mason
Building R7	
Gemini, Artemis, Stores & Workshops	G Wiggins, D Symes, R Chapman
Building R92	
	B Coles, M Hirsch
Building R26	
	S Corderoy, P Davis, R Trines, R Scott

7) LASER RADIATION SAFETY

There are many lasers in the CLF that can cause permanent damage to the eye or skin burns through a momentary exposure to the beam or a reflection. There are many (and variable) wavelengths from the UV through the visible to the IR operating simultaneously and experimental configurations are frequently changed. Appearances can be dangerously misleading. What seems to be a steady beam may be rapidly pulsing with a peak power more than a million times its average. Weak looking blue or red beams may be at wavelengths where the eye is several thousand times below its peak sensitivity. UV and IR beams cannot be seen at all. Constant care and awareness is therefore needed when working with lasers.

The STFC safety policy for the use of lasers is defined in Safety Code 22. These instructions explain the safety procedures to be followed by personnel working with lasers in the Central Laser Facility.

Each laboratory housing hazardous lasers has an appointed Laser Responsible Officer (LRO) who is responsible for laser radiation safety in that laboratory.

Before personnel start to work in any of these laboratories they must obtain the permission of the appropriate LRO. After authorisation has been obtained personnel must obey any Standing Orders, Operating Procedures or Personal Operating Limits set by the LRO. No significant changes may be made to laser beampaths, beam frequencies, or safety devices, or new lasers introduced to a laboratory without the authorisation of the LRO.

All users of laser systems must have seen the video 'LIMITS - Laser Safety in Industry and Research' before being given permission to work in an area. For access to the video contact the User Office or Michelle King.

If any person has reason to think that they may have suffered damage to the eye as a result of laser exposure they MUST IMMEDIATELY seek medical attention. They should notify the LRO or other CLF staff and contact a local First Aider, call the Occupational Health Centre (ext 6666) or the ambulance (ext 2222) if the urgency of the situation demands it. The victim should be treated as for shock. The Oxford Eye Hospital is located at West Wing, The John Radcliffe Hospital, Headley Way, Headington, Oxford, OX3 9DU. The Eye Emergency Telephone number is 01865 234800. See http://www.oxfordeyehospital.nhs.uk/default.asp for further information.

Laser Responsible Officers (LRO's)

Overall Laser Responsible Officer: B Wyborn
Deputy: D Neely

Facility (Bldg.)	Area	LRO	Deputy
CLF R1	CLF Visitor Centre	B Wyborn	C Hernandez-Gomez
Vulcan R1	Laser Areas 1, 2 & 3	A Kidd	D Pepler
" "	Laser Area 4	A Kidd	D Pepler
" "	Front End Rooms	I Musgrave	D Pepler
" "	Target Area West	M Notley	D Carroll
" "	Target Area East	M Notley	D Carroll
" "	Petawatt Target Area	R Heathcote	J Green
" "	Vulcan HAPPIE lab	M Galimberti	B Parry
LSF R92	SORS (G.59)	P Matousek	
" "	Raman/AFM Lab (G.61)	A Ward	S Botchway
" "	Loan Pool	I Clark	M Towrie
" "	ULTRA Laser Area 1 (G.44)	G Greetham	I Clark
" "	Tweezers (G.45)	A Ward	S Botchway
" "	ULTRA R&D Area (G.47)	I Clark	G Greetham
" "	ULTRA Laser Area 2 (G.48)	G Greetham	I Clark
" "	ULTRA Raman Area (G.49)	I Clark	G Greetham
" "	ULTRA IR Area (G.53)	I Clark	G Greetham
" "	Sample Area (G.31)	S Webb	B Coles
" "	Sample Area (G.32)	S Webb	S Botchway
" "	Sample Area (G.34)	S Webb	S Botchway
" "	Laser Area (G.36)	S Webb	S Botchway
" "	Sample Area (G.37)	S Webb	S Botchway
" "	Super-Resolution Microscopy Lab (G.60)	C Tynan	S Webb
" "	L&D Lab (G.57)	M Towrie	M Hamilton
Astra R7	Laser Areas 1 & 2	S Hawkes	C Hooker
" "	Gemini Laser Area 3	C Hooker	S Hawkes
" "	Target Area 2	D Symes	N Booth

" "	Gemini Target Area 3	P Foster	D Symes
Artemis R7	Artemis Laser Area	E Springate	R Chapman
R&D R2	10 PW Front End Lab	I Musgrave	M Galimberti
" "	10 PW Component Test Lab	I Musgrave	M Galimberti
" "	Development Lab	I Musgrave	C Hooker
CALTA "	Dipole Lab (G.11)	K Ertel	P Mason
" "	DiPOLE-100 lab	P Mason	J Phillips

8) ELECTRICAL SAFETY

There is inevitably electrical equipment in most areas of the CLF. These can be high voltage, high stored energy or high current electrical devices. They may well be in close proximity to cooling water or optical adjusters. Care must be taken at all times when working with electricity. Electrical shocks can kill or cause severe personal injury.

The safety rules for all electrical installations and apparatus at RAL are contained in the safety code RALSC3 (soon to be replaced with STFC SHE Code 34). STFC SHE code 17 covers the safety of portable electrical equipment.

You MUST NOT work or attempt to work on any electrical apparatus without contacting the Authorised Person for the area containing the apparatus.

All high voltage apparatus must be registered with SHE Group if it exceeds the 5 mA/5 Joule rule (ref. 1.8, RALSC3).

Everyone using electrical apparatus must be aware of the shut-down procedures to render that apparatus safe.

Staff should ensure that all Portable Electrical Equipment is tested / inspected and that the correct label is attached prior to use and that is only used for the purpose for which it was intended and in the environment for which it was designed and constructed.

- Schedule A portable electrical equipment (In general equipment subject to routine physical handling and movement, for example: extension leads; kettles; refrigerators; microwave ovens; vacuum cleaners; water coolers; portable air conditioning units; electric heaters; toaster; hand held electrical tools and equipment e.g. electric drills; soldering irons; electric power leads; electronic racks; laptop PCs and their power supplies) is checked yearly, indicated by an appropriate sticker on the plug, cable or equipment.
- Schedule B equipment (In general equipment not subject to routine physical handling and movement, including 'standard' office equipment and their power leads, for example: PCs; monitors; printers; plotters; photocopiers; scanners; fax machines; desk lamps; fans; electric staplers; laminators; shredders; battery chargers; mobile phone chargers) is checked every four years.

Any equipment with an out of date sticker should be withdrawn for testing. Any equipment not owned by the laboratory but available for use at the laboratory must be similarly checked prior to use at RAL.

Authorised Persons and deputies have been appointed for each area containing high voltage electrical apparatus and each area where low voltage apparatus is worked on. It is the job of the Authorised Person to ascertain that the person working on the apparatus is competent to do the work.

Electrical Authorised Persons

Electrical Authorising Officer P Holligan
Electrical Liaison Officer M Pitts

Facility	Bldg	Area	Authorised person	Deputies
Vulcan	R1	Control Room	D Robinson	M Pitts
"	"	Laser areas 1, 2, 3 & 4	D Robinson	M Pitts
"	"	South Control Room	M Pitts	D Robinson
"	"	Target areas, East, West & Petawatt	M Pitts	D Robinson
"	"	Pulsed Power Room	M Pitts	D Robinson
"	"	Front End Rooms	D Robinson	M Pitts
"	"	TAP Plant Room	M Pitts	D Robinson
"	"	TAP Control Room	M Pitts	D Robinson
"	"	Vulcan HAPPIE	M Pitts	D Robinson
"	R2	Clean room	M Pitts	D Robinson
"	"	Amplifier & Flash Lamp test room	M Pitts	D Robinson
LSF	**R92**	SORS		M Pitts D Robinson
"	"	Laser Tweezers Development Lab		M Pitts D Robinson
"	"	Laser Loan Pool	M Pitts	D Robinson

"	"	Bio-Incubator		M Pitts	D Robinson
"	"	SORS		M Pitts	D Robinson
"	"	User Control Room (G.58)		M Pitts	D Robinson
"	"	Nanoprobes & FLIM		M Pitts	D Robinson
"	"	Raman/AFM Lab (G.61)		M Pitts	D Robinson
"	"	Laser Office		M Pitts	D Robinson
"	"	Bio Lab		M Pitts	D Robinson
"	"	Chemical Lab		M Pitts	D Robinson
"	"	Analytical		M Pitts	D Robinson
"	"	ULTRA Laser 1 (G.44)		M Pitts	D Robinson
"	"	Tweezers (G.45)		M Pitts	D Robinson
"	"	User Control Room (G.46)		M Pitts	D Robinson
"	"	ULTRA R&D Area (G.48)		M Pitts	D Robinson
"	"	ULTRA Laser 2 (G.48)		M Pitts	D Robinson
"	"	User Control Room (G.52)		M Pitts	D Robinson
"	"	ULTRA Raman Area (G.49)		M Pitts	D Robinson
"	"	ULTRA IR Area (G.53)		M Pitts	D Robinson
"	"	User Control Room (G.31)		M Pitts	D Robinson
"	"	Sample Area (G.32)		M Pitts	D Robinson
"	"	Sample Area (G.34)		M Pitts	D Robinson
"	"	User Control Room (G.35)		M Pitts	D Robinson
"	"	Laser Area		M Pitts	D Robinson
"	"	Sample Area (G.37)		M Pitts	D Robinson
"	"	User Control Room (G.38)		M Pitts	D Robinson
Target Fab	R1	Target Fabrication Labs	M Pitts	D Robinson	
ESG	R1	Instrumentation Lab	M Pitts	D Robinson	
"	"	Dark Room	M Pitts	D Robinson	
"	"	Mechanical Workshop	M Pitts	D Robinson	
Eng.	R1	Electrical Workshop	M Pitts	D Robinson	
"	R7	Pulsed power room	M Pitts	D Robinson	
"	R2	Control room	D Robinson		M Pitts
Artemis	R7	Artemis	D Robinson		M Pitts
Astra	R7	Laser area			
"	"	Target area 2 & control room	D Robinson		M Pitts
"	"	Gemini Laser Area 3	D Robinson	M Pitts	
"	"	Gemini Target Area 3		M Pitts	D Robinson
"	"	Gemini Services Area	M Pitts	D Robinson	
"	R1	Gemini Set-up Lab (5A)	M Pitts	D Robinson	
R&D	**R2**	10 PW Front End	M Pitts	D Robinson	
"	"	10PW Component Test Facility	M Pitts	D Robinson	
"	"	Laser R&D Development Lab	M Pitts	D Robinson	
CALTA	"	DiPOLE Lab	M Pitts	D Robinson	
"	"	DiPOLE-100 Lab	M Pitts	D Robinson	

9) CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (COSHH) SAFETY

A variety of hazardous substances such as chemical and biological materials are used throughout the CLF.

The RAL is subject to the COSHH Regulations (2002) regarding the use of substances for experiments as defined within STFC SHE Code 37. Schedule 9 of the COSHH Regulations refers specifically to biological agents and The Genetically Modified Organisms (Contained Use) Regulations, 2000 are also applicable. The STFC policies for biological safety are contained in STFC SHE Code 16

Any person wishing to use a hazardous substance in the CLF may obtain advice from the nominated COSHH officer in charge of the area they are to work in. They must obtain authorisation before bringing any hazardous substance on site. A COSHH assessment must be carried out. Work involving bio-samples can only be carried out in designated biolabs and full training is required prior to the start of experiments within these areas. Initial contact must be with the area responsible person who will initiate the approval process. The completed bio-COSHH must be approved by the Biological Safety Officer (BSO) before commencing work with bio-samples and the process **requires 3 weeks to complete.**

In certain cases (in particular GMO experiments), site licence extension from the user institution may be required to cover RAL site or a new application may need to be made to the HSE for approval- this may take time.

At present the CLF restricts use of pathogens to Hazard Groups 1 & 2, as categorised by ACDP (4th Ed. 1995) HMSO booklet 'Categorisation of biological agents according to Hazard and categories of containment'. It should be noted that to work with certain biological agents the HSE must have 30 days prior notice. Further advice can be sought from the Biological Safety Officer.

The STFC has a responsibility to ensure that any chemicals that leave its sites do so safely. This includes chemicals bought in by a third party as the STFC assumes partial liability for their safe transport when leaving STFC sites. Under the provisions of The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (2009) any hazardous substances leaving any establishment should be packaged, labelled and transported in a manner appropriate to both the item in question and the method being used to transport it. See STFC SHE Code 27.

If any person believes that they have suffered exposure to a hazardous substance they MUST IMMEDIATELY seek medical attention. The COSHH officer or another CLF member of staff should be notified and telephone the local First Aider, Occupational Health Centre (ext 6666) or the ambulance (ext 2222) if the urgency of the situation demands it.

COSHH & Bio-COSHH Officers

Overall COSHH Responsible Officer: A Parker
Deputy: I Clark

Facility (Bldg)	Area	COSHH Officer	Deputy
Vulcan R1	Laser Areas 1, 2, 3 & 4	A Kidd	D Pepler
" "	Front End Rooms	I Musgrave	B Parry
" "	South Control Room & Support Areas	M Notley	R Heathcote
" "	Target Areas West	M Notley	R Heathcote
" "	Target Areas East	M Notley	R Heathcote
" "	Target Area Petawatt	M Notley	R Clarke
" "	Vulcan HAPPIE Lab	M Galimberti	B Parry
" R2	Interferometer Room	T Winstone	A Frackiewicz
" "	Clean Rooms	T Winstone	A Frackiewicz
" "	Darkroom	D Pepler	T Winstone
LSF R92	SORS Development Lab	A Parker	P Matousek
" "	Laser Tweezers Development Lab	M Towrie	A Parker
" "	Bio-Incubator	S Needham	S Roberts
" "	Nanoprobes & FLIM	S Botchway	A Ward
" "	SORS	P Matousek	
" "	Raman/AFM Lab (G.61)		
" "	Bio Lab	S Botchway	S Roberts
" "	Chemical Lab	I Clark	B Coles
" "	Analytical		
" "	Loan Pool	I Clark	
" "	ULTRA Laser 1 (G.44)	G Greetham	I Clark
" "	Tweezers (G.45)	A Ward	
" "	ULTRA R&D Area (G.47)	I Clark	G Greetham
" "	ULTRA Laser 2 (G.48)	G Greetham	I Clark
" "	ULTRA Raman Area (G.49)	I Clark	G Greetham
" "	ULTRA IR Area (G.53)	G Greetham	I Clark
" "	Sample Area (G.32)	S Webb	S Botchway
" "	Sample Area (G.34)	S Webb	S Botchway
" "	Laser Area	S Webb	S Botchway
" "	Sample Area (G.37)	S Webb	S Botchway
" "	User Control Room (G.38)	S Webb	S Botchway
Target Fab R1	Target Fabrication Labs	M Tolley	C Spindloe
ESG R1	Instrumentation Lab	M Notley	R Heathcote
Eng. R1	Mech. Workshop and Cellar	B Landowski	
" R2	Pulsed Power Area	M Pitts	P Holligan
" R1	Mech. Assembly Area	A Frackiewicz	
" R2	Elect. Workshop	M Pitts	
" R7	Laser Area	C Hooker	
Artemis R7	Artemis	E Springate	R Chapman
Astra R7	Target Area 2	P Foster	D Symes
" "	Target Area 2 Control Room	P Foster	
" "	Gemini Laser Area 3	C Hooker	

" "	Gemini Target Area 3	P Foster	D Symes
" "	Gemini Target Area 3 Control Room	P Foster	
" "	AO Lab	C Hooker	B Parry
R&D R2	10 PW Front End	I Musgrave	M Galimberti
" "	Component Test Facility	I Musgrave	M Galimberti
CALTA "	DiPOLE lab	K Ertel	P Mason
" "	DiPOLE-100 lab	K Ertel	C Hooker

In the particular case of working with Beryllium the CLF has appointed Be Handling Officers as listed below. Only authorised people may work with Be.

Facility (Bldg)	Be Handling Officer	Deputy
Vulcan R1	M Notley	R Heathcote
Astra R7	M Notley	R Heathcote

Bio-COSHH Officers
Biological Safety Officer: S Botchway
Deputy: A Parker

Note: Initial Contact must be made to the area responsible person to begin the approval process

Facility (Bldg)	Area	Bio-COSHH Area Contact	Deputy
LSF R92	SORS Development Lab	S Botchway	S Roberts
" "	Laser Tweezers Development Laboratory	S Botchway	S Roberts
" "	Bio-Incubator	S Roberts	S Needham
" "	SORS	P Matousek	A Parker
" "	Nanoprobes & FLIM	S Botchway	A Ward
" "	Raman/AFM Lab (G.61)	A Parker	S Botchway
" "	Bio Lab	S Roberts	S Botchway
" "	Chemical Lab	B Coles	I Clark
" "	Analytical	S Botchway	S Roberts
" "	Loan Pool	I Clark	
" "	ULTRA Laser 1 (G.44)	G Greetham	
" "	Tweezers (G.45)	A Ward	
" "	ULTRA R&D Area (G.47)	G Greetham	I Clark
" "	ULTRA Laser 2 (G48)	I Clark	G Greetham
" "	ULTRA Raman Area (G49)	I Clark	G Greetham
" "	ULTRA IR Area (G.53)	I Clark	G Greetham
" "	Sample Area (G.32)	S Botchway	S Webb
" "	Sample Area (G.34)	S Botchway	S Webb
" "	Laser Area	S Botchway	S Webb
" "	Sample Area (G.37)	S Botchway	S Webb

10) IONISING RADIATION SAFETY

In the CLF radiation may arise in experiments involving radioactive sources (α, $\beta\pm$,γ radiation and neutrons) or high intensity laser-matter interactions (X-rays, neutrons and energetic charged particles).

The CLF places a high importance on the control of this hazard and takes into account the type of radiation, its intensity and potential for exposure when devising control measures. Ionising radiation safety issues are dealt within the following codes: Management of ionising radiation at work STFC SHE Code 29, Radioactive open sources STFC SHE Code 28, Radioactive Sealed Sources STFC SHE Code 14, Management of Radioactive Waste STFC SHE Code 21. All work involving exposure to ionising radiations or radioactive substances must comply with the requirements of The Ionising Radiation Regulations 1999. For the keeping, storage and disposal of radioactive substances the Laboratory is subject to The Environmental Permitting Regulations 2010 (replacing the Radioactive Substances Act 1993). Other relevant regulations are: The High Activity Sealed Radioactive Sources and Orphan Sources Regulations 2005 (HASS Regulations), The Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR), The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009.

Work involving ionising radiations must be supervised by a Radiation Protection Supervisor (RPS) appointed by the Director of the CLF. Radiation Protection Supervisors are appointed for each area and they are responsible for ensuring that all work in Controlled and Supervised areas is carried out in accordance with the Local Rules. The current RPSs are listed below. The site RPA can provide advice about prior risk assessments, Local Rules, transport and purchasing or loan of radioactive materials.

Work involving ionising radiations is subject to Local Rules which must be issued by the Director of the CLF before the work begins. They must be obeyed by all of the CLF's staff and visitors. Personnel who wish to work in areas covered by existing Local Rules must obtain the written approval of the appropriate RPS in advance. Personnel who wish to begin any new work involving ionising radiations must obtain the written approval either of the LSF Division Head (for work in the LSF) or the director of the CLF (for work elsewhere in the CLF) in advance. In particular no radioactive substance is to be brought to the CLF without prior written approval from one of these people. The Ionising Radiation Shielding Policy may also be applicable.

Radiation Protection Supervisors

Area	RPS	Deputy
Vulcan Target Areas, R1	R Clarke	R Heathcote
Gemini Target Areas, R7	R Clarke	R Heathcote

Site RPA P Wright

11) SAFETY IN THE USE OF HAZARDOUS AND HIGH PRESSURE GASES, AND VACUUM SYSTEMS

Quite often hazardous and high pressure gases are used in the operation of lasers, produced as a by-product or used in the experiments at the CLF such as Fluorine, HCl, Methane, Hydrogen and Ozone. Each gas has its own unique hazards and there may be the potential for the release of a lot of stored energy. Care must always be exercised when dealing with gases. It should be noted that even inert gases such as Nitrogen can cause asphyxiation when used in a confined space.

The RAL safety regulations for the use of toxic, flammable, hazardous and high pressure gases are contained in STFC SHE Code 20 and for working in dangerous atmospheres and confined spaces in STFC SHE Code 11. STFC SHE Code 33 puts in place arrangements and a structure to enable the STFC to comply with its relevant duties for Pressure Systems. It incorporates all but the most basic vacuum systems to ensure that they are managed in a similar manner. The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) requires employers to assess the risks of fires and explosions that may be caused by dangerous substances in the workplace. The Pressure Systems (Safety) Regulations 2000 (PSSR 2000) impose specific legal duties on the STFC to design, construct, install and operate safe pressurised systems, and maintain and repair them to prevent danger.

Systems involving the use of hazardous or high pressure gases must be installed, tested or modified only by competent persons under the supervision of authorised persons with the authorisation of the Nominated Engineer or deputy. Personnel who wish to begin any new work involving hazardous or high pressure gases must obtain approval in advance. Only pressure reducing valves registered by the CLF are to be used on equipment and can be obtained from or approved by the authorised persons.

Procedures to be taken in the event of a leakage must be included in the area's standing orders. These procedures must be followed by all of the CLF's staff and visitors.

Toxic, Flammable, Hazardous and High Pressure Gases Nominated Officers

Overall Nominated Engineer: S P Blake
Deputy P A Brummitt
B E Wyborn

Area	Authorised person	Deputy
N_2 system, R1, R2 & R7	B Landowski	A Frackiewicz
Vulcan TAW, R1	A Cox	S Crisp
Vulcan TAP, R1	A Cox	S Crisp
Target Fabrication Labs, R1	P Rice	D Neville, A Cox
Attosecond, Photo-Injector and 10 PW Labs, R2	D Neville	A Frackiewicz
Adaptive Optics, R2	D Neville	A Frackiewicz, P Rice
Gemini gas panels, R7	D Neville	A Frackiewicz, P Rice
Artemis experiment gases, R7	P Rice	D Neville, A Cox
Gemini TA2 experiment gases, R7	D Neville	P Rice
Gemini TA3 experiment gases, R7	D Neville	P Rice
LSF gas panels, R92	B Landowski	A Frackiewicz
LSF experiment gases, R92	B Landowski	A Frackiewicz
DiPOLE-100 Lab	S Blake	I Hollingham

12) SAFETY IN RELATION TO MANUAL HANDLING AND USE OF LIFTING EQUIPMENT

There are many pieces of equipment which either because of their weight or bulkiness present a lifting hazard if handled incorrectly. More than a third of all over-three–day injuries reported each year to the Health and Safety Executive (HSE) are caused by manual handling and back injuries from manual handling are a major cause of occupational ill health in the UK.

The Regulations do not establish absolute limits on the maximum weights that can be lifted but do provide guidelines; these are 25kg for men and 16kg for women, where the load is at waist height. At any position other than waist height these limits are reduced progressively to 10kg for men and 7kg for women, at head or ankle height. For any tasks that involve significant manual handling hazards a risk assessment should be undertaken. Where appropriate lifting aids such as trolleys or pallet trucks should be used.

With regard to manual handling and lifting equipment the Manual Handling Operations Regulations 1992 and Lifting Operations and Lifting Equipment Regulations (1998) are the relevant national regulations. The RAL safety regulations for manual handling and for the design, use and inspection of lifting equipment are contained in STFC SHE Code 12 and STFC SHE Code 26 respectively. Lifting equipment needs to be registered, used correctly, maintained and inspected regularly.

Personnel should not lift heavy loads such as surface tables without seeking advice from the nominated LELA User. Any activity which involves the use of lifting equipment must be carried out only by a competent LELA User, this includes the use of cranes, power operated fork lift trucks and mobile work platforms. A system of training, testing and issuing of operator licences is in place.

For some particular equipment authorised operators have been approved as shown below. In addition advice and assistance on manual handling tasks can also be supplied by the LELA User.

Nominated Persons

Overall Lifting Manager: S P Blake
Deputy B Wyborn

Area	LELA User	Deputy	Specific Equipment	Authorised Operators
Vulcan Laser Areas R1	A Frackiewicz	B Landowski	Trolley Lift 208 amplifiers	T Winstone D Pepler A Frackiewicz A Kidd C Hernandez-Gomez B Landowski A Frackiewicz T Winstone
Vulcan TAW experimental equip.	A Cox	S Crisp		
Vulcan TAW laser infrastructure	A Frackiewicz			
Vulcan TAP experimental equip.	A Cox	S Crisp		
Vulcan TAP laser infrastructure	A Frackiewicz			
Vulcan Pulsed Power Room, R1	P Holligan			
Vulcan TAP	D Neville	A Frackiewicz		Only specifically authorised persons are allowed to lift the compressor lids.
Pulsed Power Area, R2	B Landowski	A Frackiewicz		
Clean Rooms, R2	A Frackiewicz	B Landowski	208 amplifiers	B Landowski A Frackiewicz T Winstone
Mech. Workshop R1	B Landowski	A Frackiewicz		
Gemini Laser, R7	D Neville	P Rice		
Gemini Target Areas, R7	D Neville	P Rice		
LSF, R92	B Landowski	A Frackiewicz		
R&D Labs, R2	B Landowski	A Frackiewicz		
Artemis, R7	P Rice	D Neville	Radial crane	Only specifically authorised persons

				are allowed to use
DiPOLE-100 Lab	S Tomlinson	I Hollingham		

The CLF Lifting Liaison Officer is Brian Landowski.

13) SAFE USE OF MACHINE TOOLS

Machine tools in use at the CLF include lathes, grinding or abrasive wheels, drilling and milling machines. The main hazards associated with these machines are contact with the moving workpiece or cutting device, from entanglement and from the waste material. Statutory obligations require that dangerous parts of the machines are securely guarded and that they are used safely.

Machine tools should only be operated by competent persons. CLF staff and visitors must get permission to use machines in the CLF workshops from S Hook, B Landowski or A Frackiewicz.

14) SAFE USE OF CRYOGENIC MATERIALS

Cryogens are often used within the CLF to cool equipment including liquid Nitrogen for enhancing vacuum systems.

The STFC safety regulations for the handling and use of cryogenic materials are contained in STFC SHE Code 03.

The hazards associated with the use of cryogenic liquids include:

- causing contact burns (by the liquid), frostbite or cold exposure (by the vapour);
- the ability to wick in woven materials, making contact with the skin and entrapping cryogenic liquids within clothing;
- the potential for the liquid to rapidly convert to a large quantity of gas, which, especially in a confined space, can present suffocation/asphyxiation or over pressurisation hazards; and
- they may be flammable and/or explosive.

Only those persons who have received suitable instruction and training may be permitted to handle or use cryogenic liquids. Before working with cryogenic liquids personnel must obtain authorisation from the relevant Area Safety Co-ordinator and a suitable and sufficient risk assessment undertaken.

Dewars should be kept inside buildings where possible. This is important during cold, damp or wet weather conditions. The tops of dewars should be checked periodically to make sure they are free from ice and any gas venting paths are free from obstruction.

Suitable safety equipment, such as gloves and eye protection, must be worn when transferring any cryogenic liquids. Advice on the use of cryogenic liquids can be supplied by the SHE Group.

If any person believes that they have suffered a cold burn they MUST IMMEDIATELY seek medical attention. Contact a local First Aider, the Occupational Health Centre (ext 6666) or Security for an ambulance (ext 2222) if the urgency of the situation demands it.

15) SAFETY WITH REGARD TO HOT WORKING

Whenever work takes place which uses naked flames or an alternative heat source, outside of a properly equipped workshop, a Hot Working Permit is required. Types of work include for example: welding, brazing, soldering and paint stripping (using blowlamps or hot air blowers).

The RAL safety requirements for such work are contained in STFC SHE Code 32.

Whenever Hot Working is performed a competent person must be appointed who is responsible for doing a risk assessment and managing the Hot Working Permit if appropriate.

Further advice and information can be obtained from the SHE Group.

16) SAFETY IN USING DISPLAY SCREEN EQUIPMENT

More and more people are coming into contact with display screen equipment in their working lives.

The STFC SHE Code 25 and the Health & Safety (Display Screen Equipment) Regulations 1992 deal with the subject. Computer users at RAL are defined as people who use a ‘display screen’ for more than 30 minutes on average more than three times a week. Regulations state that ‘work stations’, of which the screen is a part, must be assessed. This includes both the equipment and the environment.

If this applies to you then you should carry out a risk assessment of your workstation and send a copy of your assessment to A Ward who is the display screen advisor for the CLF.

17) SAFETY WITH REGARD TO APPARATUS LEFT WORKING UNATTENDED

Although it is generally discouraged, if it is necessary for apparatus to be left working unattended, the equipment must be made safe and a label indicating the shut down procedure and who to contact in an emergency must be displayed. Suitable labels can be obtained from the SHE Group.

18) SAFETY IN RELATION TO WORKING ALONE

Lone working is inherently more hazardous than normal procedures and should only be undertaken when there is no alternative and only then if it is safe to do so.

The STFC policy for personnel working alone is currently under discussion.

In situations where significant hazards exist, personnel are not normally permitted to work alone. Before a lone working situation arises a full risk assessment must be made and a reasonably practicable safe system of work implemented.

There are no restrictions on working alone in the normal office environment.

19) SAFETY IN RELATION TO WORKING LONG HOURS

Working long hours can lead to tiredness and mistakes being made, potentially leading to accidents as well as possibly leading to work related illnesses. The ensuing risk will depend upon many factors- such as; the individual, the work, the hazards etc.

The Working Time Regulations 1998 and associated Directive have been introduced.

Any hazardous activity is subject to a Risk Assessment which should, if relevant, take the possibility of personnel working long hours into account.

If personnel are likely to work more than 12 hours in a day then authorisation must be obtained from the relevant Group Leader.

20) SAFETY WITH REGARD TO YOUNG PERSONS

The Health and Safety of Young Persons Regulations 1997 places extra responsibilities on employers of young persons. These affect all persons under the age of 18 years and apply to casual work, short term work and work experience.

A risk assessment should be carried out before a young person (under the age of eighteen), starts work and, in the case of a "child" (under the age of sixteen), the child's parents must be given a copy of the assessment.

Any assessment carried out shall include the possible consequences of a lack of experience, absence of awareness of existing or potential risks, or that the young persons may not have fully matured.

Young persons shall not be employed for work which is:- beyond their physical capabilities, involves exposure to harmful or hazardous substances, or exposure to radiation (see Appendix 12 of STFC SHE Code29) or where there is a risk to health from noise, extreme heat or cold or vibration. Any young person employed should be supervised by a competent person and any risks reduced to the lowest level reasonably practicable.

21) SAFETY WITH REGARD TO BUILDING ALTERATIONS

Plans for new buildings, for alterations to buildings and for change of use of buildings must be approved by the SHE Group in order to ensure that they conform to the appropriate regulations i.e. Fire Certificate etc. It is important that holes in fire separation walls are filled with fire-resistant material. The RAL Estates team or SHE Groups can offer advice.

Also because of the age of many of the buildings, there is quite a lot of asbestos-containing material (ACM) on site and it remains imperative that no building work is done without first evaluating the asbestos situation. This includes drilling holes in floors or walls or lifting ceiling tiles, as well as more substantial works such as installing cables and pipes. All such work must be done in consultation with the RAL Estates team who will check the Asbestos Register and advise on any appropriate actions. Relevant safety instructions are in STFC SHE Code 35.

STFC SHE Code 19 'Work on Buildings, Premises, Services and Infrastructure' requires staff to not carry out building work, including minor work without approval from the relevant Estates Group or local Building Work Co-ordinator.

Normally only RAL Estates team manage building works. For the installation of CLF scientific equipment and its associated mechanical and electrical services, where the fabric of a building or its services needs to be disturbed, for example drilling holes through walls to provide access routes for services to experimental facilities, the following staff have been appointed as Building Work Co-ordinators: Brian Wyborn, Steve Blake, Paul Holligan, Mark Pitts, Brian Landowski, Darren Neville and Phil Rice.

In addition the Construction (Design and Management) (CDM) Regulations 2007 may apply to any demolition and building work. The RAL safety regulations for CDM are contained in STFC SHE Code 13. Building Projects or SHE Groups should be consulted and can offer advice.

22) SAFETY WITH REGARD TO CONTRACTORS

It is the policy of RAL to provide, as far as is reasonably practicable, healthy and safe working conditions for all who work at the laboratory whether or not they are employees of STFC, and to require that all these workers follow safe methods of working. This applies especially to contractors, service engineers etc.

The RAL safety regulations for the supervision of contractors are given in STFC SHE Code 15.

When contracts are placed for work to be carried out on site at the CLF a member of CLF staff will be named as the contract Contract Supervising Officer.

Each Contract Supervising Officer or delegated deputy will:

a) ensure that the contractor and all of his staff are fully informed of all our safety procedures (e.g. for illness or injury at work; dangerous occurrences; fire; site emergency) and have attended a Health & Safety Induction talk.
b) ensure that the contractor is fully informed as necessary of our working procedures (e.g. electrical safety; portable electrical equipment; ladders, steps and trestles; scaffolds; lifting equipment; the use of cranes as working platforms; flammable gases and highly flammable liquids and liquefied petroleum gases; hot work; dangerous atmospheres and confined spaces; explosives) and has access to copies of the relevant RAL Safety Codes and Notices.
c) ensure that the contractor is aware of our general safety requirements (eg for fire prevention; the safety of visitors when personnel are required to work alone; the site speed limit and parking restrictions; signs, warnings and notices).
d) ensure that the contractor is aware of any special safety precautions which may be necessary in the area of work concerned and that liaison is established with the Area Co-ordinator of such areas (eg chemicals; lasers; or where the work is in a designated radiation area) to ensure that the rules for work in such areas are complied with.
e) ensure that the contractor is working safely, is not putting other personnel at risk and is not at risk from our activities.

23) SAFETY WITH REGARD TO NOISE

Exposure to excessive noise can damage hearing. The first aim should be to reduce, so far as is reasonable practicable the exposure of any worker to the noise.

The Control of Noise at Work Regulations 2005 (see STFC SHE Code 18) state that where any employee is likely to be exposed to noise at or above a first action level of 80dB(A) for daily exposure and 135dB (C) for peak noise, a noise assessment is to be carried out and a record of the assessment kept. Steps should be taken to eliminate or reduce the risk, staff should be made aware of the potential dangers and suitable and efficient ear protectors should be available on request for the employee. If any employee is likely to be exposed to noise at or above the second action level of 85dB(A) for daily exposure and 137dB (C) for peak noise, a noise assessment is to be carried out and a record of the assessment kept. The employee must be provided with suitable personal ear protectors and must wear them and must use any other protective measures provided. Ear Protection Zones should be established where an employee is likely to be exposed at or above the second action level of 85dB(A). These zones will be demarcated by Supervisors and identified by means of suitable notices (available from the SHE Group) which indicate the need for employees to wear personal ear protectors. Staff must not be exposed above a limit of 87dB(A) for daily exposure and 140dB (C) for peak noise.

For your guidance 80dB(A) is comparable to the noise levels in a busy street, crowded restaurant or a vacuum cleaner. At 85dB(A) you would typically have to shout to someone 2 metres away.

The SHE Group can carry out a noise assessment, provide the necessary records and give advice on measures that may enable hazardous levels to be reduced; they can also provide the ear protectors if these are advised.

A further hazard associated with noise is the possibility of being unable to hear warnings - bells, klaxon, shouts etc..
Whenever personnel are required to work in areas where the noise level or the wearing of ear protectors might prevent the wearer from hearing warning sounds, arrangements should be made for that person to be informed immediately an alarm is raised. Personnel should try to ensure that others are made aware of their entry to such an area.

24) SAFETY WITH REGARD TO NEW OR EXPECTANT MOTHERS

The Management of Health and Safety at Work Regulations 1992 requires that suitable and sufficient general and specific risk assessments are carried out with regard to pregnant women. These risks may be from exposure to physical, biological, radiological or chemical agents. The HSE have issued a booklet on how to carry out the relevant risk assessment. Copies are available from the SHE Group.

A new or expectant mother should notify their employer, that she is pregnant, has given birth in the previous six months, or is breast-feeding, in order that measures can be taken to avoid any risks to her health and safety.

Where possible her conditions or hours should then be altered to avoid any risk. Where this is not possible the employee should be suspended from such work for as long as necessary to avoid such risks.

25) SAFETY WITH REGARD TO WORKING AT HEIGHT

Falls from height are the biggest cause of workplace deaths in the UK and one of the main causes of major injuries. The first aim should be to avoid working at height if possible.

The Work at Height Regulations 2005 require that before working at height, a suitable and sufficient risk assessment must be undertaken and a safe system of work developed. Duty holders must then select suitable work at height equipment, giving priority to collective fall protection over personal fall protection measures.

The STFC safety policy for Work at Height are given in STFC SHE Code 09.

Where it has been established that work at height cannot be avoided and that there is not an existing safe place of work, a ladder or mobile access tower might well be selected as the most suitable work at height equipment. The CLF possesses ladders and a mobile access tower and has workshop staff trained in the safe methods of ladder use and tower assembly, dismantling and alteration. Additional information is given in STFC SHE Code 04 for Ladders, Steps and Trestles and Scaffolds.

Where a mobile access tower has been selected for use staff should contact Brian Landowski for guidance and advice. On no account should untrained staff erect a mobile access tower themselves.

A permit to work may be required before working on a roof. Please contact Brian Landowski for guidance and advice.

26) SAFETY WITH REGARD TO TRAVEL AND VEHICULAR MOVEMENT

Travel, specifically by car, is a major cause of work related fatalities in the UK.

The unpredictability of driving conditions makes establishing absolute guidelines for safe driving times difficult. Such guidelines must be implemented pragmatically and depend most critically on the driver's awareness and alertness for the driving and journey undertaken. The following guidelines should provide the basis of journey planning for drivers:

Maximum driving period 2.5 hours, to be followed by a 15 minute break/stop;
Maximum continuous driving time, including breaks/stops, should not exceed 9 hours, or 400 miles;
A working day followed by business driving should not exceed 12 hours;

Additional training should be undertaken if business mileage is expected to exceed 3000 miles per annum.

Where overseas travel is planned to potentially hazardous destinations staff should consult the Foreign and Commonwealth Office (FCO) web site for advice.

The STFC SHE policy for Travel on Council Business is given in STFC SHE Code 8. There is also a short online training package 'BiteSize SHE' available for this SHE code. Template risk assessments are given in Appendix 1 of the code which describe STFC travel controls and policies which should be followed. **Only** where proposed travel plans and their hazards are **not** addressed by the controls and policies in Appendix 1 should individuals inform their line manager and conduct a specific risk assessment.

Any buildings in which vehicles move need to have a risk assessment completed to address issues such as: Ensuring segregation of pedestrian and vehicular traffic were possible; Loading and unloading of vehicles, and the need for vehicles to reverse; and Compliance with Disability Discrimination Act 2005 in relation to pedestrian routes. See STFC SHE Code 02.

27) SAFETY WITH REGARD TO LOCAL EXHAUST VENTILATION SYSTEMS (LEV)

After considering elimination and substitution as methods of prevent exposure to hazardous fumes and dust, local exhaust ventilation (LEV) is widely applicable for controlling dust and fumes.

Any LEV system needs to be appropriately designed, installed and commissioned before being brought into use the system should be proved to be capable of meeting its design specification. Appropriate details of airflow velocities and pressures should be recorded to provide standard performance data for future reference.

Once installed, the LEV should be regularly checked for leaks or blockages and maintained according to the manufacturer's instructions. The LEV must be thoroughly examined and tested at least once every 14 months by a competent person. (See STFC SHE Code 04 Appendix 2 for specific guidance).

28) SAFETY WITH REGARD TO WORK IN CONFINED SPACES

Work in confined spaces (including people who try to rescue trapped personnel without proper training and equipment) can be dangerous and should be avoided where possible. Where this is not possible a written suitable and sufficient risk assessment must be undertaken and a safe system of work developed.

The RAL safety regulations for Work in Confined Spaces are given in STFC SHE Code 11.

29) SAFETY WITH REGARD TO ACCESS AND VACUUM OPERATIONS OF THE VULCAN TARGET AREA PETAWATT (TAP) INTERACTION AND COMPRESSION CHAMBERS

The TAP Interaction and Compression Chambers are on a large enough scale that there is the potential of persons entering the chambers. The risk of, either asphyxiation due to an oxygen deficiency in the chamber or the chamber being closed and vacuum operation started is now present. Special standing orders for the safe access and operation of the vacuum equipment have been put in place and all staff must obey these.

30) SAFETY TRAINING

The Health & Safety at Work (etc) Act 1974 requires all employers provide "such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of their employees". The knowledge and experience of staff established by training and instruction provides a key basis for assuring the safety of staff and others.

STFC SHE Code 10 sets out the process by which the STFC ensures and records that staff are competent to undertake work within the STFC safely, without harming their, or others, health and the environment.

Two classes of training necessary to ensure competence have been established, mandatory General SHE training and job or hazard specific SHE training:

- Mandatory SHE training is a requirement of all staff. This may take the form of induction training courses or of general managerial safety training. The first of these is provided on appointment to STFC, and the second when an individual is appointed to a role which involves SHE management responsibility for others. Both forms of training are, in general, managed by the SHE Group.
- Job or hazard specific training is determined by the role or duties an individual undertakes within the STFC. The identification of the need for such training is the responsibility of line management based upon their understanding of the hazards faced. To facilitate the identification of hazard specific training each STFC SHE code defines the training necessary to undertake work where a specific hazard exists in an appendix, for example the COSHH code defines the training necessary for competency as a COSHH Assessor. Delivery of such training is in general managed by the STFC SHE Group.

An alternative means of communicating SHE codes to refresh their content in the minds of staff is being developed as a range of short, on-line training packages called 'BiteSize SHE'. These have been developed in house and are specific to our SHE Codes – one per code and include a self-assessment test. The first batch contains SHE codes which are relevant to many staff.

- SHE Code 5: Incident reporting and investigation;
  SHE Code 8: Travel on Council Business; and
  SHE Code 39: Working with static magnetic fields.

A catalogue of STFC SHE training is also available (SHE Training Catalogue)

31) SAFETY WITH REGARD TO MAGNETIC FIELDS

Static Magnetic Fields

Static magnetic fields are used in a range of applications across the STFC sites, for example superconducting magnets in NMR machines or permanent magnets in particle accelerator wigglers or undulators. The STFC SHE Code 39 aims to minimise so far as is reasonably practicable, the health and safety risks to staff and other persons who may be affected by static magnetic fields (in line with The European Physical Agents (Electromagnetic Fields) Directive (2004/40/EC amended 2008/46/EC). There is also a short online training package 'BiteSize SHE' available for this SHE code.

While the biological effects of strong static magnetic fields are subject to current debate and investigation there are clear hazards associated with such fields arising from their impact on implanted medical devices, specifically magnetic or electronic devices for example pace makers, and their ability to attract magnetisable objects at distance and speed (projectile and crush incidents)

Where there are sources of static magnetic fields >0.5mT that extend into the working environment managers should locate warning signs at all entrances to areas containing such magnetic fields

Where there are sources of strong static magnetic fields, >0.2T, that extend into the working environment managers shall ensure that a Risk Assessments is done to address the hazards from strong static magnetic fields.

Time-Varying Electro Magnetic Fields

STFC SHE Code 23 ensures that hazards associated with strong and time-varying electromagnetic fields (EMFs) up to a frequency of 300 GHz are managed so as to minimise so far as is reasonably practicable the health and safety risks to staff and others.

For those areas employing strong EMF generating equipment or devices a suitably qualified and experienced EMF Protection Advisers (EPAs) is to be appointed. The CLF EPA is Paul Holligan.

Managers responsible for strong EMF radiation sources should ensure that the advice of the EPA is sough and that Risk Assessments are conducted for all work through which persons may be exposed above the action levels defined in the code

32) WASTE

The STFC Environment Policy is that the disposal of waste should be considered to be an act of last resort and that, in priority order, alternatives such as avoiding the creation or minimising the generation of wastes and re-using or recycling waste should be considered when planning work or projects.

All waste materials or equipment generated by the STFC is subject to legislative controls as Controlled Waste. In addition some waste may be classified as Hazardous Waste for example: waste chemicals; batteries; food; waste electrical or electronic equipment; and hazardous gases and liquids.

The STFC has a Duty of Care to ensure that all waste is safe and secure whilst it is on any STFC site and disposed of only through authorised channels. This duty extends to the point where the waste is finally disposed of and includes responsibility for its safe transport from the site to the point of disposal. The use of licensed waste disposal contractors does not remove this responsibility from the STFC.

STFC SHE Code 31 outlines the controls that are employed to ensure that Controlled and Hazardous wastes are disposed of safely and in an environmentally responsible manner and in accordance with relevant legislation.

A Parker is the CLF Waste Disposal Officer.

33) LEGIONELLA

Legionella are a range of bacteria widespread in natural fresh water which can if they proliferate cause Legionnaires' disease or Legionellosis - potentially fatal forms of pneumonia. In the UK there are between 200 and 300 cases per year of which approximately 30 are fatal.

While the ecology of Legionella in water systems is not fully understood, in the laboratory, it will grow optimally in stagnant nutrient rich water in the temperature range 20°C to 45°C (37°C body temperature) and pH 6.5-7.5. Water contaminated by Legionella only presents a risk when it is dispersed in air in the form of an aerosol (very fine water droplets / spray) such as that from a shower. Legionnaires' disease can therefore be contracted where there are opportunities to inhale infected water droplets.

Legionnaires' disease is a statutorily reportable disease.

STFC SHE Code 38 establishes STFC standards and arrangements for the management and control of Legionella risks minimising, avoiding or preventing infection. The code applies to the design, operation and maintenance of all water systems where there is the potential for Legionella to grow and become dispersed as a respirable aerosol, whether owned or managed by the STFC or brought onto STFC sites by facility users, tenants; contractors or other visitors.

34) POLLUTION

The STFC Environment Policy commits the STFC to "ensuring high standards of environment management throughout our organisation in accordance with local environmental standards and legislation". STFC SHE Code 41 establishes procedures to ensure that releases of gases, vapours and dusts to air; liquids to drains or land; the on-site processing or storage of wastes; and the creation of statutory nuisance comply with Environmental Permitting and other regulations.

For existing activities, and prior to commencing any new project or work activity, which may be expected to produce discharges, responsible persons should ensure that possible discharges to air (including from fume cupboards), water (including foul drains) and land are assessed, and 'statutory nuisance' considered as part of the normal activity/project SHE risk assessments. Assessments should identify controls to reduce, as far as is reasonably practicable, any discharges, and minimise the environmental impact and establish operating procedures to control emissions, and contingency plans and equipment (for example 'Spill kits') to deal with any environmental incidents.

APPENDIX 1 - LIST OF LEGISLATION, CODES, AND STANDARDS ETC.

There is a wide, and constantly being updated, range of legislation for Health and Safety. To comply with these the laboratory has issued a number of codes and notices. In addition other standards should be observed where appropriate. A list of legislation, codes, notices and standards that are considered appropriate is shown below, together with any associated Regulations, Approved Codes of Practice and Guidance Notes. Cases outside the scope of these must be given individual attention necessary to ensure comparable standards.

SAFETY LEGISLATION

The Health and Safety at Work etc. Act 1974
The Management of Health and Safety at Work Regulations 1999
The Manual Handling Operations Regulations 1992
The Lifting Operations and Lifting Equipment Regulations 1998
The Health and Safety (Display Screen Equipment) Regulations 1992
The Provision and Use of Work Equipment Regulations 1998
The Workplace (Health Safety & Welfare) Regulations 1992, amended 2002
The Personal Protective Equipment at Work Regulations 1992
The Control of Substances Hazardous to Health Regulations 2002
The Electricity at Work Regulations 1989
The Radioactive Substances Act 1993
The Ionising Radiation Regulations 1999
The Health and Safety of Young Persons Regulations 1997
The Reporting of Injuries Diseases and Dangerous Occurrences Regulations 2013
The Working Time Regulations 1998
The Confined Spaces Regulations 1997
The Noise at Work Regulations 1989
The Construction (Design and Management) Regulations 2007
The Highly Flammable Liquids and Liquefied Gases Regulations 1972
The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR)
The Work at Height Regulations 2005

CORPORATE Policies

Health and Safety Policy
Environmental Policy

CORPORATE SAFETY CODES

SC2 - Safe Movement of Vehicles on STFC sites
SC3 - Safe Use of Cryogenic Materials
SC4 - Safety and the Safe use of Work Equipment
SC5 - Incident Reporting and Investigation
SC6 - Risk Management
SC7 - SHE Improvement Planning
SC8 - Travel on Council Business
SC9 - Working at Height
SC10 - Provision of Safety, Health and Environmental (SHE) Training
SC11 - Work in Confined Spaces
SC12 - Manual Handling
SC13 - Construction (Design and Management)
SC14 - Radioactive Sealed Sources
SC15 - Management of Contractors
SC16 - Biological Safety
SC17 - Portable Electrical Equipment
SC18 - Control of Noise at Work
SC19 - Work on Buildings, Premises, Services and Infrastructure
SC20 - Controlling Explosive and Flammable Gases and Dusts
SC21 - Management of Radioactive Waste
SC22 - Working with Lasers
SC23 - Working with Time-Varying Electro-Magnetic Fields
SC24 - Occupational Health Surveillance and Health Screening Medicals
SC25 - Management of Display Screen Equipment
SC26 - Safe Use of Lifting Equipment and Lifting Accessories
SC27 - Receipt and Dispatch of Hazardous Substances
SC28 - Radioactive Open Sources
SC29 - Management of Ionising Radiation at Work

SC30 - SHE Auditing and Inspection
SC31 - Controlled and Hazardous Waste
SC32 - Fire and Emergency Management
SC33 - Safety of Pressure and Vacuum Systems
SC35 - Asbestos Management
SC36 - First Aid Management
SC37 - COSHH: Safe Use of Chemicals/Hazardous Substances
SC38 - Control of Legionella
SC39 - Static Magnetic Fields
SC41 - Controlling Pollution to Air, Land and Water

RAL SAFETY CODES

RALSC 3 - Electrical Safety
RALSC 4 - Batteries
RALSC 5 - Safety in the Construction and Use of Scaffolds
RALSC 7 - Repair of Drums and Small Tanks - Explosion and Fire Risks
RALSC 9 - Ladders, Steps and Trestles

OTHER RELEVANT CODES

Fire Precautions Act 1971, Fire Precautions (Workplace) Regulations 1997
Fire Certificate (Special Premises) Regulations 1976
British Standard Specifications
The Institution of Electrical Engineers Wiring Regulations for Electrical Installations
Recommendations of the Fire Protection Association
HSC Approved Codes of Practice
HSE Guidance Notes

APPENDIX 2 – CLF Incident/Emergency Response Plan

This appendix describes the proposed management structure for dealing with a RAL incident/emergency in the CLF. These procedures would come into effect when a localised departmental incident is or has the potential of affecting an area greater than the building or the immediate vicinity and/or could necessitate the evacuation or controlled access of the whole or part of the RAL Site The primary aim of this plan is to safeguard the life of everybody on the RAL site and surrounding area. This will be achieved by ensuring any incident is brought as quickly and smoothly as possible under control by implementing the RAL Incident/Emergency Response Plan.

The Emergency Team comprises people who have specific roles in dealing with an emergency.
The team comprises of a levels:
Strategic (Gold) – usually Director level. John Collier is a trained Gold
Tactical (Silver) – usually Division Head/Group Leader level. Brian Wyborn and Justin Greenhalgh are trained Silver
Local (Bronze) - Local Incident Controller whose role is to take control of the incident at the scene, make short term decisions concerning the actions required to control the cause of any incident or emergency and to act on the directions of the RAL Emergency Controller. These officers are Area Supervisors or experts/specialists for critical hazards in their areas. A site maintenance or plant engineer will act as the local incident controller during silent hours until the Area Supervisor takes control.

The following have been identified as Local Incident Controllers for the CLF:

Area	**Local Incident Controller**
Vulcan	I Musgrave
Target Areas	R Clarke
LSF	D Clarke
Gemini	R Pattathil
Artemis	E Springate
Target Fabrication	C Spindloe
Mech. Engineering	S Blake
Elect. Engineering	P Holligan

In addition the following key support personnel have been identified:

Utility	**Key Support personnel**
IT/Network	N Fielden
Electrical	M Pitts
HVAC	B Landowski
Misc. Utilities	B Landowski