

The Orange Guide

FIRE STATIONS

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1.0 Introduction and WSFRS Ethos

The purpose of this document is to provide guidance on the level of provision and specification within new build and refurbished fire stations for West Sussex County Council. It is a checklist of items that should be included when designing good-quality Fire Stations. Not every space listed within this document will be required for every fire station, which is dependent on the crew size of the station and other teams based at the location.

Information contained within this document has been supplemented with information from:

- Healthy Firefighters – The Skellefteå Model;
- East Sussex Fire and Rescue Service – Station Design Guide
- National Fire Chiefs Design Standards;
- German DIN 14092-1_2012 standards.

This document is not intended to replace current Building Regulations, British Standards, Codes of Practice, Building Bulletins or any other statutory legislation but does set out the expectations of West Sussex County Council.

In addition, this guidance should also be read in conjunction with:

- WSCC The Grey Guide;
- WSCC The Yellow Guide Fabric and Materials;
- WSCC The Green Guide External Spaces;
- The Equality Act 2010;
- The Workplace (Health, Safety and Welfare) Regulations 1992;
- Building Regulations Approved Documents Parts B, K, L, M;
- Climate Change Act 2008
- The Construction Playbook

Whilst this guide outlines the basic requirements, the briefing and design process should allow for a continuous dialogue between various parties:

- West Sussex County Council
- West Sussex Fire and Rescue Service
- Firefighters, Instructors, Managers and other specialist teams and Heads of Service
- Stakeholders
- Specialist Consultants

WSFRS has agreed seven over-arching principles in the Service Asset Management Plan 2019-20 which capture the Service's intentions and aspirations for their estate. It is the Service's intention that FRS buildings and facilities should:

1. Provide modern, professional working environments;
2. Encourage greater diversity, dignity and inclusion;
3. Improve opportunities to work better with partners;
4. Be designed to meet the needs of the community and the service;
5. Be operationally efficient, effective and secure;
6. Be sustainable and environmentally friendly;
7. Offer flexible space.

The purpose of this document is to:

- Establish and record the requirements of WSFRS for the layout of all fire stations;
- Establish the physical and operational constraints that must be considered in providing functioning and safe fire stations;
- Set out the design parameters which will apply to all fire stations in West Sussex;
- Set out the functionality drivers which will apply to all fire stations i.e. the suitability of purpose, the space relationships, as well as the efficient and effective working environment;
- Ensure all fire stations have a positive impact and provide a statement on social value to the local community and minimise any environmental impacts.

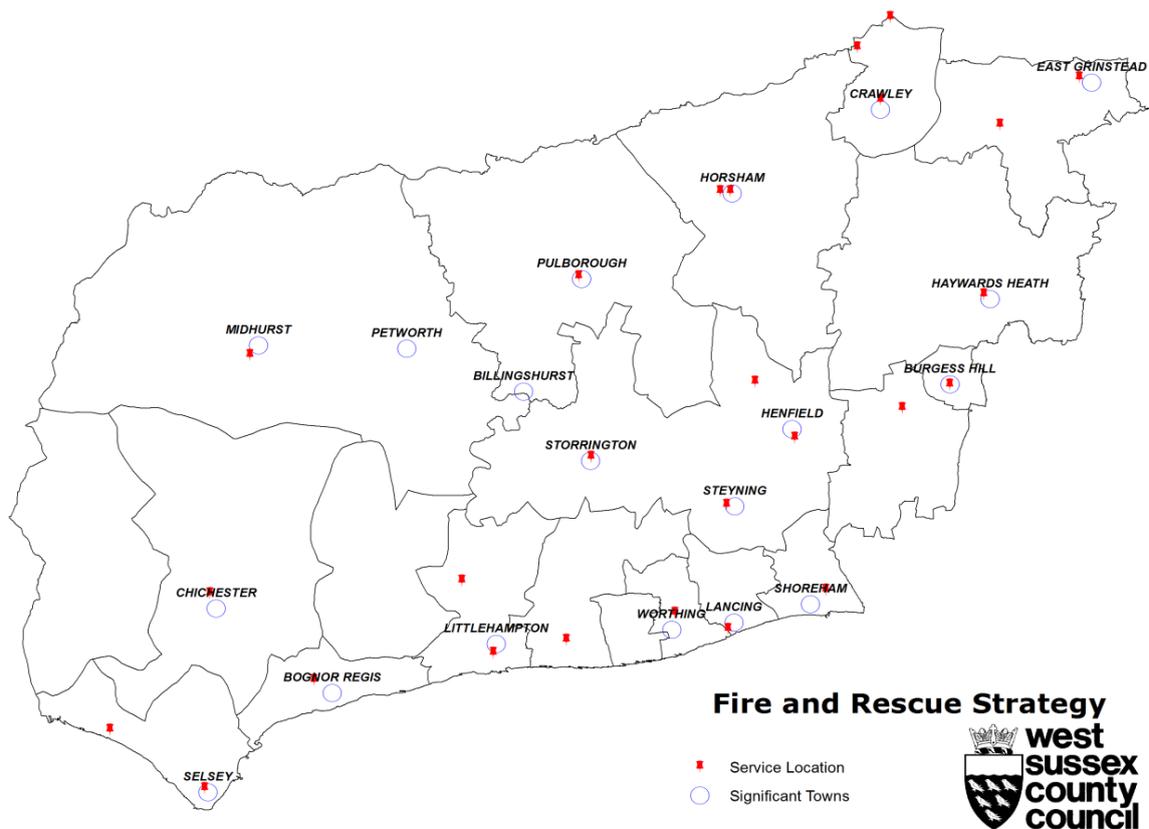


Figure 1 Fire Station locations across West Sussex

2.0 Effects of Contaminants on Firefighters' Health

- In 2007, the World Health Organisation (WHO) established the connection between the firefighting profession and various forms of cancer;
- Both European and Overseas research (in Canada, Australia and USA) concluded that firefighters' prolonged exposure to contaminants during and post-incident was detrimental to their health;
- In 2018, University of Central Lancashire (UCLAN) concurred, stating that **skin absorption proved to have a higher risk in comparison to inhalation**;
- In the US, the Firefighter Cancer Support Network (FCSN) have concluded that firefighter cancer rates are up to two times higher than the general population (with 67% of the Boston Fire Department deaths between 2002-2014 being caused by cancer);
- Aromatic hydrocarbons and other harmful combustion gases from fires can seep through turnout gear and, once in contact with the skin and bloodstream, they eventually circulate to internal organs; it is therefore essential for fire personnel to clean their clothing and shower as soon as possible after a fire.
- The Swedish Skellefteå model outlined that the level of skin absorption is determined by the quantity and type of substance, the size of the molecules and the skin condition, **as warm sweaty skin is more susceptible than dry cool skin.**

The solution for tackling the above would be the correct removal, storage, cleaning and maintenance of PPE equipment, as well as the cleaning of hose reels post incident. The behavioural model will not form part of this document.

- **Inhalation and ingestion** are the other means of contamination and thus, the separation of dining and sleeping areas from the rest of the accommodation is necessary; some contaminants become harmful when in contact with saliva or mucus in the respiratory system; **harmful compounds can act like a synergy.**

The design solution is to apply the Swedish Skellefteå model to both operational stations and training centres which promotes the decontamination zones, segregated from the food preparation and consumption areas, as well as office and sleeping accommodation, whilst employing separate ventilation systems to minimise cross-contamination.

More recently, in 2020, UCLAN prepared an independent report for the Fire Brigades Union; 'Minimising firefighters' exposure to toxic fire effluents (Interim Best Practice Report)'.

As a result, West Sussex Fire & Rescue Service will need to adopt best practice to ensure their firefighters' health and safety and thus follow the Swedish Model as closely as possible throughout their estate.

3.0 General Design Considerations

Zoning – the Skellefteå Model: Dirty to Clean Transition

In 2011, The Swedish model received “Good practice award” from the European Agency for Safety and Health at Work;

The behavioural component of the model focuses on:

- Minimising firefighters’ contact with soot, as soon as possible following a fire incident;
- Careful removal and storage of PPE in a sealed bag before entering the appliance vehicle to maintain its interior clean;
- Thorough decontamination process upon arrival at the fire station before entering offices, dining or sleeping areas;

The design component focuses on the zoning of adjacencies, creating room clusters grouped into contaminated, transitional, clean, which are ventilated separately to avoid cross-contamination. It is thus important for new builds that the designs are created with these principles in mind; the existing facilities must be assessed for appropriate measures to be taken through refurbishment and/or extension.

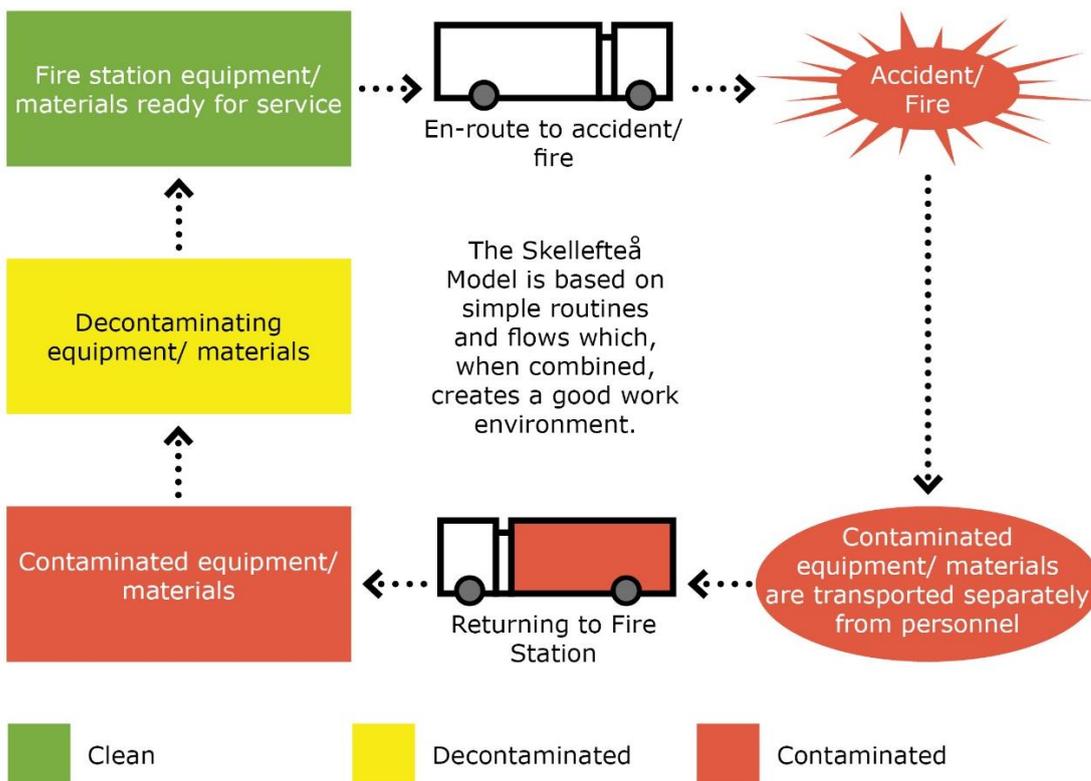


Figure 2 Good Routines and Flows from the Skellefteå Model

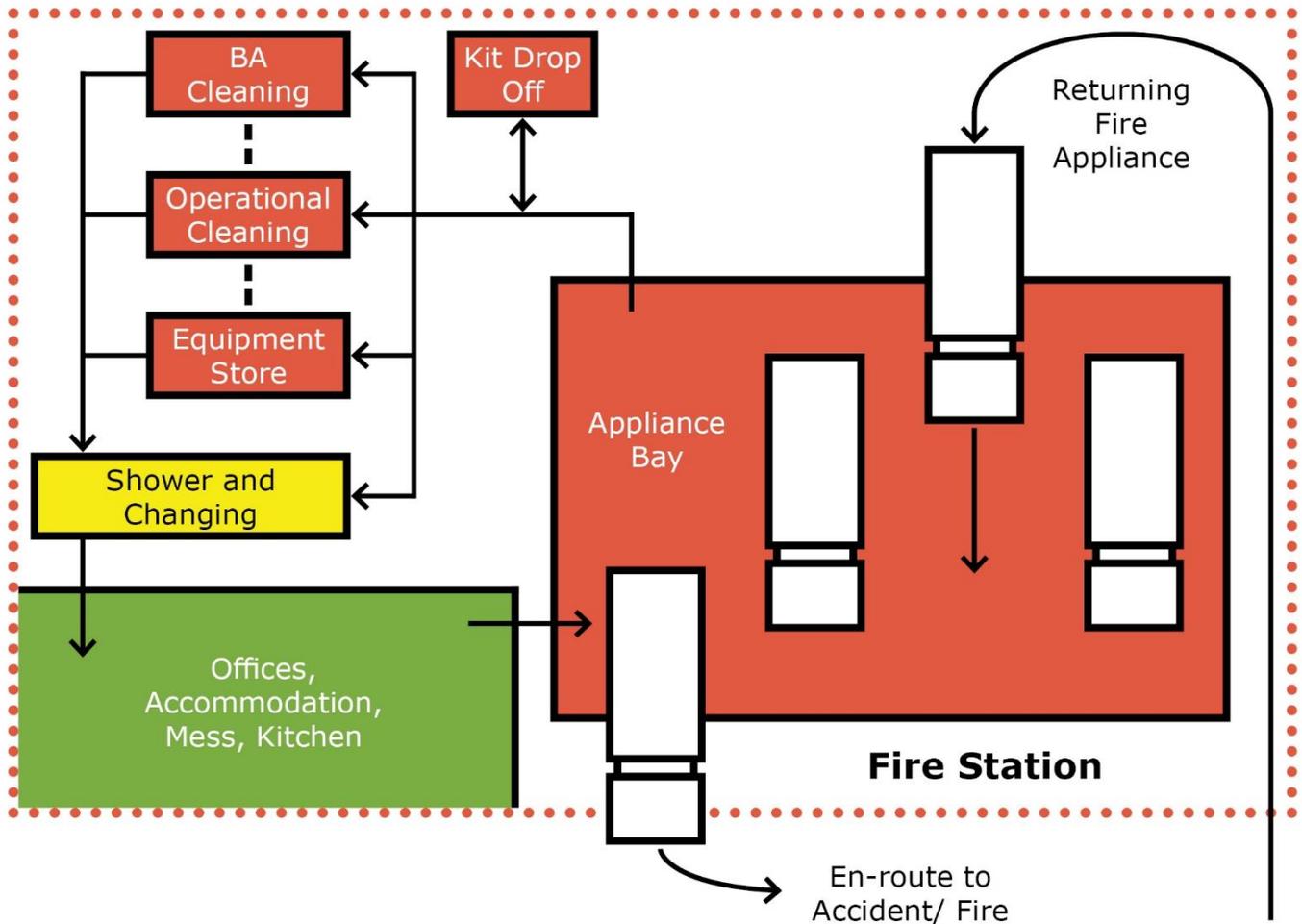


Figure 3 Fire Station Mobilisation and Return Diagram: upon returning to the fire station, the appliance enters the rear of the station into the yard and remains in the yard to be washed down. Once the wash-down is completed, the appliance may return to the Appliance Bay. The firefighters will proceed to drop off any contaminated or dirty kit which has been brought back in zip lock bags on the appliance. They may then enter the transitional zone to wash before entering any green zones.

Red Zone	Hazard Level - Dirty	Red zones are primarily operational areas. WSFRS has a decontamination at source policy, but the red area has a medium risk of cross contamination or exposure to carcinogens. When leaving a red zone, personnel must pass through a transitional zone with the opportunity to wash and change clothes.
Yellow Zone	Hazard Level - Transitional	Yellow zones are transitional spaces between red and green zones where personnel can wash (decontaminate). The risk of exposure to contamination or carcinogens is low. Firefighting kit can be worn in this area if it is clean, including if it has been retrieved from the kit drying rooms where gold suits are stored after adverse weather conditions.
Green Zone	Hazard Level - Clean	Green zones are clean areas where food is prepared or consumed, where daily office tasks take place, where fitness is maintained and where sleeping accommodation is provided. No firefighting kit can be worn and there should be no risk of exposure to contamination or carcinogens.

Table 1 - Fire Station Zones and Function

Red zones

- areas firefighters first enter upon their return to the station;
- dirty turnout gear and equipment is placed in PPE pick-up areas to be collected and professionally cleaned by a specialist company;
- appliance vehicles should be washed before entering the Appliance Bay;
- the Appliance Bay is considered to be in a Red Zone due to fuel fumes;
- Some turnout gear such as the breathing apparatus, hoses and boots could be first cleaned here. If it is not possible for all equipment to be washed at the same time, temporary storage space for dirty gear should be provided.

Yellow zones

- Showers to remove contaminants from the body;
- Lockers for personal possessions;
- Cages where clean PPE is stored, ready to be taken to the fire appliance as watches change over. To limit impact on response times, the cages should be positioned near the Appliance Bay.
- Kit drying rooms, located immediately adjacent to cages, should only be used to dry clean PPE that got wet during training exercises outdoors.

Green zones

- Food preparation and consumption;
- Offices;
- Training;
- Recreational/de-stressing/resting spaces;

Once the above principles are employed, clear and consistent wayfinding should be used throughout all fire stations so that wholetime crew, retained crew, full-time and part-time office-based staff and visiting staff can easily navigate and understand where the zone thresholds are. Simple but effective solutions to mark these transitions should be used, such as: feature walls and/or coloured architraves on either side of the entryways along with any bespoke signage to remind personnel to double check for contaminated gear.

The three distinct areas operating within any station, which should be adhered to, are summarised below. List is not exhaustive, further details are in the space standards (section 6).

Red Zone	Appliance Bay Appliance Washdown Yard Training Tower, Road Traffic Collision Area, Deep Lift Pit & Garages (If applicable) BA/ Operational Cleaning Operational Equipment Store Dirty Kit Drop Off/ Collection Hot Briefing Room
Yellow Zone	Cages Kit Drying Room Lockers Changing and Showers Steam Room Compressor Cylinder Room
Green Zone	Public Main Entrance Reception (where applicable) Community Room Furniture Store WCs & Accessible WCs Personnel Entrance Meeting Room Training Room Watch Room Station Manager's Office Watch Manager's Office Offices Staff WCs Kitchen Mess Quiet Room Multi-Faith Room Bedrooms Laundry Fitness room Fitness room Store Physio/ First Aid Room IT Comms Room Stores

Table 2 - General Allocation of Spaces Across Zones

It is essential that the layout of fire stations permits movement at speed when answering to a "call out" but discourages the movement of staff from dirty to clean areas without passing through a transitional area with the opportunity to wash or change clothes. It is important that circulation routes are 1.8m to permit this movement to be undertaken safely. Unnecessary junctions should be avoided so as not to become collision points and travel distances should be minimised and well illuminated. Direct and un-obstructed paths of travel into the Appliance Bay must be achievable under emergency response conditions. This ensures response times can be kept to a minimum. Corner protections should be provided, where deemed necessary.

General Information

The design should consider the following:

- Operational effectiveness;
- The heavy and continual use of the facilities on a 24/7 working basis (wholtime stations);
- Noise (from outbuildings, equipment, training exercises, as well as traffic);
- Natural and artificial lighting, including the effects on irregular sleeping patterns;
- Ventilation (mechanical and natural) and segregation per zones;
- Heating – appropriate for each room use (e.g. radiant panels in the Appliance Bay)
- Standby power;
- Lightning protection in accordance with BS EN 62305;
- Public health systems and site drainage (allowing for training exercises in the drill yard);
- Fire safety;
- Appropriate consideration of the "cost in use" of the building and the maintenance cycle of key building components;
- Flexibility for adaptation over the life span of the Fire Station and the ability to convert to alternative use;
- Impact of any adjacent construction works and/or proposed development;
- Security of the facilities;
- Accessibility to the community;
- Traffic requirements (for safety egress of fire appliances) and tracking;
- Equality requirements to incorporate diversity, inclusion & dignity;
- Environmental impact and Biodiversity enhancements, where possible (e.g. green roofs, living walls);
- Biophilic Design which promotes nature connections through views of the outdoors, fresh air, thermal comfort, colours and textures that mimic the natural environment and create a sense of calm and wellbeing;
- Recreational outdoor spaces (e.g. outdoor table and benches for dining, vegetable patches etc.)
- Information Technology and bespoke equipment;
- Sustainable Urban Drainage Systems (SUDS) and rainwater harvesting, where possible;
- Pole drops are an additional strategy to reach the appliance bay quickly, but do not replace staircases as a response route. A pole drop is only permitted to be used by one firefighter at a time, therefore quick access to the appliance bay should not rely solely on the pole drop. The pole drop should have a barrier on the upper floor to prevent accidental falls or unauthorised use, and a cushioned shock absorber at the base. Ideally pole drops will enter directly into the appliance bay and be no more than a single storey in height. Regulations may apply.

4.0 Staff Mental Health and Wellbeing

From a design perspective, spaces that positively contribute to the staff mental health and wellbeing should be carefully considered. Appropriate finishes or landscape strategies should be chosen to create a pleasant working environment.

Biophilic design (links to nature) can: reduce stress, enhance clarity of thought, increase productivity, improve wellbeing and accelerate healing.

- Outdoor views and fresh air encourage productivity - working, dining and sleeping spaces should have access to natural light and natural ventilation, where possible;
- The Mess should have direct access to an outdoor recreational area;
- Natural colours and textures should be incorporated, where possible, with durability and maintenance in mind, as well;
- Exercise releases endorphins - fitness room, rehabilitation suite, physiotherapy room;
- Irregular sleeping patterns affect health and performance – possible solutions could include human centric lighting that mimics the circadian rhythm (day/night cycle) or dimmable lights, separate bedrooms rather than dormitories, where possible etc.
- Quiet room with soothing environment to mitigate stress and act as rest area for retained crew;
- Shower rooms that mimic a domestic setting, complete with handwash basin and W.C. - individual changing space that not only provides privacy, but also acts as a therapeutic space, an opportunity to calm and gather one's thoughts post-incident;
- Meditation – in flexible/multi-use spaces such as community room or multi-faith prayer room.

5.0 Diversity, Dignity and Inclusion

WSFRS wants to promote equality throughout its facilities to ensure that all members benefit from the same sense of belonging to the team, regardless of their role, age, ethnical background, religious beliefs, gender or sexual orientation.

The design of gender-neutral facilities will promote safety, privacy and dignity to enable all staff to feel comfortable in their working environment, to encourage camaraderie and open-mindedness.

6.0 Space Standards

The following table details WSFRS room uses and minimum space requirements for fire stations.

Room Type	Zone	Shared Use Blue Light	Whole-time Station	Day Crewed Station	Retained Crewed Station	Single Crew (m ²)	Double Crew (m ²)	Notes
Appliance Bay		Case by case basis	Yes	Yes	Yes	75 Per appliance	75 Per appliance	Each bay 5m x 15m. Clear height of 4.7m for overhead door. Workshop area to be provided in this area too. Note – Subject to change dependent on specialist appliance sizes.
Appliance Washdown		Case by case basis	Yes	Yes	Yes	75	75	Wholetime Stations would generally have covered washdown areas.
BA/ Operational Cleaning		Private to WSFRS	Yes	Yes	Yes	15	15	Can be combined with workshop where flexible but must have separate work areas. Space and facilities for battery charging. Located near to Appliance Bay. Contains sink with rinse spray arm tap, worktop cabinets, drying cabinets, pegs and hand wash basin.

Room Type	Zone	Shared Use Blue Light	Whole-time Station	Day Crewed Station	Retained Crewed Station	Single Crew (m ²)	Double Crew (m ²)	Notes
Operational Equipment Store		Private to WSFRS	Yes	Yes	10	15	20	Located close to the appliance bay. Could include the BA/ Operational Cleaning.
Dirty Kit Drop Off/ Collection		Private to WSFRS	Yes	Yes	Yes	10	20	Located externally, close to the appliance bay. Separate containers for clean and dirty kit. Accessible for collection by external company.
Hot Briefing Room? Is this space required?		Private to WSFRS	Yes	No	No	15	20	Used for briefing whilst wearing fire kit. Near appliance bay.
Changing and Showers		Private to WSFRS	Yes	Yes	Min. of 2 showers	1 shower room per 2 crew members	1 shower room per 2 crew members	Changing and shower cluster is comprised of several rooms constructed of traditional partitions rather than cubicles. Each room contains a shower, W.C. and wash hand basin. Gender neutral facilities.
Lockers		Private to WSFRS	Yes	Yes	Yes	1 locker per crew member	1 locker per crew member	Sloped tops to prevent bags being stored on top. Full height lockers, one locker per crew member. Ability to clean underneath. Only for

Room Type	Zone	Shared Use Blue Light	Whole-time Station	Day Crewed Station	Retained Crewed Station	Single Crew (m ²)	Double Crew (m ²)	Notes
								operational staff use/trainees. Separate provision for Instructors.
Cages		Private to WSFRS	Yes	Yes	Yes	1 cage per crew member	1 cage per crew member	Full height cage for clean kit, 1 per watch member.
Specialist PPE		Private to WSFRS	Yes	Yes	Yes	10-15	10-15	Water PPE room for drysuits and associated equipment.
Kit Drying Room		Private to WSFRS	Yes	Yes	Yes	5	5	Drying solution is recommended to maximise space and dry kit from inside out. Timer switch to be incorporated.
Compressor		Private to WSFRS	Yes	Yes	Case by case basis	10	10	For details, please refer to the Grey Guide for Fire Stations
Cylinder Room		Private to WSFRS	Yes	Yes	Case by case basis	12	12	Room with connection to compressor to provide the facility of refilling oxygen cylinders. Storage of oxygen cylinders.
Cleaners' Store		Shared	Yes	Yes	Yes	4	4	Cleaners sink and storage.
Public Main Entrance Lobby		Shared	Case by case basis	Case by case basis	No	5	5	Public entrance located before the reception. Access panel required to

Room Type	Zone	Shared Use Blue Light	Whole-time Station	Day Crewed Station	Retained Crewed Station	Single Crew (m ²)	Double Crew (m ²)	Notes
								enter the fire station.
Reception (where applicable)		Case by case basis	Case by case basis	Case by case basis	No	10	10	For sole purpose of greeting general public, situated away from operational areas.
Community Room		Case by case basis	Case by case basis	Case by case basis	No	30 (for an occupancy of 12)	30 (for an occupancy of 12)	Community engagement needs to be determined on each station locally. If community room is provided, an accessible WC of 4m ² must be provided. A kitchenette/tea point of 6m ² should be included as part of the 30m ² . Can be flexible or multi-function space, doubling up as training/ lecture room
Meeting Room		Case by case basis	Yes	Yes	Yes	12	12	Occupancy for 6 people. Can be used as private study or 1-to-1 discussions.
Watch Room		Private to WSFRS	Yes	Yes	Yes	25	25	Room may contain printer for call out information and will contain a digital screen detailing call out information and riding

Room Type	Zone	Shared Use Blue Light	Whole-time Station	Day Crewed Station	Retained Crewed Station	Single Crew (m ²)	Double Crew (m ²)	Notes
								position etc. Located near to appliance bay.
Staff WCs / Showers		Shared	Yes	Yes	Yes	Refer to the Workplace Regs.	Refer to the Workplace Regs.	Workplace (Health, safety & Welfare) Regulations 1992. Staff showers as necessary to suit BREEAM requirements.
Personnel Entrance		Shared	Case by case basis	Case by case basis	Case by case basis	5	5	Access controlled entrance to the Fire Station for fire crew and support staff.
Quiet Room		Private to WSFRS	Yes	Flexible	Flexible	25	35	For decompression after difficult incidents or private contemplation. Can be used for meditation, medical, occupational therapy in existing facilities. Comfortable seating and black out blinds with human centric lighting. Located near the Mess and Kitchen area.
Training Room		Private to WSFRS	Flexible	Flexible	Flexible	35	45	WiFi, webcam, flexible layout (folding tables, stackable chairs etc)

Room Type	Zone	Shared Use Blue Light	Whole-time Station	Day Crewed Station	Retained Crewed Station	Single Crew (m ²)	Double Crew (m ²)	Notes
Kitchen & Mess		Shared	Yes	Yes	Yes 5m ²	55	55	Separate lockable fridge-freezers for each watch (1x full height 50:50 split fridge freezer per watch). Full height lockable storage cupboards for each watch. Ability to cook hot meals. Hard-wearing stainless-steel worktops and robust cupboard units - stainless steel as well as domestic look. Retained stations will not require a cooker.
Multi-Faith Prayer Room		Shared	Yes	Yes	No	12	12	Room with ablution facility lobbied off with engaged/vacant slider, designated clean/no-shoe floor area. Able to support use as meditation, prayer, mother/baby, undertaking 1-to-1s and private reading. Privacy curtain provided to separate males and females praying simultaneously. Shoe storage and cupboard

Room Type	Zone	Shared Use Blue Light	Whole-time Station	Day Crewed Station	Retained Crewed Station	Single Crew (m ²)	Double Crew (m ²)	Notes
								space for religious items to be allowed for in the design. Space for mini-fridge, desk and chair to be allowed for. Appropriate signage.
Watch Manager's Office		Case by case basis	Yes	Yes	No	12	12	Office for the watch manager and other support staff, up to two people with meeting space for 1-to-1s.
Station Manager's Office		Case by case basis	Yes	Yes	No	9	9	Maybe combined with the Watch Manager's Office.
Bedrooms		Private to WSFRS	Yes	No	No	7 (5 no. for a watch plus 1 for watch manager)	7 (10 no. for a watch plus 1 for watch manager)	One room per watch member. Each room to contain a single bed, side table and bed linen store for 5 sets of bedding.
Laundry		Private to WSFRS	Yes	Yes	Yes	4	4	For bedding and fitness room wear etc. Not to be used for firefighting kit.
Fitness room		Shared	Yes	Yes	Flexible	25	60	Rehabilitation/physiotherapy suite on a case by case basis, to be agreed with WSFRS.
Fitness room Store		Shared	Yes	Yes	Flexible	8	8	

Room Type	Zone	Shared Use Blue Light	Whole-time Station	Day Crewed Station	Retained Crewed Station	Single Crew (m ²)	Double Crew (m ²)	Notes
IT Comms Room		Shared	Yes	Yes	Yes	To M&E design	To M&E design	As advised by M&E Consultant. Refer to WSCC Grey Guide for Fire Stations.
Plant		Case by case basis	Yes	Yes	Yes	As required	As required	As advised by M&E Consultant. Refer to WSCC Grey Guide for Fire Stations.
Parking		Case by case basis	Case by case basis	Case by case basis	Case by case basis	10 no. Crew 2 no. Managers 5 no. Retained Crew (if required) Total 17 + 1 no. Accessible Visitors? Motorbike	20 no. Crew 2 no. Managers 5 no. Retained Crew (if required) Total 27 + 2 no. Accessible Visitors? Motorbike	Travel plan/ transport assessment to be prepared for each site. Also refer to the WSCC Green Guide.
Bike Stores		Private to WSFRS	Yes	Yes	Yes	6 no. Subject to planning policy	10 no. Subject to planning policy	In line with WSCC parking standards.

Table 3 WSFRS Room Use & Minimum Space Requirements for Fire Stations

7.0 Adjacencies

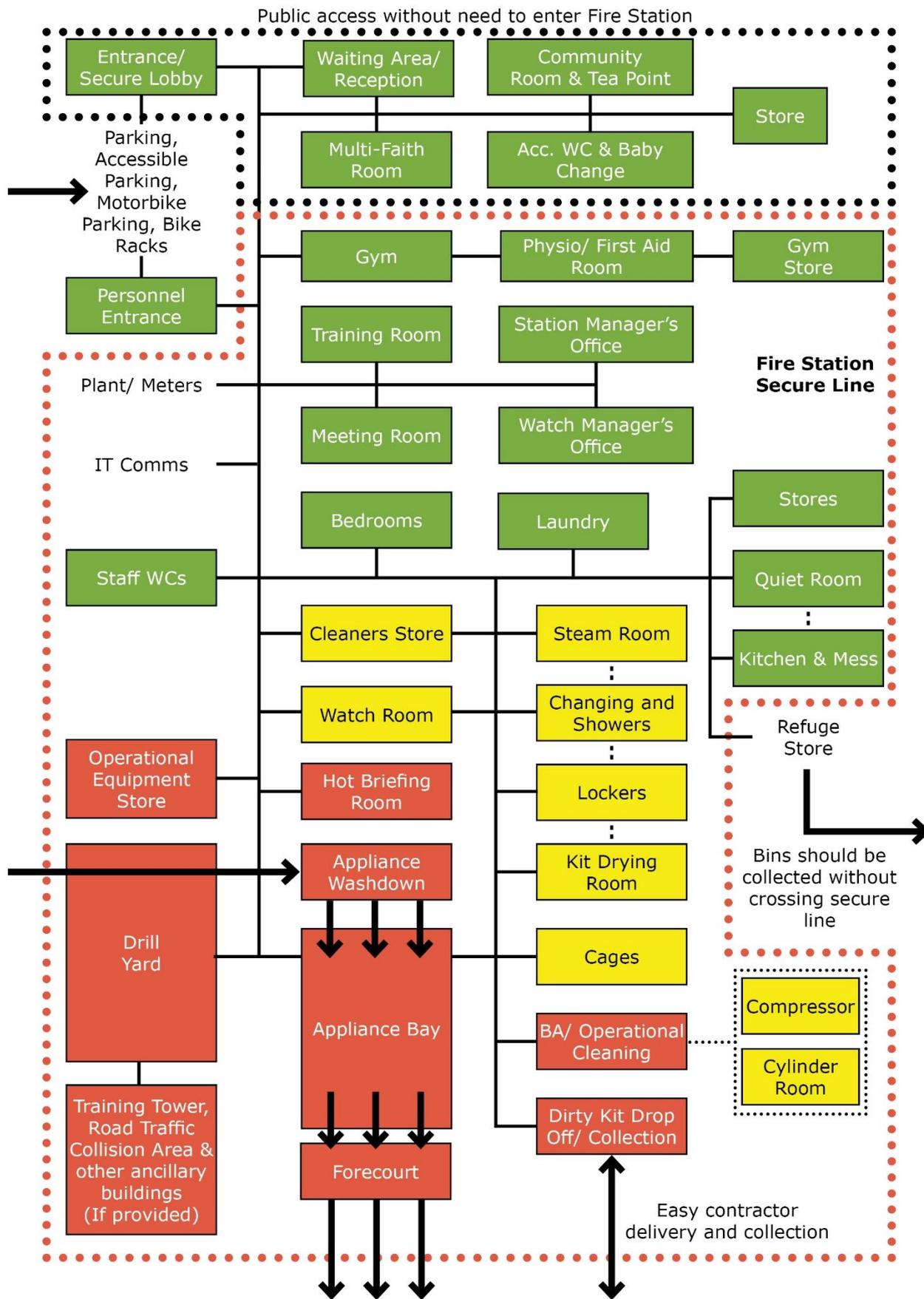


Figure 4 Flow Chart of Room Adjacencies within a WSFRS Fire Station

8.0 Key Spaces

8.1 Appliance Bays

Appliance Bays are where the firefighting appliances are parked, ready to take the watch to an incident. From an M&E perspective, they should be treated separately from the rest of the building and, as such, they should have independent forms of heating and ventilation.

Appliance Bay doors are a major feature of the elevation and must be carefully considered. A maximum area of vision panels is required to allow light into the Appliance Bay and views into the Appliance Bays from the street outside. Powder coated aluminium (reinforced as appropriate) insulated plastic/insulated panel sections as indicated on the elevations. Fully automated electrically operated with bottom safety edge and photo beam. Units to be installed to manufacturers recommendations. Clear height of 4.7m. Assa Abloy Crawfords OH1042F Full vision sectional doors, or equal approved.

A standard fire engine is 8m x 2.5m, however various specialist vehicles can be found at different fire stations throughout West Sussex and tracking exercises should be undertaken if new sites are being considered to ensure there is space in the drill yard for those appliances to manoeuvre and have clear access and egress to and from the Appliance Bay.

Specialist vehicles:

- ALP (Aerial Ladder Platform) – 2no. within WSFRS: one located at Worthing and the other at Horsham; these vehicles are used for aerial firefighting and sometimes in conjunction with ambulances as they can carry a stretcher to lower people down to safety. They feature a working height of 32m and can reach out 22m and can access depths of 5m downwards. 3,800 l/min can be pumped for significant fire incidents. To operate, it needs a 2-person crew, one at the ground, one in the cage;
- HRT (Heavy Rescue Tender) – 3no. of such vehicles within WSFRS in Worthing, Chichester and Crawley; HRTs are used for aircraft incidents or where people are trapped. It needs a 4-person crew and features a HIAB crane;

The floor finish of the Appliance Bay should have good slip resistance both in dry and wet conditions; however, this should not be to the detriment of easy maintenance and cleaning. German DGUV 205-008 Information on fire station standards advises a slip resistance factor of R11 and a minimum gradient of 2% to drainage channels or gullies.

Floor finishes such as Polyurethane (PU) or MMA (methyl methacrylate) resins are both considered suitable for fire stations, however they have different properties and should be chosen on a project-basis. (Flowcrete – Flowfast Quartz (MMA) or Flowfresh HF (PU) / Degafloor FB or QTA – both MMA).

Clear demarcations should indicate the position of appliances as well as any safe pedestrian zones. WSFRS to advise on setting out and colour contrast if applicable. German Standards suggest 0.5m to front and sides with 1m at the rear.

8.2 Watch Room

In West Sussex, the watch system operates differently to other counties. Currently, stations have five watches (Green, Red, White, Black and Blue) each consisting of five firefighters and their watch manager. Crew shifts operate from 7 a.m. to 7p.m.

The Watch Room is an ICT-rich room. Workstations for each member of the watch should be provided and a screen should be fitted to provide information for call outs. This is where also quick briefings take place before crew leave the fire station; therefore, the Watch Room should be near to the Appliance Bay to avoid any delays to response times.

Similar to an office, the Watch Room is in a green zone and thus, upon their return, firefighters should not enter it before having gone through the decontamination process in the yellow transition zones.

8.3 Offices

Station Managers and Watch Managers should have allocated office space. Hot-desking allowances should be made for any potential visiting staff and retained crew. A one-person office should be 8m² and a two-person office should be a minimum of 12m².

Prevention and Protection Teams – in addition to operational emergency response crews, there are several other site users, who also must be considered. Their activity is either office based, visiting local businesses or home visits to the vulnerable and elderly; capacity to house these teams is essential where required (office/welfare accommodation & parking should be factored).

8.4 Fitness room , Physiotherapy Room and Rehabilitation Suite

The inclusion of a fully equipped fitness room at each station provides firefighters with the means to achieve and maintain the appropriate level of physical fitness that their job demands. Fitness rooms are to be located away from or not immediately above areas where quiet activities are normally undertaken.

Cushioned vinyl is to be provided in the fitness room with specialist matting to Free-weights Area, if applicable.

Examples of such areas include:

- Recreational areas;
- Briefing / community rooms;

Flexible areas should incorporate folding, wheeled and stackable tables / chairs. Attention should be given when designing storage for Flexible Areas to ensure use transitions can take place with minimal fuss.

No freestanding / fixed fitness equipment is permitted to be used outside of the fitness room.

Fitness room areas should be planned to allow safe working out areas between machines and around floor mats, storage of equipment, proximity to changing rooms and lockers, ventilation and cooling, natural light and mirrors to open up spaces.

Certain pieces of equipment have particular spacing requirements, for example treadmills. The European and British Treadmill safety Standard BS EN 957-6:2010 requires there to be a clear safety area of 2m x 1m behind the equipment, in order to prevent treadmill users making contact with walls or other equipment, as the result of falling whilst on the treadmill. The CEN committee's interpretation is that this 2m clear space can be shared by treadmills which are back to back.

WSFRS we have a basic equipment list for every Whole-time Station and 50-70m² is sufficient for 8-12 firefighters to use at any one time. 25m² is appropriate for a One Pump Station, which is also in line with recommendations from Sport England. This does not include storage for equipment. Two Pump Stations require more space and equipment, therefore the floor space required would be at least 60m².

The following equipment lists and diagrams outline minimum fitness room expectations, it should be noted that this is a guide and individual design / layouts are required; these must be issued to the WSFRS Fitness Advisor for their consultation and approval.

'Standard' equipment requirement (One Pump Station)

Cardiovascular Fitness

- Treadmill
- Rower
- Static Cycle
- Cross Trainer

Strength

- Dual Adjustable Pulley
- Free Weights Set and rack
- Weights Rack/Cage
- Adjustable Bench

Area for body weight exercises/stretching

Storage boxes for loose equipment

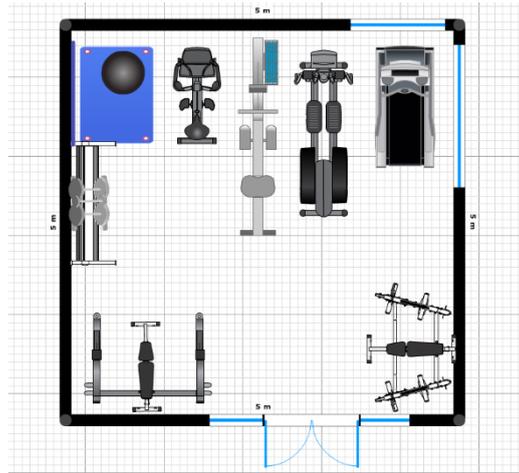


Figure 5 Fitness room Equipment Layout for a One Pump Station

'Standard' equipment requirement (Two Pump Station)

Cardiovascular Fitness

- Treadmill x 2
- Rower
- Static Cycle x 2
- Cross Trainer

Strength

- Dual Adjustable Pulley
- Jones Smith Machine
- Leg Press/Hack Squat
- Free Weights Set
- Weights Rack/Cage
- Adjustable Bench x 2

Functional Fitness

- Rig – wall mounted or free standing with the following:
 - Multi grip Pull Up Bar
 - Rope Pulley
 - Weight Rack
 - Dips Bar
 - Rope and Band Attachments

Boxing/Martial Arts Area

- Upper Cut Bag
- Kick Bag

Area for body weight exercises/video linked fitness training (P90/Insanity)/stretching
Storage boxes for loose equipment.

Storage space for outdoor and indoor equipment.

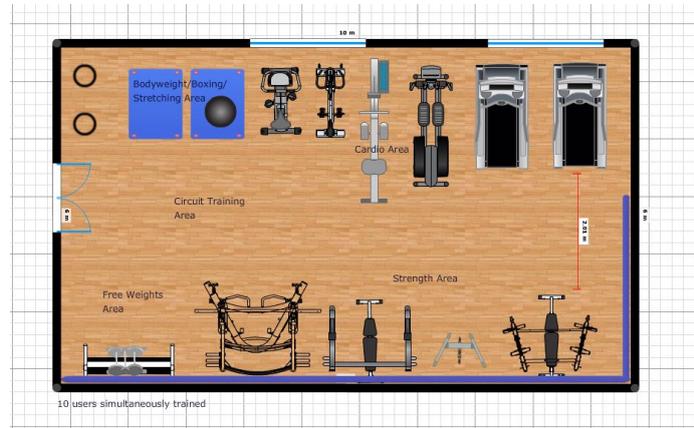


Figure 6 Fitness room Equipment Layout for a Two Pump Station

8.5 Mess

The facilities within the kitchen area should enable the consumption of hot meals, which could either be ready-prepared, part prepared or that do not require a time-consuming or complex level of preparation or cooking.

A dining area, often referred to as the Mess, should enable watch members and staff to sit together to consume the food if they so wish.

Full height lockable cabinets and fridge-freezers are required for each watch..

Kitchens should be constructed from robust materials with hard wearing tops such as stainless steel. All equipment is to be of commercial classification, as opposed to domestic, and automatic gas shut-off should be activated when a call comes in.

8.6 Quiet Room

To support firefighter mental health and wellbeing, quiet rooms are provided for firefighters to relax in, post incidents. Used as a reflection area, it is essential that it is located away from busy areas of the station and soundproofed accordingly.

Quiet rooms should be fitted with soft seating and a TV screen. Human-centric lighting, use of colour and finishes should be carefully considered to provide a soothing environment.

8.7 Cages

Cages are grid-type lockers used to store clean kit. Each watch member has an allocated cage to store jackets, gloves, hoods, helmets and boots. Each firefighter is provided with two sets of PPE.

Cages should be 490x520mm each, can be in groups of 2-6; doors should be fitted for security. They could be provided in a combination of wall mounted and mobile systems.

8.8 Locker Rooms and Private Shower/Changing Rooms

The key factors when designing changing areas are safety, privacy, dignity and inclusion. Gender neutral facilities, including W.C.s, should be provided in all fire stations.

In new builds, W.C.s accessible from main circulation should be designed as separate rooms, from floor to soffit partitions. Private shower/changing rooms (similar to a domestic environment) should be gender-neutral and include a toilet and hand-wash basin. Locker rooms should only be used to bring/retrieve personal belongings and no changing should take place; no benching to be provided in the locker rooms. Separate locker rooms for male/female to be provided as well as segregated provision for instructors.

In existing facilities, if the above arrangement is not possible, gender-neutral full-height toilet cubicles should be provided with shared hand washing. Gender-neutral full-height shower cubicles with individual changing space within to be provided. No changing to take place in the locker areas to respect all personnel privacy and dignity and provide a sense of safety, eliminating any opportunities for intimidating behaviour.

Locker specification for all operational staff: 450x600x1800mm. These can be provided in a combination of full height, half height or tiered.

8.9 Kit Drying Rooms

Kit drying rooms should be located in the immediate vicinity of Cages so that once dry, clean PPE could be stored again. As previously mentioned, kit drying rooms are used for drying contaminant-free equipment that was used in adverse weather conditions for training exercises that do not involve smoke.

8.10 Breathing Apparatus Facilities

Breathing apparatus is essential for all firefighters world-wide. It consists of one or two oxygen cylinders and a mask which are worn when firefighters attend an incident where it may be difficult to breathe, be it either smoke or volatile compounds of chemicals.

Dedicated facilities are to be provided to allow for manual and/or specialist washing/drying (Meiko or similar approved) of breathing apparatus, storage and training tables with cylinder slots. If the cleaning takes place manually, an outdoor sink should be provided so that most of

the contaminants can be removed prior to entering the fire station red areas. Dedicated BA Cleaning and Maintenance rooms should be provided either in close proximity to the Appliance Bays or within it; if there is a training facility on site, the sink could be located in close proximity to the training tower, where incidents are simulated. Such cleaning facilities should have a deep and robust sink with a double drainer and rinse spray arm. Wall mounted flexible driers should be provided to ensure all mask seals are dry to prevent mould growth.

BA Rooms should also have adequate storage, including a cylinder rack and a re-charging shelf beyond which the compressor room is located.

8.11 Sleeping Accommodation and Storage

Separate bedrooms should be provided for each firefighter and their respective watch manager in all new builds. The latter should include a desk and a phone. If possible, dormitories should be reconfigured in existing facilities to promote health and wellbeing, privacy and dignity which can be affected by irregular sleeping patterns.

Five sets of bedding should be stored in the room, one for each rotating watch, in open-type shelving. Laundry facilities should be made available on the premises to wash bedding and fitness room clothing.

Any personal belongings are to be stored in the locker rooms.

8.12 Training Rooms, Incident Command Training Suite Control Rooms

Lecture Rooms or Training Rooms should be provided at every station. These should be designed to be flexible, need to have WiFi access, large TV screens and webcam for remote learning/conferences.

All meeting/lecture/training rooms should have a hearing loop facility.

Incident Command Units are replicas of the internal layout of a fire appliance or 'bus'. It assists firefighters to get accustomed to the procedures during a fire incident call. The ICU is comprised of three rooms with a sliding door and window, in turn. Room sizes are as follows: 2.3m x 2.6m, 2.3m x 2.90m, 2.30m x 2.70m. WiFi and scene setting lighting is required as well as power and data points in each room.

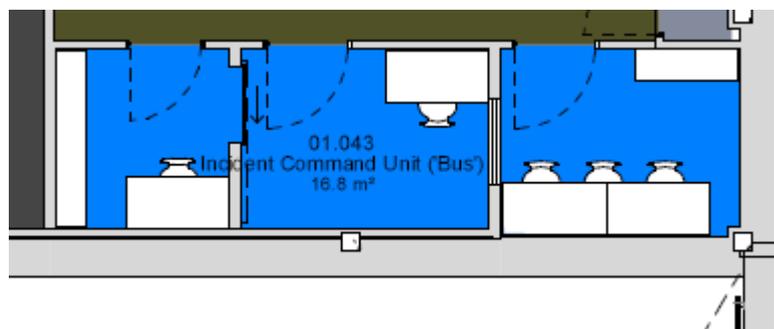


Figure 7 ICU for Horsham Fire Station

Any examinations that take place would be monitored through CCTV and assessors have the possibility to tailor scenarios in the control rooms from where trainees are observed.

8.13 Technical Rescue Unit

The Technical Rescue Unit (TRU) deal with urban search and rescue (USAR), rope rescue, water rescue, animal rescue, confined space rescue, as well as overseas rescue missions. They have specialist kit – the Wade Kit – which is comprised of thermal under suit and dry suit together with steel toe cap boots.

Fire Stations that will accommodate a TRU crew need to have appropriate separate storage for the specialist equipment, the kit, along with an associated drying room.

9.0 Community Facilities

WSFRS want to actively engage with the communities that they serve and as such, fire stations should convey a welcoming and consistent message to the community.

The provision of community space within fire stations will be considered on a case by case basis and is only to be provided where community engagement has identified there is a need and demand.

Where community spaces are provided, the following considerations should be factored into the design:

- Community areas should be completely separated from operational areas by security and access controls;
- Design and access routes should prevent the public from crossing or congregating in front of Appliance Bay doors;
- Wayfinding signage must be clear and can be supported by directional markings or lines on the floor;
- Community spaces must support WSFRS in educating the community with safety messages through display screens or noticeboards;
- Community Spaces must encourage the community to engage or identify with the history of the service or fire station e.g. glazed memorabilia cabinets, historical pictures etc.;
- Community Spaces must encourage the community to engage with their local firefighters. e.g. wall graphics with life size images of local staff and images of the variety of specialisms the Fire and Rescue Service undertake;
- If achievable, community spaces should have a separate entrance with key code access;
- Community spaces should have the capacity to be used without requiring a member of staff to provide access;
- If achievable, some outside congregation space should be provided near to the community entrance;
- Community rooms should be a flexible space that can have multiple uses, including training/ lecture rooms, and incorporate areas to store or stack furniture etc.;

- Community areas should comply with all necessary welfare provisions in accordance with the Equality Act 2010. e.g. hearing loops, accessible toilet & baby changing, multi-faith room, tea point etc.;
- Parking provision should be considered on a case by case basis providing that it does not interfere with operational matters;
- Privacy must be maintained with sound insulation provided between operational and community areas.

10.0 Acoustics

Different acoustic treatment is to be provided to certain areas that require more privacy, where spaces are used for briefing, meetings or relaxation. An acoustic engineer should be consulted on each project.

11.0 Security and Access

WSCC endorse pedestrian and non-motorised access before motorised, with a view to support health and wellbeing, as well as having a sustainable approach. As such, sufficient provision should be made for bicycles and the sharing of vehicles should be promoted, where possible.

The main entrance should be clearly visible, accessible and provide a welcoming environment which will assist WSFRS in strengthening its community links with members of the public and community groups. It must be clearly signed in accordance with the WSFRS standard signage requirements which can be provided on request.

The fire station is to be provided with a security system and any visitors would have to use an intercom to be allowed inside the building into the secure lobby. Secure lines should be well defined and community spaces with respective aforementioned facilities should be separate from the operational fire station to limit un-accompanied access.

Separate entry points should be provided for members of the public and firefighters (as well as trainees, if applicable). CCTV should be provided to all entrances and exits, linked back to WSFRS central security systems.

Access cards linked to station controls, fuel usage and payroll etc. to be used.

12.0 ICT

13.0 FF&E

14.0 Aesthetics & Identity

Brand Identity

Branding should be maintained between WSFRS facilities; however, design teams should have the flexibility of choice of materials that reflects current legislation and market.

The WSFRS logo together with the name of the fire station should be displayed above the main entrance and on any other part of the elevation, as appropriate, depending on the specific massing and design of each station.



West Sussex Fire & Rescue Service

Figure 8 WSFRS Logo

Where privacy is required, translucent manifestation/films on glazing should be used and, if applicable, incorporate brand identity as per the WSFRS requirements.

Flag poles to be provided at every station for celebrations/commemorations/bereavement.

15.0 Outdoor Facilities and Practice Area Requirements

Training activities undertaken within the yard should be accommodated to also not impact upon operational routines and manoeuvres within the yard. Fire hydrants and the deep lift pit (if required; used for training firefighters to save animals or humans from wells etc) locations should not be placed on the vehicle manoeuvre path.

Some stations also need to accommodate training specialisms. Please refer to the WSFRS training strategy for further details of the training requirements for each station.

Outdoor wellbeing space – it is important that an outdoor wellbeing space is provided where possible, incorporating seating and planting/garden area in a peaceful environment.

15.1 Road Traffic Collision (RTC)

Road Traffic Collision practice areas are necessary at every fire station. Appropriate storage for 2-3 disused /scrap vehicles should be provided for the RTC and sufficient space is to be allocated for training exercises. An area of 15mx15m would allow for 4no scrap vehicles to be stored.

A hard standing area also needs to include a T-shaped concrete trench, a metal pole and 2 no. "metal trees".

15.2 Training Towers

All stations have the requirement for a drill yard with a drill tower. The tower must be located so that jets of water or foam do not cross the boundary of the fire station. The drill tower can serve a number of different training functions and should be designed with the input of local firefighting staff. It should be accessible for ladder use (largest is 6m long) on at least two of its sides. Hoses are 23m long and are used for operational tests in conjunction with the tower.

Please note facilities vary around the county, in remote areas some towers are steel frame structures, whereas wholetime stations have brick training towers with various fenestration options and several pitched roofs to assist in the diverse scenarios for training.

Belay points with eye bolts and cover caps should also be provided on the ground, in close proximity to the tower for line rescue exercises.

15.3 Fitness Tests

Outdoor Activities would include fitness tests and fitness training (circuits/relays).

The Bleep Test requires 20m plus 5m at each end for a run off.

The new Fireground Fitness Test requires 25m and enough space for a Fire Appliance to be parked adjacent to the area and the equipment laid out at the side, therefore approximately 10m x 30m.

15.4 Auxiliary Buildings & Structures

In addition to the fire station building itself, there are, usually, other structures located in the drill yard that contribute to its operation. These structures have specific requirements and should comply with Building Regulations. As a result, certain minimum clear distances must be maintained for access, maintenance and operational purposes.

The drill yard can contain:

- Hydrant tank;
- Sprinkler Tank – applicable if live fire training facilities are on site;

- Gas Booster or LPG tank – if deemed necessary;
- Emergency Generator;
- Fuel Storage;

Notes:

- 3m clearance from gas meter;
- Clearance for LPG tank, if applicable, to be discussed with supplier as it depends if it is located above or below ground and on the size of the tank;
- 1m clear around all pumps rooms and tanks;
- 6m distance from diesel storage to all other structures;

15.5 Appliance Manoeuvrability and Car Parking

Fire stations must be designed to allow fire appliances and other vehicles to drive forward safely with a clear line of sight and unhindered access to the public street and to be able to return safely without the need to reverse the appliance into the fire station. Provision may need to be made to be able to control traffic lights from the station to permit easy access onto the street during callouts.

Segregated circulation routes are required for each appliance leaving the station. The route should not be interrupted by other traffic or returning appliances, and maximum visibility will be required. Appliances must be able to turn out without crossing the crown of the road. If the road is narrow, a forecourt is required in front of the Appliance Bays so that appliances can start to turn within the area of the forecourt upon exiting the Appliance Bay doors. WSFRS car parking areas are to be in a secure, designated area, easily accessible to/from the fire station and not accessible by non-station personnel. Authorised car parking is to be contained on site to limit overspill car parking requirements. Clear signage to be provided.

On shared use stations parking bays are to be clearly marked in red to denote they are designated for the fire service. On retained stations provision needs to be made for on-call fire fighters to urgently park close to the Appliance Bay when a call out is received.

16.0 Carbon Reduction & Sustainability

The Council's Sustainability Strategy makes a commitment to reducing carbon emissions, adapting to a changing climate, using resources efficiently and effectively and making sustainability part of the normal design function on WSCC projects. To meet our targets in these areas we need to ensure that we embed sustainability into the design and construction of our buildings.

A 'fabric first' approach to building design should be employed, which involves maximising the performance of the components and materials that make up the building fabric itself, before considering the use of mechanical or electrical building services systems. This can help reduce

capital and operational costs, improve energy efficiency and reduce carbon emissions. A fabric first method can also reduce the need for maintenance during the building's life.

Buildings designed and constructed using the fabric first approach aim to minimise the need for energy consumption through methods such as:

- Building form and orientation
- Maximising air-tightness.
- Using super-high insulation.
- Optimising and controlling daylight and solar gain through the provision of openings and shading.
- Optimising natural ventilation.
- Utilising the thermal mass of the building fabric.
- Utilising energy from occupants, electronic devices, cookers and so on.
- Minimising the use of all resources, including building materials and operational resources.
- Reducing the demand for energy and water use during the works period and during the life cycle of the building.
- Minimising waste and carbon dioxide emissions during the works period and during the life cycle of the building.

Further details on the 'Fabric First' requirements should be reviewed with reference to the Grey and Yellow Guides, as well as the other requirements for sustainable design including Low and Zero Carbon (LZC) technology.

Projects should achieve a rating of at least VERY GOOD under the BREEAM 2018 rules at Pre-assessment. A full, formal, BREEAM Assessment is not required unless explicitly requested for planning purposes.

Designers should be aware that WSCC has committed to achieving Net Zero Carbon by 2030. This will have particular implications for the type of energy used to heat and power the building systems. Priority should be given to the LZC technologies listed in the Grey Guide, including heat pumps and biomass boilers.

17.0 Glossary of Technical Terms

Appliance Bay – refers to the location in which an appliance is stationary and awaiting an emergency call out.

Appliance Wash-down – an area used to wash down appliances upon return from a call out.

BA/Operational Cleaning – an area usually within the Appliance Bay to wash down dirty kit or boots. Should contain a deep trough sink and be close to the contaminated / dirty kit drop off point.

Community Room – an area dedicated to community personnel; this facility should be separated by security lines from the operational side of the fire station and should include a kitchenette/tea point and accessible WC with baby changing folding table. There should be separation and security between this area and the main fire-fighting sections of the building and have separate parking.

Community staff – refers to users of the fire station for a completely different purpose than that for which the station is primarily used for.

Compressor Room – equipment to refill oxygen cylinders;

Cylinder Room – room adjacent to compressor room used to store BA equipment and cylinders; interface between the two rooms with manifolds allows the cylinders to be refilled.

Day Crewed Station – refers to a station that is manned only during the day and staff are 'on call' during the evening hours.

Dirty Kit Collection / Clean Kit Drop-off – this is the starting point for firefighters returning from an emergency call out with kit and equipment potentially contaminated by carcinogens or other materials hazardous to health and is a Red Area. This area contains a drop off area for potentially contaminated and dirty kit/equipment which is external to allow contractors to remove without entering the station. Clean kit to be delivered and stored in a separate external container.

Emergency call-out – incident alert received by the station for which firefighting crew must leave the station. For this design guide, all call outs have the risk of subjecting firefighters to carcinogens or other substances hazardous to health.

Equipment Stores – used as a space to store equipment separately to other areas.

Fire station appliance – refers to the fire fighting vehicle being utilised by the fire station for the purpose of answering emergency 'call-outs'.

Green Zone – clean zone within a station containing eating, working and sleeping areas. There is no risk of exposure to contamination of carcinogens.

Kitchen – used for cooking and serving hot foods with cold and ambient storage facilities.

Laundry – area used for cleaning of day clothing and fitness room kit. Not used for fire kit.

Mess – an area designated for the purpose of communal eating of food whilst on watch.

Quiet Room – an area used for quiet contemplation and private use for firefighters.

Red Zone – operational areas which are considered part of the dirty zone. WSFRS have a decontamination at source policy, but the red area has medium risk of exposure to contamination or carcinogens. If leaving a red area, staff should not be able to enter a green area without passing through a transitional zone with the opportunity to wash and change.

Retained Station – refers to a station that is not manned unless there is an emergency call out. Staff is fully 'on call' and must be at the station within a certain time period following the call.

Shower and Changing areas – an area where firefighters can change and wash at the beginning, during and end of shifts.

Sleeping Accommodation – individual rooms containing a bed and some furniture for night shift firefighters to sleep.

Support staff – refers to staff that have a support role in relation to WSFRS and not having a fire fighting role to play.

Training Room – a shared area with IT facilities and Wi-Fi to allow for the connection of a laptop and to achieve training competencies as required.

Watch Room – a room where the watch can use IT facilities and where the fire call screen informs firefighters of the details for the next incident.

Whole-time Station – refers to a station that is manned on a 24/7 basis, both day and night watch fire officers.

Yellow Zone – a transitional space between Red Area and Green Area whereby firefighters have the opportunity to wash and decontaminate. The risk of exposure to contamination or carcinogens is low.

