**New build and major refurbishment project Health and Safety checklist**

This checklist pulls together a range of Health and Safety (H&S) considerations that those designing and managing new builds or refurbishment projects should consider at the design stage to ensure our workplaces are safe and promote good operational H&S on initial, and future, occupation.

The most important consideration when designing a new building or large refurbishment project is – “***What is the intended use of the spaces created, by whom, and from this what hazards will be introduced”*** so that the design of the building itself can support good operational workplace H&S***.*** The nature of STFC science programmes is such that our buildings are frequently re-purposed so the answer to this question is not always clear and designs may be required to offer great flexibility in use.

This checklist is not intended to replicate building regulations but to highlight some key design aspects that will facilitate the effective implementation of key operational H&S controls when in use.

**Fire Safety**

* Vehicle access for fire and emergency service access
* CONSIDERATION OF SUPRESSION SYSTEMS
* REFUGE AREAS AND MEANS OF COMMUNICATION TO CENTRAL CONTROL
* CONSTRUCTION MATERIALS – INTERNAL AND EXRTERNAL SPREAD OF FIRE
* FIRE ENGINEERED SOULTIONS – FIRE STRATEGY/COMPENSATORY FEATURES
* OCCUPANCY – TYPE & NUMBERS OF PERSONS IN THE BUILDING E.G PUBLIC, VISITORS, USERS
* COMPARTMENTATION
* HORIZONTAL MEANS OF ESCAPE – PROTECTED ROUTE/DEAD END CONDITIONS
* VERTICAL MEANS OF ESCAPE – PROTECTED STAIRS/FIRE – FIGHTING STAIRS
* VOIDS
* INTENDED PROCESSESS AND FIRE RISKS
* RISERS inc SERVICES
* FIRE LIFTS
* HOLD OPEN DEVICES
* PLANT ROOMS
* HV/LV ELECTRICAL SWITCH ROOMS
* HAZARDOUS – FLAMMABLE STOREAGE/PIPED GASES- DSEAR REGULATIONS
* CAUSE & EFFECTS
* EMERGENCY LIGHTING
* AUTOMATIC FIRE DETECTION SYSTEMS
* ASSEMBLY POINT LOCATIONS
* FIRE SIGNAGE
* FIRE-FIGHTING EQUIPEMNT
* WATER SUPPLIES – HYDRANT LOCATIONS
* TRAVEL DISTANCES
* SLEEPING RISKS
* PROVISION FUME CUPBOARDS – USE OF SOLVENTS
* MAINTENANCE PROGRAMMES
* SECURITY CONFLICT WITH FIRE SAFETY
* STORAGE

**General SHE**

* Does the intended use require Local Exhaust Ventilation (LEV) systems? these need to be maintained and inspected.
* Where fume cupboards are installed – automatic suppression systems should be installed, for example Firetrace.
* Ensure internal office doors have glass vision panels to allow easier search in the event of emergency evacuation/fire.
* Where laboratories or workshops have adjacent corridors ensure the walls have large glass windows to promote safe working and maintaining tidy workplaces.
* Where large overhead cranes are installed active consideration should be given to how crane maintenance and inspection can be undertaken without recourse to scaffolding or MEWPs.
* Where Pressure Systems are installed as part of the fabric of the building, for example heating systems, they will need to come with proof certificates and Written Schemes of Examination (WSEs)
* Where goods or passenger lifts are installed ensure that safe and simple access is provided for maintenance
* Where O2 depletion / gas monitors are installed:
  + Connect to central monitoring control panel in building;
  + Connect to security;
  + Connect to solenoids at source; and
  + Ensure that once activated there is means of dispersing the atmosphere remotely from outside the room (to avoid entry to hazardous atmospheres to open windows!)
* Labs / rooms with O2 depletion / gas monitors to have vision panels on doors and internal mirrors for blind spots.
* Actively consider the storage needs of the buildings occupants to avoid their accumulation in workplaces, corridors or stair wells
* Panic alarms.
* All routine gas needs should be piped in from external cylinder storage with emergency stop switches.
* Minimise the storage of LN2 within the building preferably piping in as gases.
* Ensure that there is suitable external storage – gases, cylinder trolleys, LN2 Dewars – ensure that the path between storage and building will permit the level movement of cylinders and Dewars between.
* Where LN2 and or other hazardous materials may be transported within the facility, consider layout/design of building and specify a suitable hazardous goods lift that has full key control. Ensure there is a stair access next to this lift.
* Consider installation of internal LN2 dispensing stations on floors above ground level to minimise internal LN2 transport requirements.
* Ensure that suitably designed, segregated and ventilated external storage is provided where significant volume of chemicals, solvents will be used. Ensure that suitable sized bunds are installed for such locations in the event of leaks.
* Legionella control – especially infrequently used outlets.
* Ensure that ‘Goods In- areas segregate the safe movement of people and vehicles.
* Where showers are installed ensure non slip flooring is included.
* External waste bins (storage) should not be located against the building.
* Where mobile phone based lone worker alarm systems are employed consider the need for phone signal boosters to allow signal reception.
* If proposed building use includes biohazards contact SHE Group directly to ensure that the STFC Bio Safety Advisor is involved in the design of such facilities.
* If class 3b/4 lasers are to be used consult the OLRO or LRO for the areas planned.
* Consider the solid, liquid and gaseous wastes arising from the proposed use of the building and ensure that:
  + There is sufficient accessible external storage for solid wastes;
  + Where liquid wastes are generated check that they are permitted for disposal down municipal sewers and if not interceptor pits are installed; and
  + Where gaseous waste are generated check that they are permitted, see STFC Environmental Officer.
* Where chilled water systems are installed – consider design and material specification to mitigate against leaks, and allow Legionella inspection.
* Where A/C systems are installed – consider design and material specification to mitigate against condensation - dripping onto areas below the system, and allow their maintenance and inspection.
* Always ensure that there is sufficient storage for scientists to keep spare equipment and equipment boxes, they need a lab and storage.

**Radiation Safety**

Note: STFC is required to have EA permits for work with radioactive materials, and licenses or registrations may be required from the HSE for any work with ionising radiations. These take time to obtain or to modify if existing permits or licenses are in place, at least 4 months in most cases and there is no way to expedite the process. No work with ionising radiations will be permitted to commence without the appropriate documentation.

You must leave time for appropriate work to be done in preparation for obtaining suitable permits or altering existing ones and you are advised to make contact with an STFC RPA as soon as you are aware that new work with ionising radiation will be carried out.

Key design questions to consider:

* Will sealed radioactive sources be used in the building?
* Will radiation generators be used in the building?
* Will unsealed radioactive sources be used in the building?
* Has appropriate shielding been considered?
* Has appropriate security been considered?
* Has the RPA/RWA been consulted? (a statutory requirement of IRR17)
* Is the building in a radon affected area? And will there be any basements or partial basements?