



SCDF

The Life Saving Force

... for a safer Singapore

FSM Briefing 2023



Common Fire Safety Enforcement Findings

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Fire Safety Department

Singapore Civil Defence Force



Scope

- Introduction
- Enforcement Workflow
- Common Fire Hazards & Fire Safety Offences
- Managing Fire Safety using Technology
- Conclusion



Introduction

- **SCDF regulates fire safety to attain a fire-safe built environment by:**
 - ✓ Formulating fire safety policies – E.g. Fire Safety Act (FSA), Code of Practice for Fire Precautions in Buildings (Fire Code)
 - ✓ Implementing fire safety requirements – E.g. Fire Safety Certificate (FSC), Petroleum and Flammable Materials License (P&FM), Temporary Permit
 - ✓ Partnering the industry players to improve on regulatory systems – E.g. Fire Safety Managers (FSM), Building Owners
 - ✓ Maintaining an effective regulatory regime – E.g. Regular Inspections, Enforcement Actions



Regulatory Regime

- **To create a fire-safe environment by enforcing the FSA and achieved through:**
 - ✓ Scheduled fire safety enforcement checks
 - ✓ Responding to public feedbacks
 - ✓ Concerted joint efforts by SCDF and building managements / owners / FSMs / CERTs





THE STATUTES OF THE REPUBLIC OF SINGAPORE

FIRE SAFETY ACT

(CHAPTER 109A)

(Original Enactment: Act 39 of 1993)

Enforcement Action

REVISED EDITION 2000
(30th December 2000)

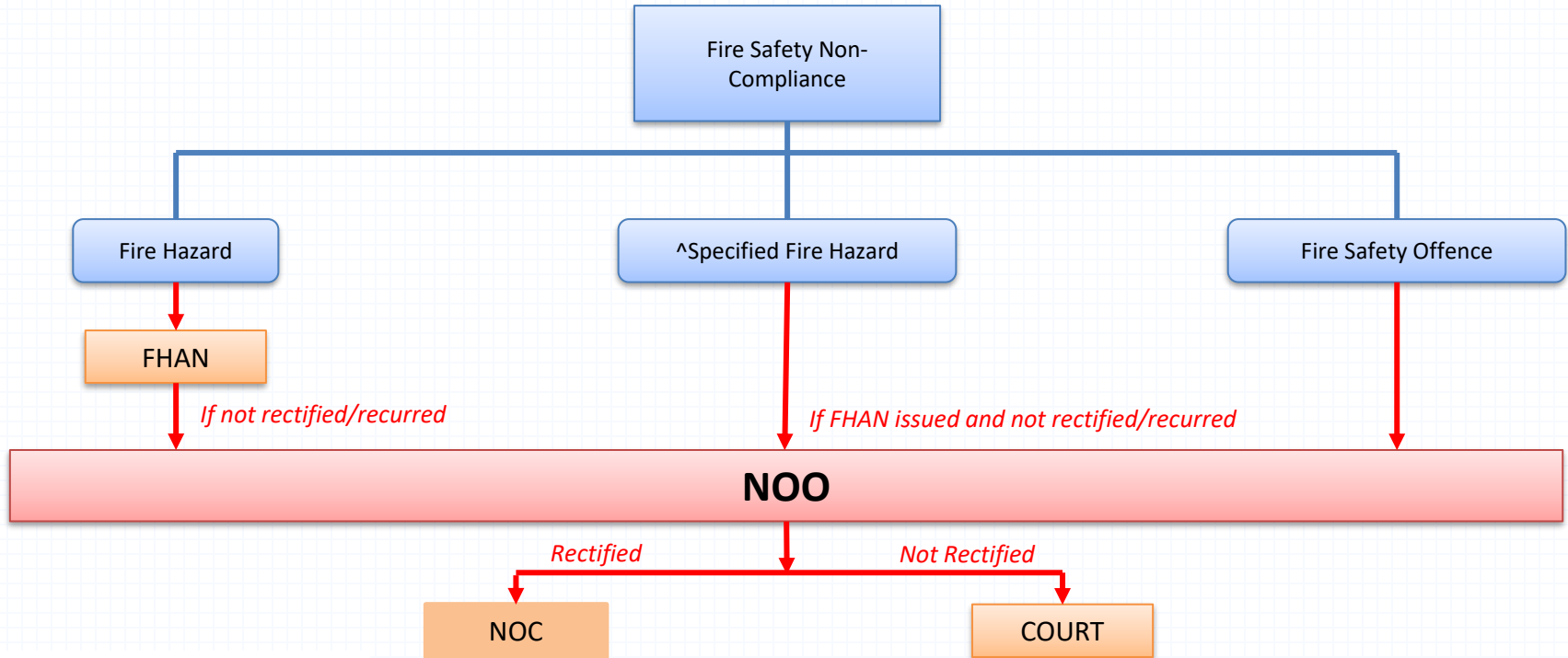
Prepared and Published by

THE LAW REVISION COMMISSION
UNDER THE AUTHORITY OF
THE REVISED EDITION OF THE LAWS ACT (CHAPTER 275)

Informal Consolidation – version in force from 1/9/2013



Enforcement Framework



FHAN: Fire Hazard Abatement Notice

NOO: Notice of Offence

NOC: Notice of Composition

^ such as

- (i) Overcrowding*
- (ii) Fire safety measures not in order*
- (iii) Obstruction to escape route*



Common Fire Hazards



Fire Hazards

- Any matter or circumstances which materially increase the likelihood of fire or the danger to life or property that would result from the outbreak of fire which includes:
 - ✓ Obstruction to means of escape
 - ✓ Obstruction to fire safety measures
 - ✓ Non-maintenance of fire safety measures
 - ✓ Storage/placement of combustible material
 - ✓ Missing/removal of fire safety measures



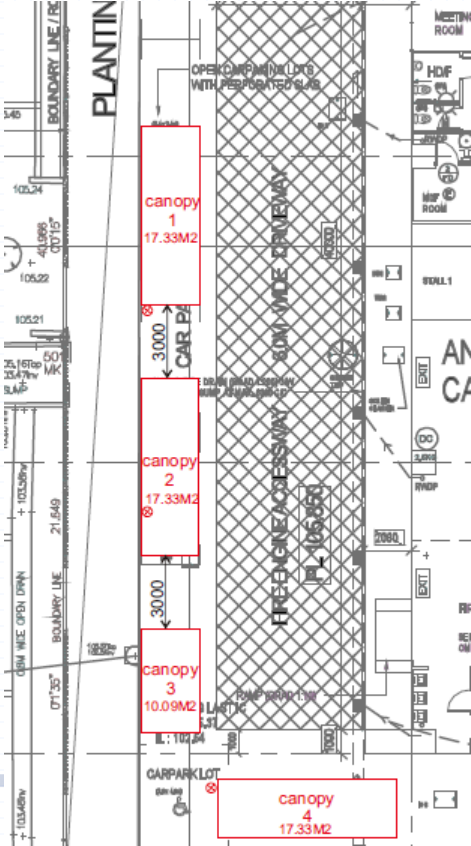
Obstruction along Means of Escape



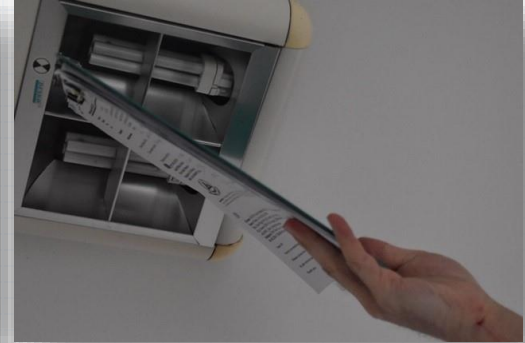
Obstruction to Fire Safety Measures



Obstruction to Fire Engine Access/Accessway



Fire Safety Measures Not in Efficient Working Order



Common Fire Safety Offences

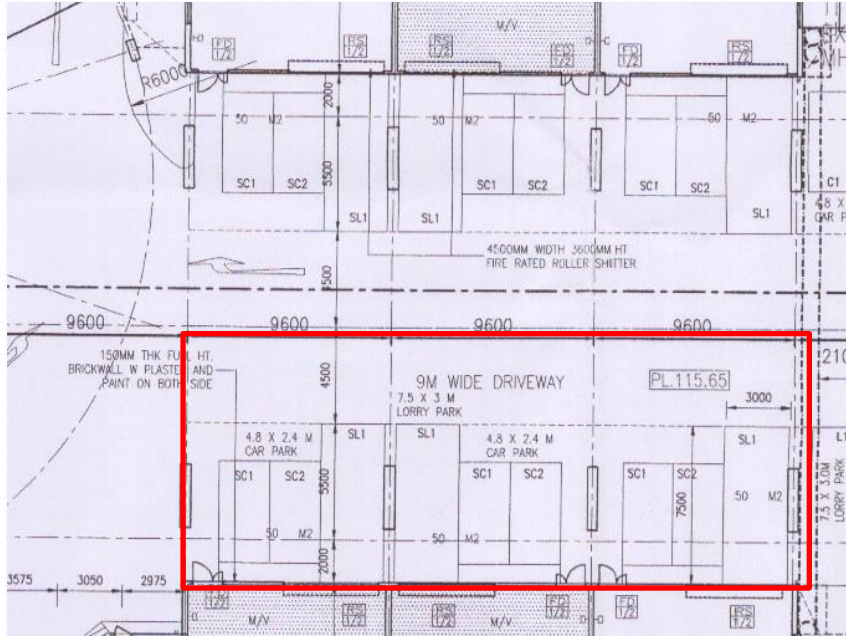


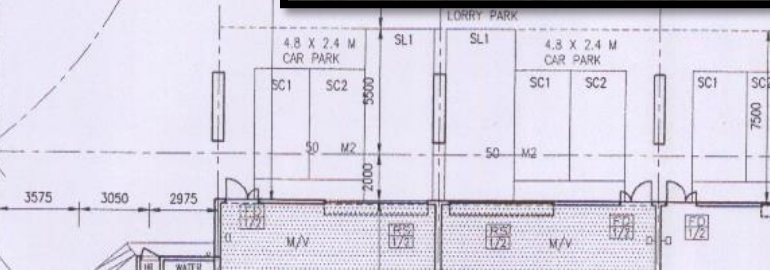
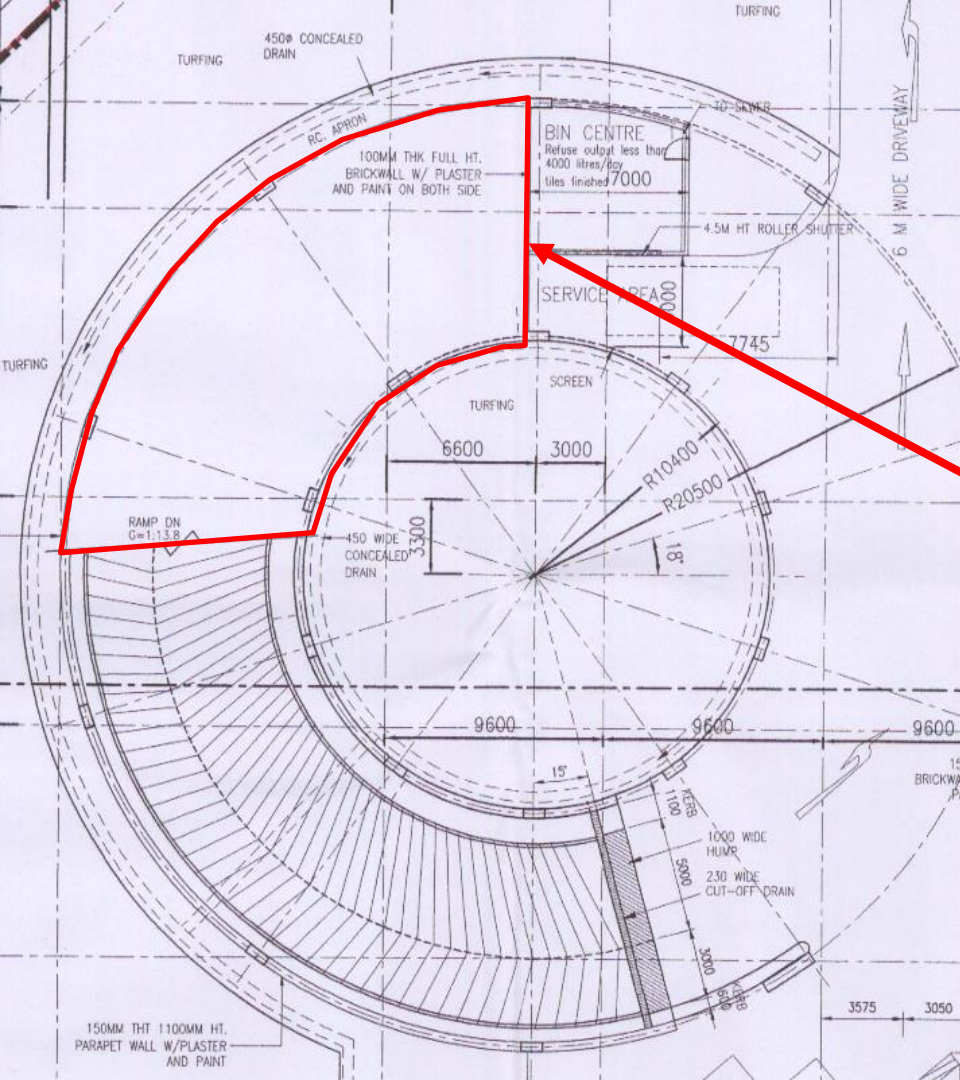
Fire Safety Offence

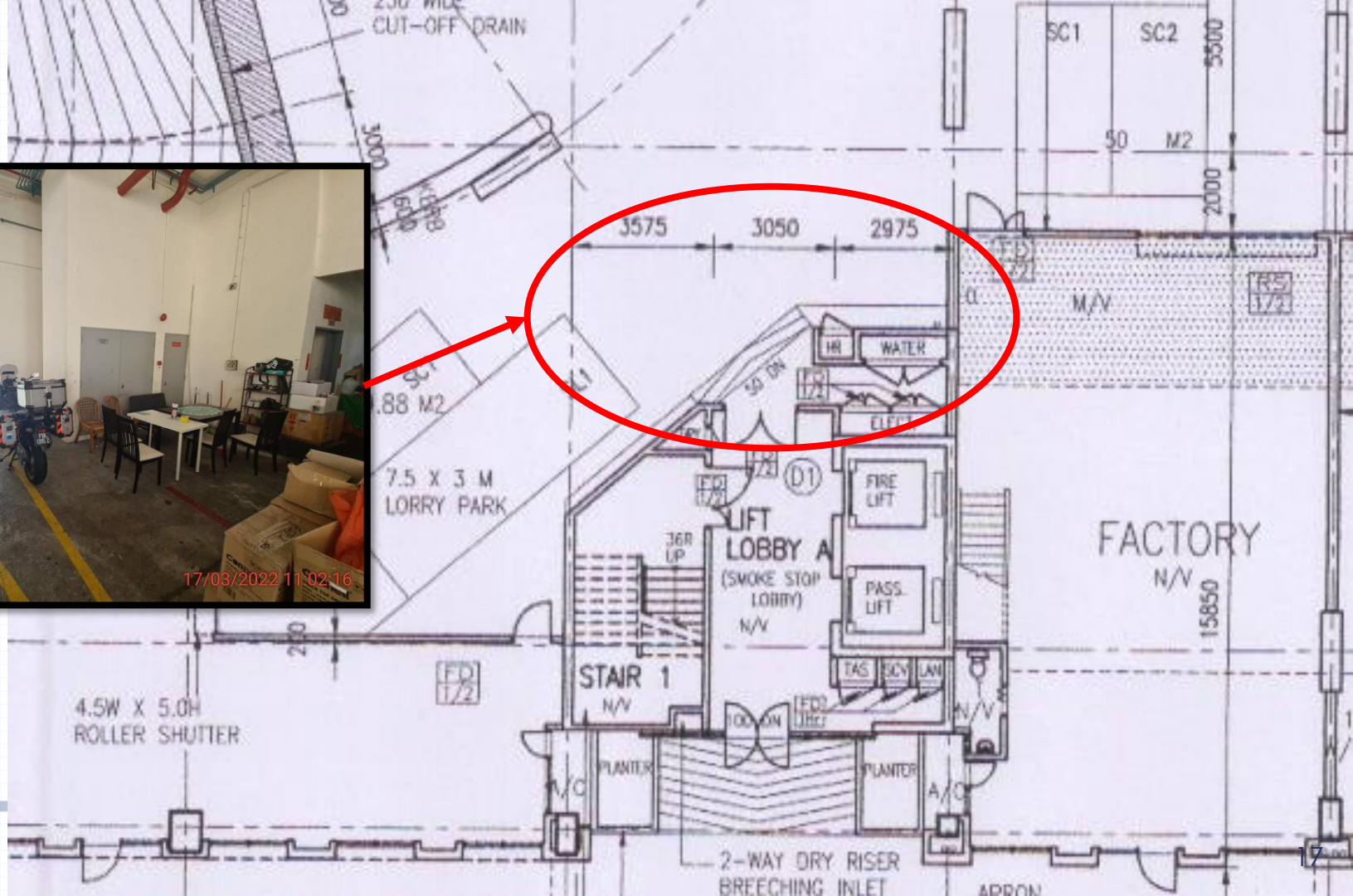
- Contravention to requirements in Fire Safety Act and its regulations such as:
 - ✓ Change of use of premises
 - ✓ Carrying out fire safety works without approval of plans
 - ✓ Storage of Petroleum and Flammable Material (P&FM) without a valid storage license



Unauthorised Change of Use







Unauthorised Change of Use to Dormitory

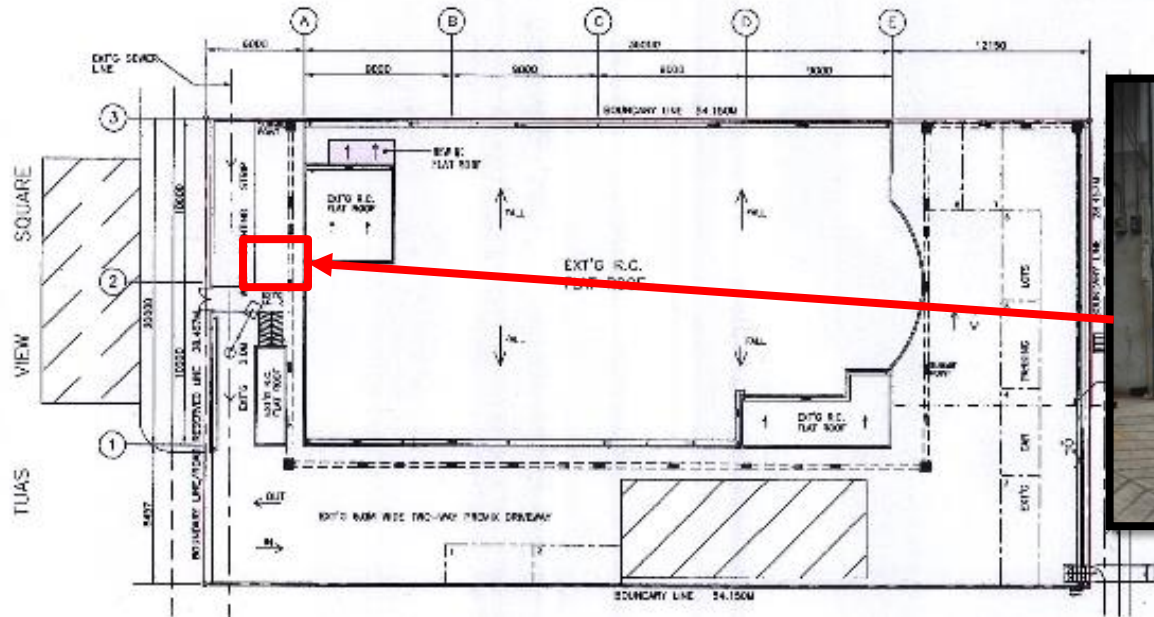


Unauthorised Fire Safety Works

Fire Safety Works (partition and mezzanine floor) without approval of plan



Unauthorised Fire Safety Works



Unauthorised Fire Safety Works

Fire Safety Works (LPG manifold system) without approval of plan



Unauthorised Fire Safety Works

Fire Safety Works (kitchen exhaust duct) without approval of plan



Storage of P&FM Without a Valid Storage

Licence

- All storage of P&FM (Petroleum and Flammable Material), regardless of quantity stored, have to comply with the fire safety requirements.
- All storage of P&FM must be indicated in building plans submitted to SCDF for approval.
- Storage licence is required if the quantity stored is above the exemption quantity or if there is a **mixed state** (eg. 10kg acetylene (gas), 800 litres of diesel (liquid)) of P&FM in a factory.

P&FM Mixtures ^

Mixed storage or keeping of any petroleum and flammable material, or more than one flammable material, in separate containers or compartments within any premises shall be exempted from the requirement of a licence if:

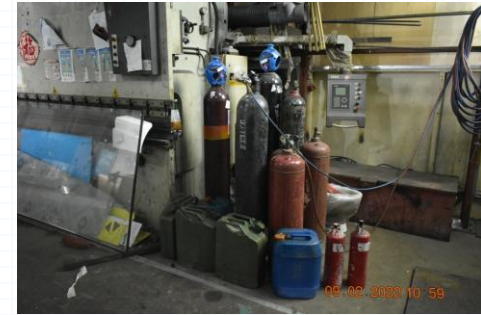
- Where all the substances are solids, their aggregate weight does not exceed 20 kg;
 - Eg. If you store several kinds of petroleum/flammable materials of which all are solids, for instance, aluminum powder, calcium carbide and calcium silicate, you are required to have a storage licence if the overall quantity of all such solids together exceeds 20 kg.
- Where all the substances are liquids, their aggregate volume does not exceed 40 L:
 - Eg. If you store several kinds of petroleum/flammable materials of which all are liquids, for instance, butanol, chlorobutane and acetone, you are required to have a storage licence if the overall quantity of all such liquids together exceeds 40 L.
- Where all the substances are gaseous, their aggregate weight does not exceed 10 kg; or
 - Eg. If you store several kinds of petroleum/flammable materials of which all are gases, you are required to have a storage licence if the overall quantity of all such gases together exceeds 10 kg.
- Where the substances are in mixed states, their aggregate weight does not exceed 20 kg.
 - Eg. If you store several kinds of petroleum/flammable materials of which consist of solids, liquids and gases, for instance, calcium carbide, acetone and acetylene, you are required to have a storage licence if the overall quantity of all such solids, liquids and gases together exceeds 20 kg.

Storage of P&FM Without a Valid Storage Licence

Flammable Materials

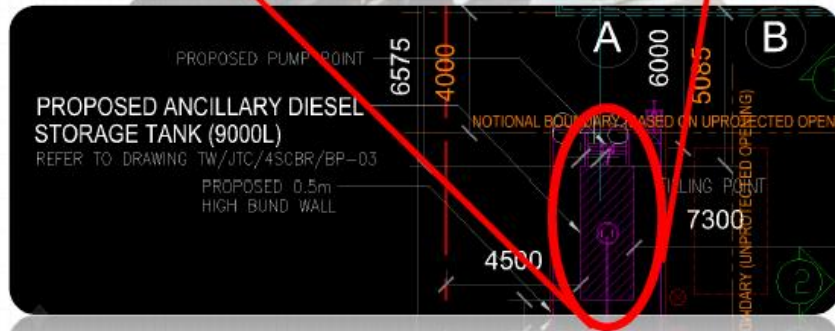
The exemption quantities for the 366 classes of Flammable Materials are in the following folder.

Click on the link to download [the Exemption quantities for flammable materials](#).
(58.50 KB)



Second Schedule (New)			
S/N	Flammable Materials	General manufacturing, etc., purpose	Medical or laboratory purpose
1	Acetal	20 L	20 L
2	Acetaldehyde diethylacetal	20 L	20 L
3	Acetoin (3-Hydroxybutanone)	20 L	20 L
4	Acetone	20 L	20 L
5	Acetyl chloride	20 L	20 L
6	Acetyl methyl carbinol (Butanolone)	20 L	20 L
7	Acetylene (gas)	10 kg	10 kg

Storage of P&FM Without a Valid Storage Licence



Any Other Classes of Petroleum

Purpose	Exemption Quantity				
	Class Petroleum	I Class Petroleum	II Class Petroleum	III Class Petroleum	III
For private use in a private dwelling house or for use in any business other than in a factory	Not more than 20 L	Not more than 200 L	Not more than 1,500 L		
For use in a factory	Not more than 400 L	Not more than 1,000 L	Not more than 1,500 L		

Storage of P&FM Without a Valid Storage Licence

P&FM Storage Licence Application

1. Engage a Qualified Person (QP) to prepare and submit plan to SCDF
2. Submit plan(s) that incorporate with the fire safety works in accordance with the Fire Code and other accepted codes
3. A registered inspector (RI) will apply Fire Safety Certificate (FSC) after he has certified that fire safety works are completed and in accordance with the approved building plans.
4. The applicant can apply for P&FM storage licence on-line via GoBusiness Portal.

SCDF
The Life Saving Force
SINGAPORE CIVIL DEFENCE FORCE

REPUBLIC OF SINGAPORE
SINGAPORE CIVIL DEFENCE FORCE

FIRE SAFETY ACT
(CHAPTER 109A)

SECTION 29 (3) (a)

FIRE SAFETY CERTIFICATE

NEW FUNNELS (S) PTE LTD
176 GUL CIRCLE

SINGAPORE 629627

APPLY: SAMUEL GEE

DESCRIPTION OF PROJECT:
PROPOSED AMENDMENT TO THE OUTDOOR STORAGES OF THE FLAMMABLE MATERIAL AND TEMPORARY CONTAINER STORAGES AT NO.174 & 176 GUL CIRCLE, SINGAPORE MIS NEW FUNNEL(S) PTE LTD

APPROVED PLAN NUMBER(S):
DEP1A00591702 DEP1A005917

This is to certify that the fire safety works in the above project have been satisfactorily completed in accordance with the requirements of the Fire Safety Act.

Nur Hazwan Bin Amin
for Commissioner
Singapore Civil Defence Force

Date: 04-Jul-2018

SCDF - A member of the Home Team

80 SINGAPORE CIVIL DEFENCE FORCE, 91 USE AVENUE 4, SINGAPORE 48027
TEL: 6348 3774 FAX: 6348 3495 EMAIL: noc_hazwan_singcfd@scdf.gov.sg

File Ref No. : FMS/251/18 Lic No - FS19852019
Submission No. : SUS2019044734

REPUBLIC OF SINGAPORE
SINGAPORE CIVIL DEFENCE FORCE

THE FIRE SAFETY ACT 1993
(PART VI)
CONTROL OF PETROLEUM AND FLAMMABLE MATERIALS

PETROLEUM & FLAMMABLE MATERIALS STORAGE LICENCE

Licencee (Name and Address)
NEW FUNNELS (S) PTE LTD
176 GUL CIRCLE
SINGAPORE 629627

Licence to store petroleum & flammable materials and respective quantity :
1. Flammable Materials (Gases) - 697 Kg
2. Petroleum - 1200 Litres

Premises authorised for storage of petroleum and flammable materials :
176 GUL CIRCLE SINGAPORE 629627

Period of Licence: 17-JUL-2018 TO 30-JUN-2019 Licence fee: \$618.0

This licence is granted subject to Act and the Regulations relating to the said purpose now and from time to time hereafter in force.

17-JUL-2018
Date of issue

Alice Sze Lay Chen
for COMMISSIONER
SINGAPORE CIVIL DEFENCE FORCE

*Please note that the licence will be revoked if serious non-compliance of technical requirements are found during subsequent inspections.

Managing Fire Safety



Managing Fire Safety

To manage fire safety, premises can leverage technology such as the Internet of Things (IoT) and Closed Circuit Television (CCTV) with video analytics.

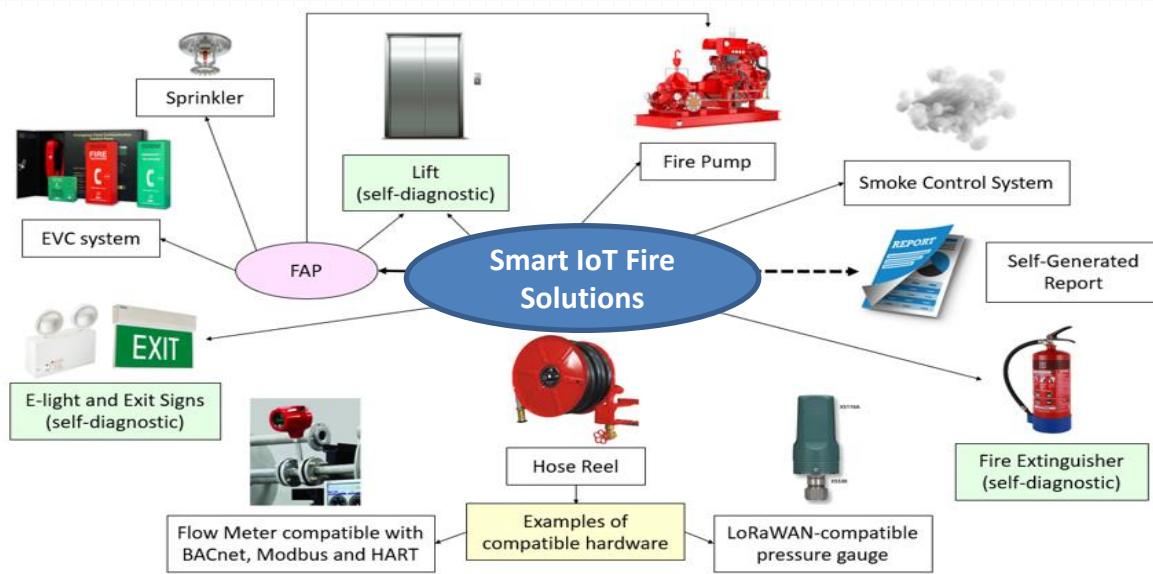
These systems can provide automated monitoring and alerts to promptly detect and mitigate any fire safety concerns, such as malfunctioning fire safety measures or obstructed escape routes.

The technology is simple to understand and can be implemented professionally, allowing premises to effectively manage fire safety.



IoT (Internet of Things)

For fire safety management, the Internet of Things (IoT) pertains to a network of physical devices, and other items that are equipped with sensors, software, and network connectivity. These features enable them to gather and exchange data, which can be analyzed and used to automate processes, enhance efficiency, and offer new insights into how things work.

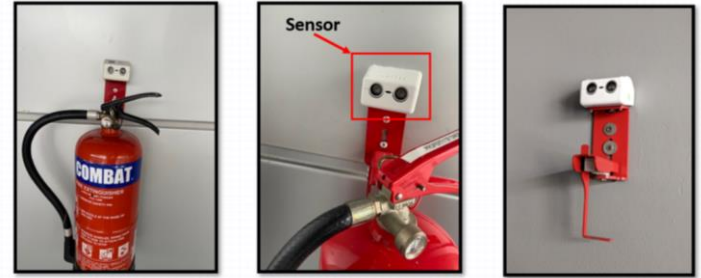


IoT (Internet of Things)

IoT sensors are compact, connected devices capable of monitoring a wide range of fire safety parameters, such as temperature, smoke, gas levels, water or air pressure leak, flow rate, and more. Additionally, they can detect tampering, removal, obstruction, and remote testing capability from a remote location.

One significant advantage of IoT sensors is their suitability for fire protection systems. Building owners and fire safety managers can opt for IoT sensors because they are easy to deploy within a reasonable timeframe, non-intrusive, require minimal maintenance. Furthermore, they can generate system operating status reports at a reasonable cost of implementation over the longer term.

Fire Node (Sensor) for Fire Extinguishers



Sensor for Emergency Light / Exit Sign



CCTV Video Analytic

Significant advancements in Artificial Intelligence (AI) have allowed for the automation and optimization of many functions and process of CCTV systems.

This technology goes beyond the basic features of real-time footage and recording playback to include video analytics.

The use of video analytics in conjunction with CCTV systems can aid premises in managing fire safety by detecting potential hazards early, monitoring risk and facilitating prompt mitigation.



Concept of Operations

1



CCTV coverage will capture areas where fire hazards are common (e.g. vehicle parking areas, exits).

2



Footages are transmitted to video analytics system to detect and identify possible fire safety infringements.

3



Video analytics system sends an alert to the building owner or FSM to take early intervention actions.

Video Analytics of CCTV footages has the potential of detecting and identifying fire safety infringements 24 / 7. It helps building owners or FSMs to self-monitor and take quick intervention actions.

Early interventions can help prevent major fires and shape occupants' behaviours to be more compliant and improve fire safety of the whole building.

CCTV using video analytics system can detect potential fire safety infringement such as obstructed exit doors.

Once detected, the system can send an alert to the building owner or Fire Safety Manager (FSM) for early intervention.

By actively monitoring and taking early intervention measures with the aid of CCTV video analytics system, fire safety infringement can be prevented from reaching a stage where tenants may be reluctant to take corrective actions.



Conclusion

Assisting the building owner in managing fire safety is a critical responsibility of Fire Safety Manager (FSM).

FSM must ensure that fire safety measures are in proper working order and, when any malfunction are identified. FSM should informed the nearest territorial Fire Station.

For non-compliances highlighted during our fire safety inspection, FSM should also update the case officer on the rectification progress.

Lastly, to explore the use of technology such IoT or CCTV VA to enhance your duties and better manage building fire safety.



Thank You

