SCDF
The Life Saving Force
. . . for a safer Singapore

Fire Safety Engineer (FSE) Workshop

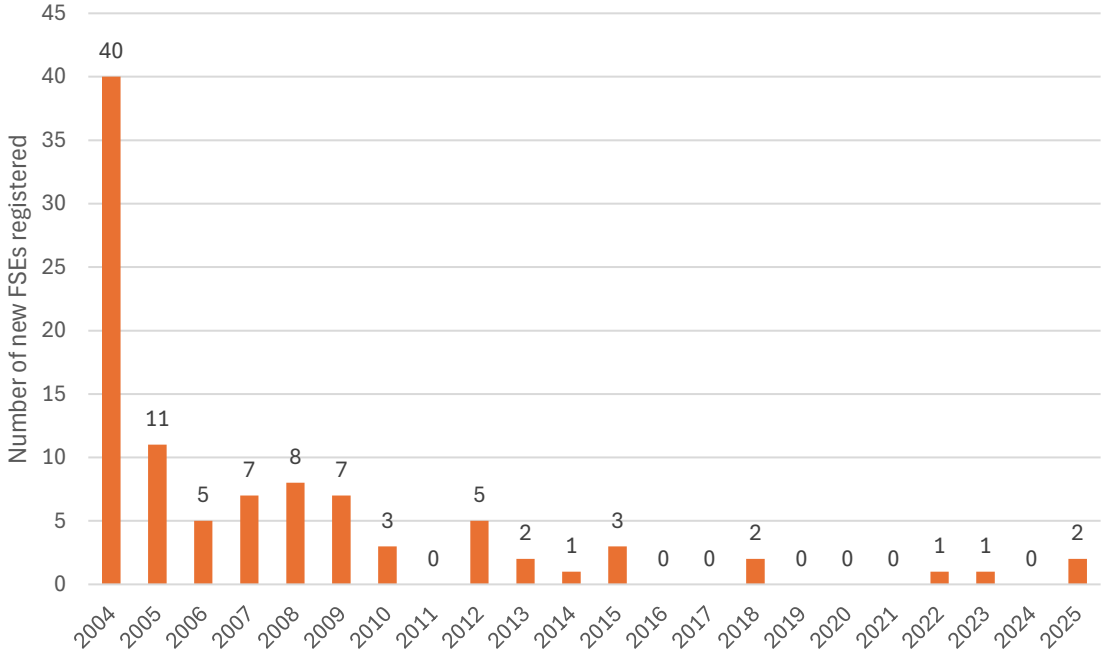
10th July 2026 from 9.00 am to 12.00 pm
SCDF HQ Level 3 Meeting Room 4

Agenda

1. PB Regulatory System (Update)
    1. FSE Registration
    2. Number of PB cases & PB waiver issues
    3. FSE Inquiry Committee cases
2. Admin Requirements (Update)
    1. CPE programme (recap, declaration, course approval requests)
    2. Submission requirements
3. SFEG 2025
    1. Acknowledgments
    2. Key updates and clarification
4. Other Fire Engineering Technical Requirements Update

Performance-Based Regulatory System

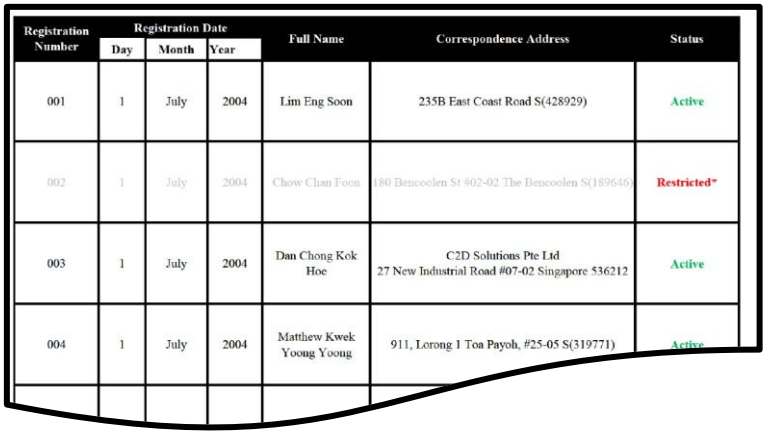
FSE Registration



- 47 practising FSEs
- 20 “restriction of practise”
- 31 deregistered – no longer practising

Updates on FSE Register

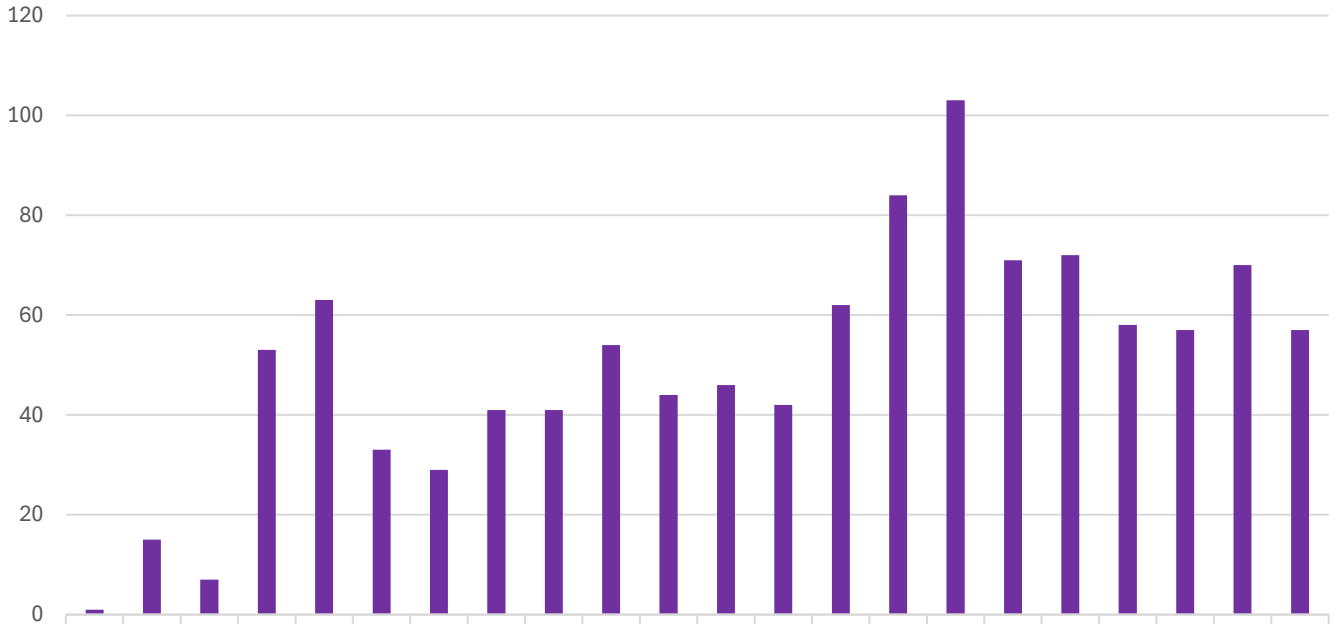
- The FSE register has been updated to reflect only name, address, registration status and practice restrictions due to data governance.
- Reminder that only addresses in Singapore will be accepted. FSE with foreign addresses will be removed from the register.
- Reminder for FSE to provide a single email address for official correspondence



Registration Number	Registration Date			Full Name	Correspondence Address	Status
	Day	Month	Year			
001	1	July	2004	Lim Eng Soon	235B East Coast Road S(428929)	Active
002	1	July	2004	Chow Chan Foon	180 Bencoolen St #02-02 The Bencoolen S(189648)	Restricted*
003	1	July	2004	Dan Chong Kok Hoe	C2D Solutions Pte Ltd 27 New Industrial Road #07-02 Singapore 536212	Active
004	1	July	2004	Matthew Kwek Yoong Yoong	911, Lorong 1 Toa Payoh, #25-05 S(319771)	Active

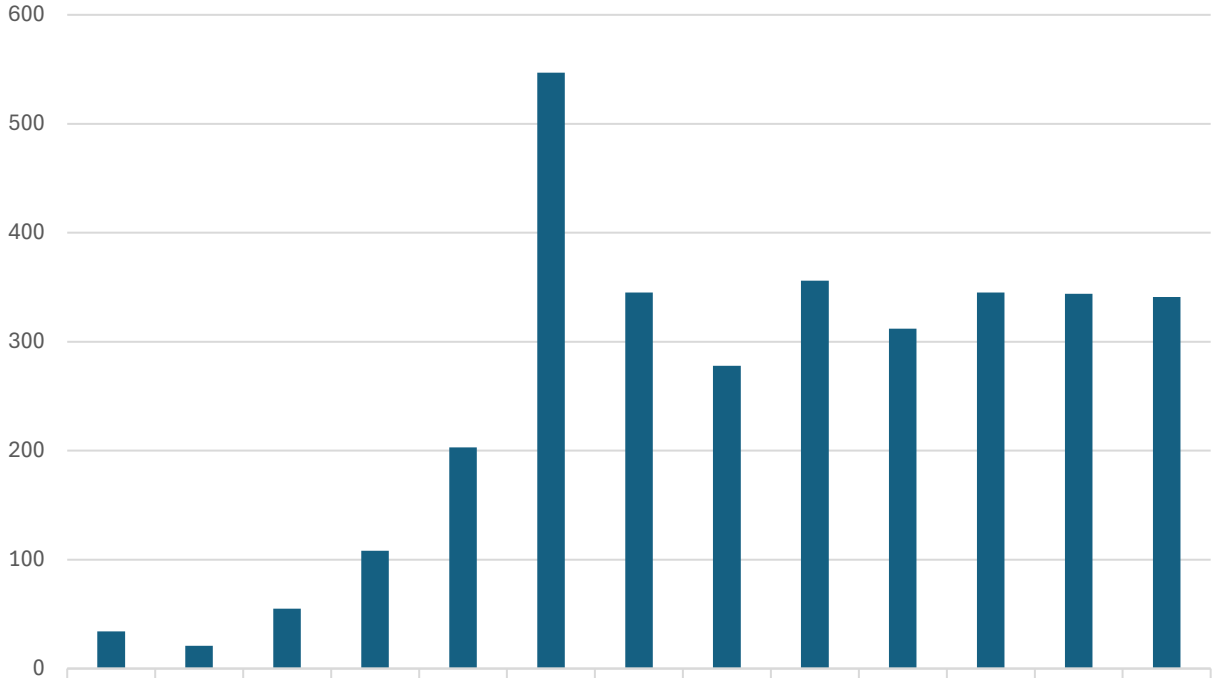
SCDF Website -> Fire Safety -> Plans Submission Process -> Performance-Based Approach to Fire Safety Design -> Register of Fire Safety Engineers: https://www.scdf.gov.sg/docs/default-source/fire-safety-docs/register-of-fire-safety-engineer.pdf?sfvrsn=e06ebe40_6

Number of PB Cases
(FEDB)



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
No. of PB cases	1	15	7	53	63	33	29	41	41	54	44	46	42	62	84	103	71	72	58	57	70	57

Number of PB WVR Issues



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
No. of PB waiver issues	34	21	55	108	203	547	345	278	356	312	345	344	341

FSE Inquiry Committee

- FSE Inquiry Committee convened twice in the past year

- Case 1: FSE was fined for the following issues:
  - ✓ Performance criteria declared in the report was not achieved in assessment
  - ✓ Discrepancies in modelling parameters declared in report and modelled in simulation
  - ✓ Multiple editorial errors in report demonstrating poor due diligence

FSE Inquiry Committee

- Case 2: FSE issued Letter Of No Objection (LONO) for an A&A works that affect existing PB design, instead of full PB submission in accordance with SCDF circular (CD/FSSD/12/02/03/01) dated 18 October 2013.

SCDF Circular Ref: CD/FSSD/12/02/03/01

SINGAPORE CIVIL DEFENCE FORCE

Our Ref. : CD/FSSD/12/02/03/01
Your Ref :
Date : 18 Oct 2013

HQ Singapore Civil Defence Force
91 Ubi Avenue 4
Singapore 408827
Tel : 68481457
Fax : 68481489

Registrar, Board of Architects (BOA)
Registrar, Professional Engineers Board (PEB)
President, Singapore Institute of Architects (SIA)
President, Institution of Engineers, Singapore (IES)
President, Association of Consulting Engineers, Singapore (ACES)

Dear Sir/Mdm

CERTIFICATION BY QUALIFIED PERSON FOR A/A PLANS INVOLVING PERFORMANCE-BASED FIRE SAFETY DESIGNS

SCDF issued a circular (ref: CD/FSSD/12/02/03/01) on 5 Jun 2012 to inform the building industry that qualified persons (QPs) who carry out any addition & alteration (A/A) works to an existing Performance–Based (PB) building, are required to obtain a letter of no objection from a fire safety engineer (FSE), if the A/A works do not affect the PB design. If the works affect the PB design, a FSE has to be engaged for submission of PB plans to SCDF.

2. QPs have suggested to allow them to issue the letter of no objection instead of FSEs, especially for cases where the A/A works clearly do not affect the Performance–Based (PB) design of the building.

3. SCDF has no objection to the suggestion. However, QPs are expected to do their due diligence in referring to the relevant PB documents before issuing the letter of undertaking. Please note that there could be several PB projects carried out for the PB building in question and as such, the QP would have to make reference to all the different sets of PB documents. QPs who undertake the certification, will take full responsibility if the A/A works are subsequently found to have affected the original PB designs. If the QP is doubtful whether the proposed A/A works affect the PB designs, he/she is strongly advised to consult the FSE.

4. The Operations and Maintenance (O&M) Manual is one of the PB documents prepared by the FSEs for submission to SCDF. One of the purposes of the manual is to serve as a guide for building operators on future renovations and changes made to the building. However, this aspect on demarcation is usually not included in the manual submitted by the FSEs. SCDF would therefore like to remind FSEs to clearly demarcate the areas where future A/A works can be carried out without affecting the PB design of the building so as to facilitate such works.

5. These requirements shall take immediate effect. Please convey the contents of this circular to members of your Institution/Association/Board. The circular is available in CORENET-e-Info: http://www.corenet.gov.sg/einfo.

6. For any inquiry or clarification, please contact Maj Chong Kim Yuan at DID: 6848 1476 or email address: Chong_Kim_Yuan@scdf.gov.sg.

Yours faithfully,

(transmitted via e-mail)

MAJ Lee Kok Chuen
Secretary, FSSD Standing Committee
for Commissioner
Singapore Civil Defence Force

cc

CEO, BCA
CEO, URA
CEO, HDB
CEO, JTC
CE, LTA
CE, SPRING Singapore
President, REDAS
President, IFE
President, SISV
President, FSMAS
All members of FSSD Standing Committee

2

SCDF Circular Ref: CD/FSSD/12/02/03/01

- Para 1 - "qualified persons (QPs) who carry out any addition & alteration (A/A) works to an existing Performance–Based (PB) building, are required to obtain a letter of no objection from a fire safety engineer (FSE), if the A/A works do not affect the PB design. If the works **affect** the PB design a FSE has to be engaged for submission of PB plans to SCDF."

Regardless adversely or non-adversely

- Para 4 – "FSEs to **clearly demarcate the areas** where future A/A works can be carried out without affecting the PB design of the building so as to facilitate such works."

SCDF Circular Ref: CD/FSSD/12/02/03/01

- Example of clearly demarcated PB areas

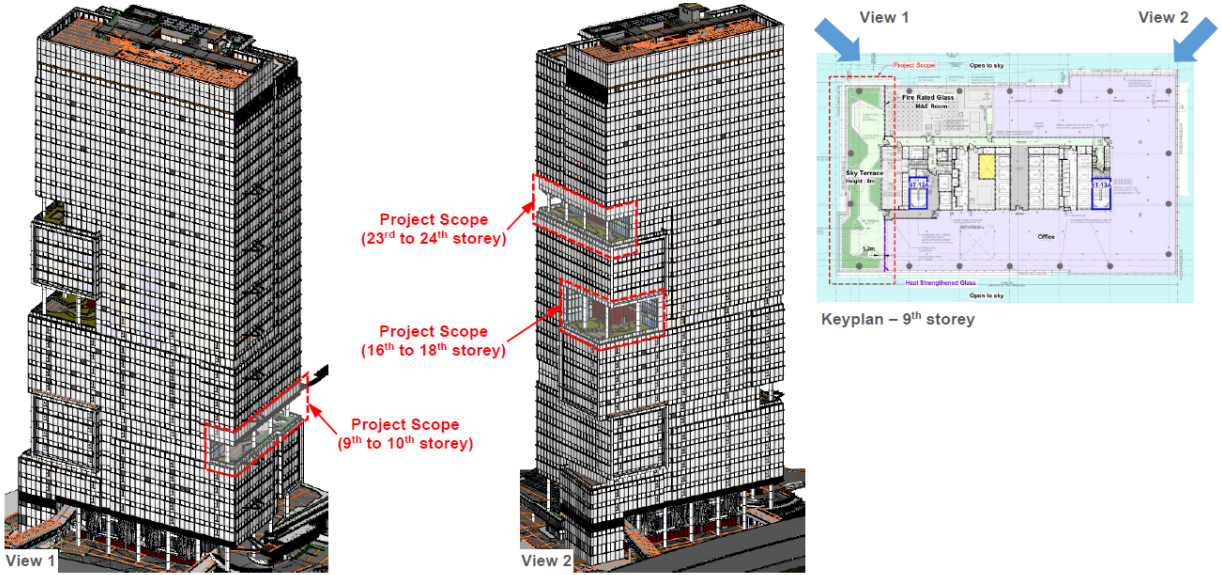


Figure 1.1-1: Proposed Development

SCDF Circular Ref: CD/FSSD/12/02/03/01

- Example of clearly demarcated PB areas

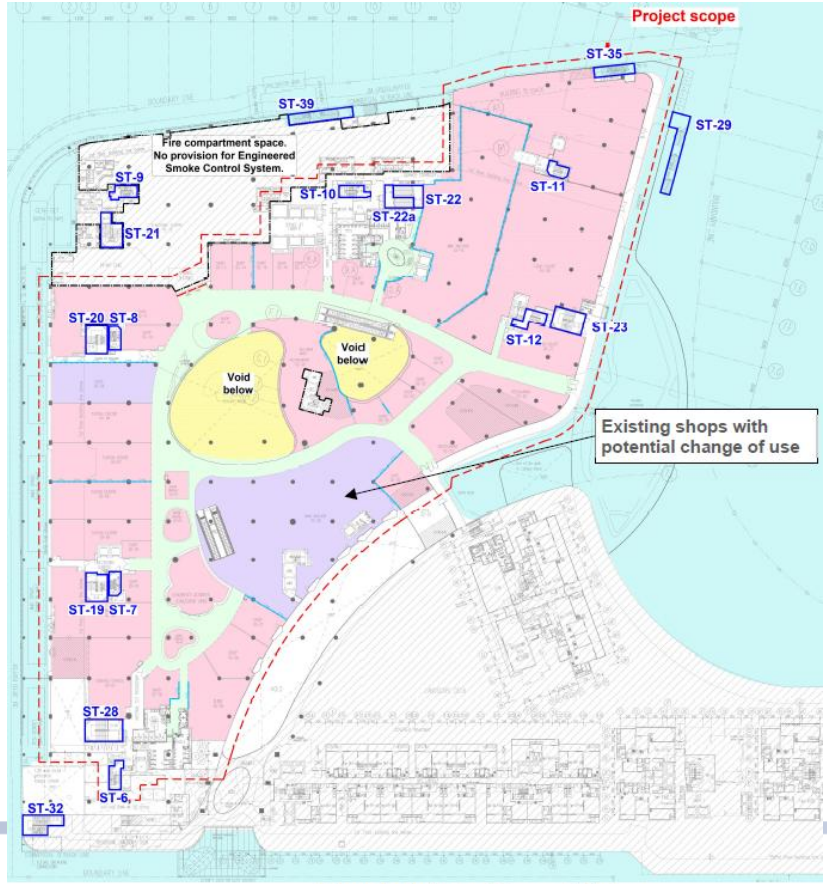


Figure 1.1-1: Project Scope – 2nd storey

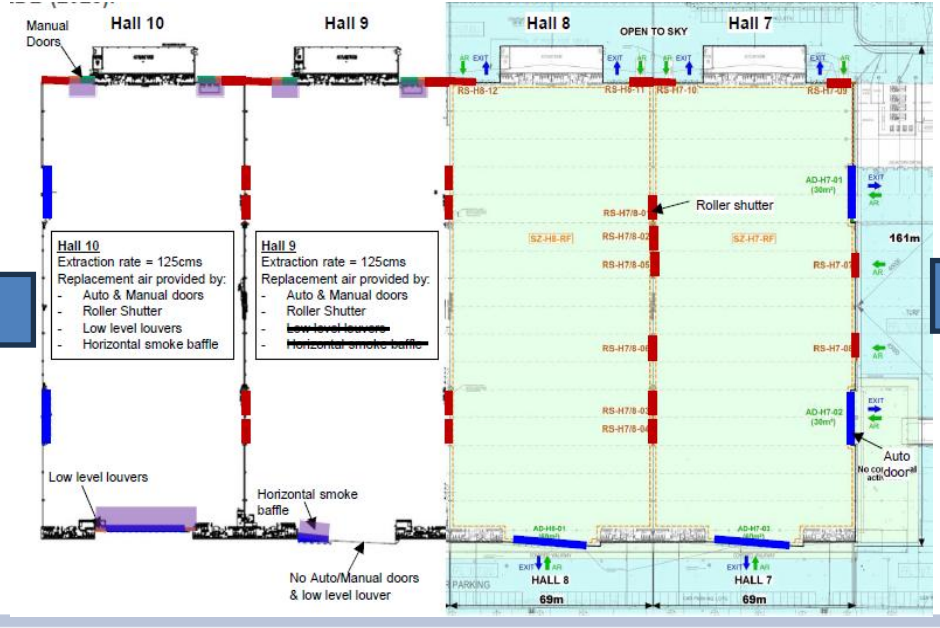
SCDF Circular Ref: CD/FSSD/12/02/03/01

Case Example:

- A&A Works for multiple halls (existing PB building)
- ESCS provisions changed: existing low-level replacement air inlets and smoke baffles were removed or relocated. Roller shutters open during fire outbreak.

FSE B

- Based on his own professional judgement as overall replacement air area enlarged due to shutters
- Issued LONO because the A&A works does not affect the PB design adversely.



FSE A

- Conducted FDS simulations to assess the proposed ESCS provisions.
- Submitted FEDB/FSER to regularise the A&A works.

Rationale

SCDF has justified the need for a full PB design, in lieu of a LONO:

- As stated in the LONO Circular, a full PB submission is required whenever an A&A work impacts the existing PB design features, regardless of whether the impact is adverse or non-adverse.
- The FSE shall verify whether the proposed A&A works affect the existing PB design for the premises. If it affects the design, the FSE shall submit full PB design plan, together with modelling studies and relevant documents e.g. OMM.
- Some possible examples for LONO (self-declaration):

➢ A&A work outside the PB demarcated area.

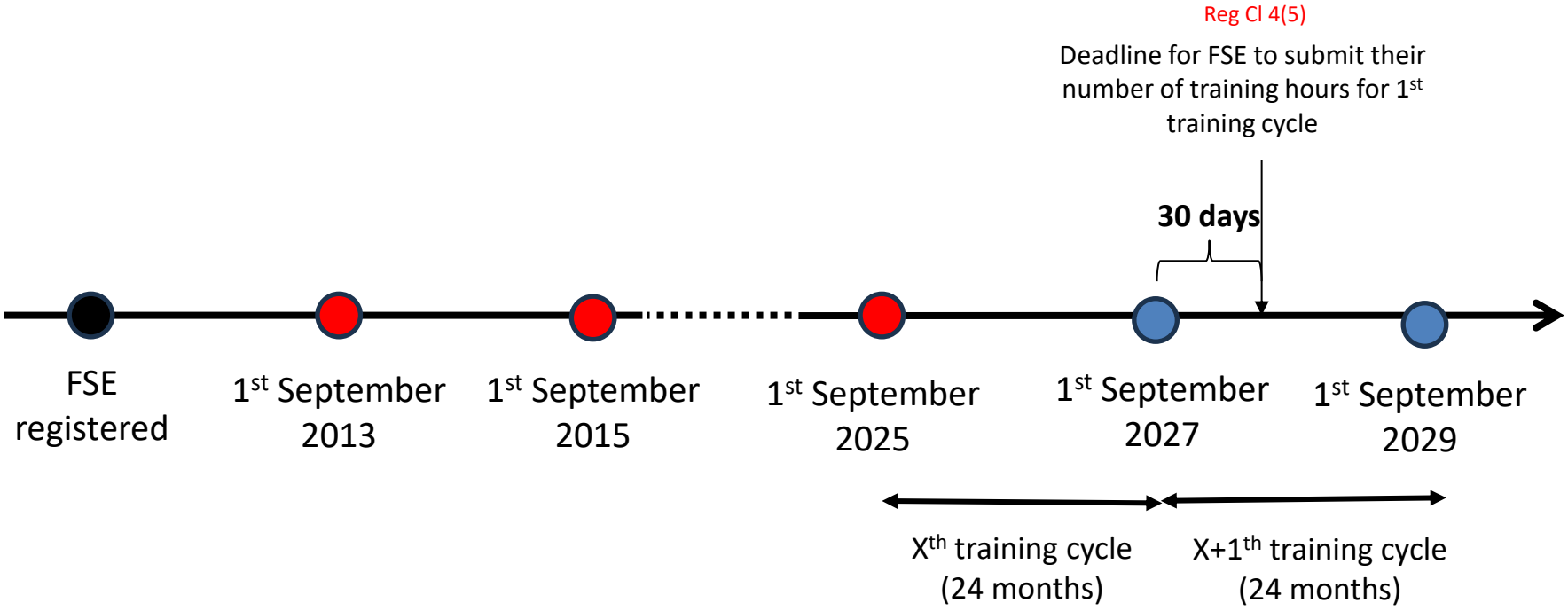
➢ Reinstatement works only involve the partitions in the shop unit during the tenancy or lease.

Admin Requirements Update

Continual Professional Education (CPE)

- Attain minimum 48 CPE hours for every 2 year-cycle. Cycle starts on:
  - ✓ 1st Sep 2013 (for FSEs registered before 1 Sep 2013)
  - ✓ FSE registration date (for FSEs registered after 1 Sep 2013)
- Different FSEs may have different CPE training cycle start/end dates
- FSE's responsibility to track and monitor own CPE training records. **DO NOT** send your supporting documents/declaration after every course/seminar.
- FSE to submit their declaration of CPE hours **not later than 30 days** after end of the training cycle.

FSE registered before 1st September 2013

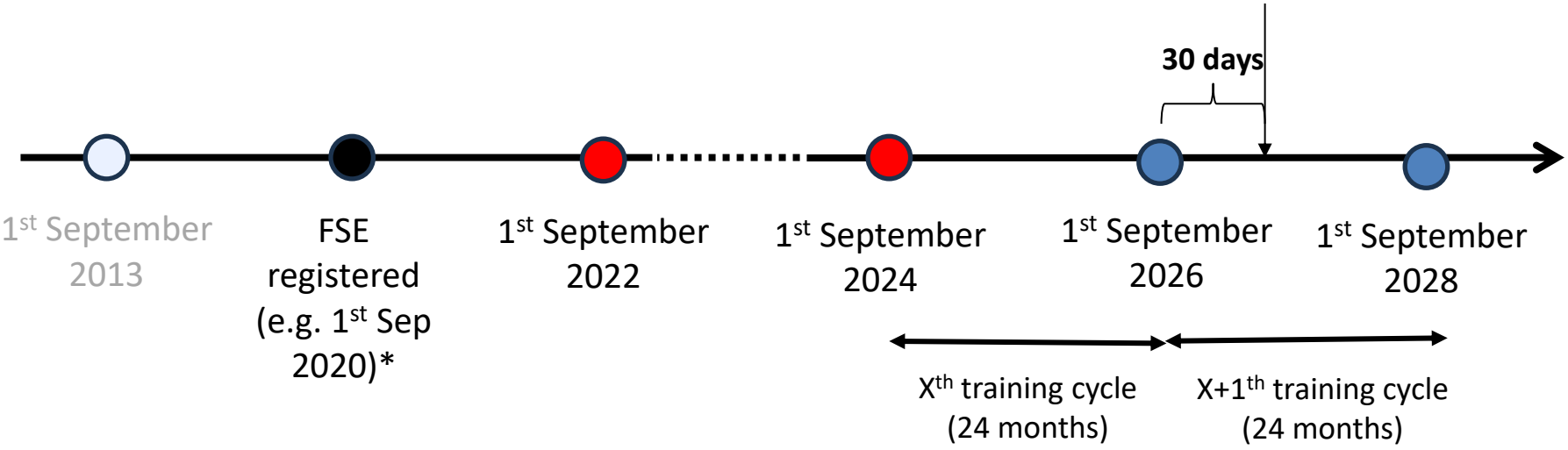


FSE registered after 1st September 2013

* Not all FSEs are registered on 1st September of the year. FSEs to note their registration date.

Reg Cl 4(5)

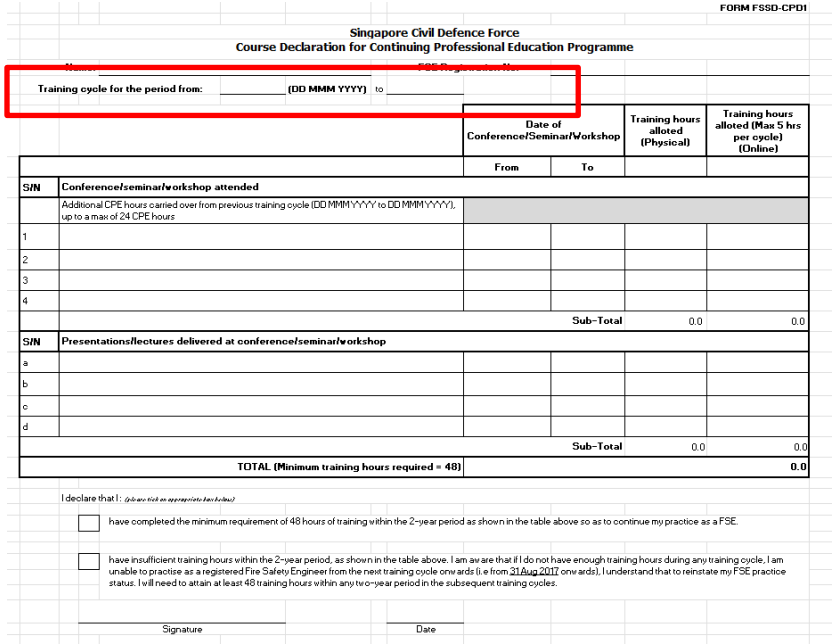
Deadline for FSE to submit their number of training hours for 1st training cycle



Reg Cl 4(7) (a)

CPE Declaration Form Submission

- Declaration form with documentary proof for each item **to be submitted at the end of training cycle** (NOT after every course)
- Ensure the training cycle period is correctly shown and all entries are within this period
- Each entry have to be supported by documentary proof of participation
- Form to be **signed and in pdf format**



FORM FSSD-CPD1

Singapore Civil Defence Force
Course Declaration for Continuing Professional Education Programme

Name: _____ FSSE Registration No: _____

Training cycle for the period from: _____ (DD MMM YYYY) to _____

S/N		Date of Conference/Seminar/Workshop		Training hours alloted (Physical)	Training hours alloted (Max 5 hrs per cycle) (Online)
		From	To		
S/N	Conference/seminar/workshop attended				
	Additional CPE hours carried over from previous training cycle (DD MMM YYYY to DD MMM YYYY), up to a max of 24 CPE hours				
1					
2					
3					
4					
			Sub-Total	0.0	0.0
S/N	Presentations/lectures delivered at conference/seminar/workshop				
a					
b					
c					
d					
			Sub-Total	0.0	0.0
	TOTAL (Minimum training hours required = 48)				0.0

I declare that I: *(please tick as appropriate box below)*

☐ have completed the minimum requirement of 48 hours of training within the 2-year period as shown in the table above so as to continue my practice as a FSE.

☐ have insufficient training hours within the 2-year period, as shown in the table above. I am aware that if I do not have enough training hours during any training cycle, I am unable to practise as a registered Fire Safety Engineer from the next training cycle onwards (i.e from 31 Aug 2017 onwards). I understand that to reinstate my FSE practice status. I will need to attain at least 48 training hours within any two-year period in the subsequent training cycles.

_____ Signature

_____ Date

CPE Declaration Platform Trial

- Digital platform is in development to facilitate CPE declaration submission.
- Trial to be implemented for submissions due in September 2026. Affected FSEs (3) for this upcoming training cycle will be contacted prior to deadline.

Request for approval of course for CPE hours

- Requests to be submitted **at least 1 month in advance** to allow sufficient time for review

- Requests shall be supported with details on the content of the course **(in pdf, not website links)**. Only fire safety engineering content shall be allocated CPE FSE hours

- Requests shall be supported with **confirmation and declaration** that the course would be able to provide a documentary proof of participation to all participants.

PB Waivers submitted via CoreNetX

- Due to the CoreNetX system, the same waiver description will be repeated for multiple issues.
- FSE to remind QP to submit a letter together with the PB waiver submission to request for the waiver descriptions for each issue to be changed accordingly.
- To assist this change, QP shall type all the issues into the waiver description in CorenetX, numbering each issue separately.

PB Waivers submitted via CoreNetX

E.g.

CoreNetX Description

Waiver Description

1. Clause 2.2.13b.(7)(c)(ii) of Fire Code 2023 - To allow the floor area of the corridor of Block 1 to 5 from 1st to 27th storey to be more than 12m away from the ventilation openings

2. Clause 2.2.13b.(7)(c)(ii) of Fire Code 2023 - To allow the floor area of the corridor of Block 1 to 5 from 1st to 27th storey to be more than 12m away from the ventilation openings

3. ....

Cover Letter Submitted

2. Please refer below the details for the waiver items:

Item No.	Description of waiver application and relevant clause number	Provision on Plan	State clearly the reasons in support of the application
1	Clause 2.2.13b.(7)(c)(ii) of Fire Code 2023 - To allow the floor area of the corridor of Block 1 from 1st to 27th storey to be more than 12m away from the ventilation openings	Kindly refer to the fire engineering report enclosed.	Kindly refer to the fire engineering report enclosed.
2	Clause 2.2.13b.(7)(c)(ii) of Fire Code 2023 - To allow the floor area of the corridor of Block 2 from 1st to 27th storey to be more than 12m away from the ventilation openings	Kindly refer to the fire engineering report enclosed	Kindly refer to the fire engineering report enclosed
3	Clause 2.2.13b.(7)(c)(ii) of Fire Code 2023 - To allow the floor area of the corridor of Block 3 from 1st to 27th storey to be more	Kindly refer to the fire engineering report enclosed	Kindly refer to the fire engineering report enclosed

Reminder on correspondences to PB officers

- Reminder to inform **all PB officers** when submission (PB waiver / FEDB / FER) is made
- Reminder to include **all PB officers** in the email distribution list for all correspondences on PB projects
- PB officers
  - ✓ Kristy Chen (kristy_chen@scdf.gov.sg)
  - ✓ Farah Binte Mohd Faudzi (farah_md_faudzi@scdf.gov.sg)

Other reminders

- Reminder that FSEs responsible for the project shall be in attendance for all meetings regarding the projects.
- Reminder that FSEs to ensure meetings are pre-arranged before turning up for discussions on the projects.
- Reminder that all waivers supported by fire engineering assessments shall be supported by submission of source code. Failure to do so may result in the waiver being rejected.

Singapore Fire Engineering Guidelines (SFEG) 2025

Acknowledgements to the SFEG Committee

Thank you for your hard work in putting the guidelines together for the past 10 years.

Special thanks to the past PB officers (Nicholas Lee & Khai Chern) for their contributions during their service to SCDF.

The Singapore Fire Safety Engineering Guidelines Committee

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Senior Assistant Commissioner Lian Wee Teck	Singapore Civil Defence Force
Deputy Chairman	
HTX Heng Chai Liang	Singapore Civil Defence Force
Secretary	
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Mr. Bryan Chin	Association of Consulting Engineers, Singapore (ACES) / AECOM
Er. Vijay S/O Rajaram	Institute of Engineers, Singapore (IES) / PDE
Mr. Liew Kim Hoe	LKH Fire
Er. Victor Ho	HiLT
Er. Lin Hoong Tat	SHEVS
Er. Henry Ho	IGNESIS

SFEG 2025: Key updates and clarifications

Inclusion of Chapter 9 Fire Engineering Assessment in Support of Fire Safety Waiver Application and Annex K

- FSEs to note on the methodologies for PB waiver in Chapter 9
- PB waivers submitted for clauses **not** listed in Annex K **may be rejected**.

Fire Safety Waivers to be substantiated with Fire Engineering Studies

SN	Waiver Clauses to be substantiated with fire engineering studies	Fire Code Requirements
1	1.2.1(A) Minimum air well size	To assess if the smaller air well size (10 to 14m) is sufficient for the ventilation of staircase
2	2.2.13(a) 2.2.13(b) (i) (iii) (iv) Smoke free approach to exit staircase	To assess if the non-compliance of the following is sufficient for smoke free approach: • Min width of 6m for air well and not less than $93m^2$ • At least 15% of floor area and not more than 9m from any part of the lobby • Cross ventilated corridor with at least 50% of the superficial area of the opposing external wall and any part of the corridor shall not be more than 13m from the opening
3	2.2.15 (c) External corridor serving area of refuge	To assess the deficiency of the external corridor serving the area of refuge
4	2.3.2 (c) External Exit Passageway 2.3.2 (d) Internal Exit Passageway	To assess if the non-compliance in the design and ventilation requirement of external exit passageway will affect egress of occupants To assess if the non-provision of 15% ventilation opening will affect egress of occupants
5	2.3.3 (a) (iii) Unprotected opening from internal staircase (1.5m horizontally and 3m vertically)	To assess the effect on the ab… horizontal and 3m… opening of…
6	2.3.3 (b) (ii) Unprotected opening from external staircase (3m horizontally and 3m vertically)	To…

2.2 Sensitivity Analysis

2.2 Sensitivity analysis

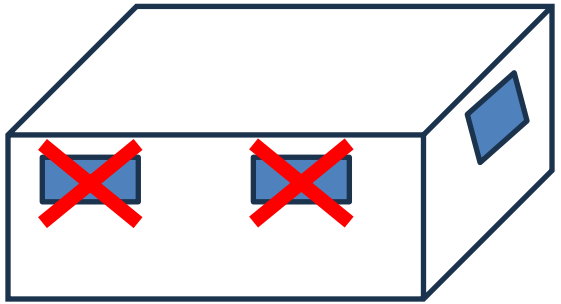
Sensitivity analysis shall be conducted to test the robustness of the proposed design. These mandatory studies as described below (where applicable) may not be exhaustive and the FSE is to propose all relevant sensitivity analysis in the FEDB.

FSE to tabulate the different sensitivity tests considered for each base case fire scenario and explain why (if any) the scenario is not applicable for a particular base case. SCDF may also request for other sensitivity analyses to be conducted, depending on the nature of the project and the extent of the alternative solutions.

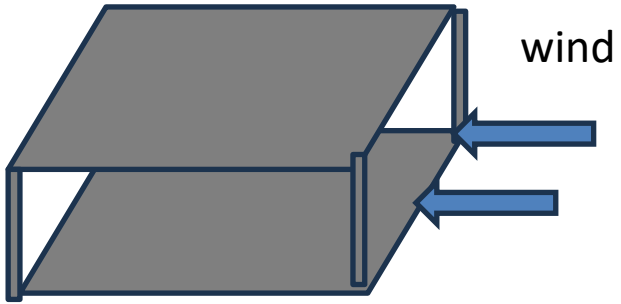
Clarification on sensitivity test with wind effects (2.2.2)

2.2.2 Sensitivity Test 2 – Wind effects

a. One side of vents (side with the most openings) is assumed to fail, i.e., vents modelled to be in closed position or subjected to wind effects that may negatively affect smoke venting for natural smoke control system.



Modelling vents in the closed position (side with the most openings) are only applicable for enclosed naturally ventilated spaces such as warehouses with designated vent openings at the higher level and replacement air inlets at the lower level.



3.2.1.d(ii)(iii) Water Monitor System

- Specification and test report of water monitor to be provided to support the time taken to activate and discharge system
- Safety factor (minimum 2) to be applied
- Fire size justification have to be provided in FER

(iii) Water monitor system

Time taken to activate automatic fire detection system (e.g. flame detectors, etc) and for the water to be discharged.

Based on the product specifications, FSE shall determine the minimum fire size that would activate the water monitor system. Thereafter, FSE shall then apply a safety factor (minimum 2) and include the delay time for water to be discharged to determine the fire size to be modelled. The delay time can be obtained from the specification and test report of the water monitor provided by the manufacturer. The delay time shall be verified and recorded during testing and commissioning. FSE shall include the fire size justification in the fire engineering reports.

For sprinkler protected buildings, where water monitor systems are installed in areas that are within the effective height of sprinklers, the design fire size shall be based on 2nd ring sprinkler activation, rather than water monitor system activation.

3.2.1.e Soot Yield (for industrial buildings and warehouses)

e Soot yield

FSE may adopt a soot yield, which refers to mass of soot generated during combustion divided by the mass loss of the test specimen, not lower than 0.1, unless he/she has justification to adopt other values.

The default soot yield value for industrial buildings and warehouses shall be 0.1. FSE may propose a different value only if the type of fuel load in the building is of specifically known usage during operation and does not change over its occupancy period.

9.5.2 Soot Yield (for carparks)

9.5.2 Soot yield

Soot yield shall not be lower than 0.1 kg/kg, unless FSE has justification to adopt other values. For vehicle fires, soot yield for general car parks shall not be lower than 0.07 kg/kg.

Q: Is this applicable to HGV and buses in car park / driveway?

- No. The value of 0.07 g/g is only applicable for general car parks.
- Variation in additional fuel load and type that are present in these vehicles e.g. the type of goods on the HGV.
- May require FSE to consider a higher soot yield compared to general car parks i.e. > 0.07 g/g.
- Default value of **0.1 g/g** shall apply otherwise

3.7.2 Replacement air for smoke control systems – Standby fans

At least 2 standby fans (n+2) shall be provided for each mechanical replacement air system, such that in the event any fan fails, the required replacement air rate will still be met. The standby fan shall be automatically activated in the event the duty fan fails.

To note:

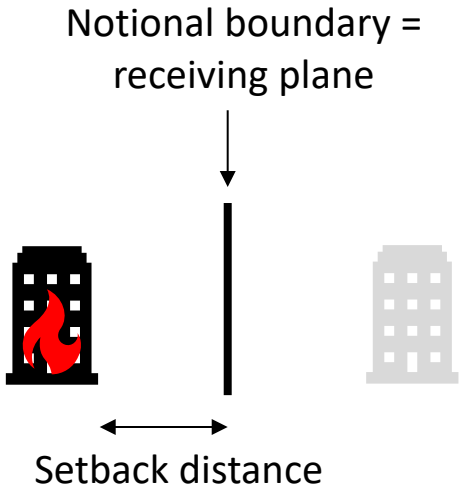
3.7 Replacement air for smoke control systems

Replacement air for engineered smoke control shall be provided fully by natural means. Where mechanical replacement air is proposed by FSE for SCDF's consideration, e.g., high containment facilities, laboratories that handle biological agents or toxins, clean room, deep underground infrastructure like rock cavern, tunnel, the following shall apply:

10.4 Set back distance – Acceptance criteria

Table 10.20 : Acceptance Criteria

Scenario	
Base case	Radiation receiving plane on site/notional boundary < 12.6 kW/m²



Note that receiving plane shall be **on site/notional boundary** i.e. **NOT** twice the distance of the notional boundary of the building on fire (SFEG 2015)

3.4.3 Selecting the CFD software

Use of any CFD software not listed above shall be justified by FSE. The use of any particular CFD software (including its version) must be reflected in the FEDB, FER and Peer Reviewer's Report.

Assessment of non-residential corridors(for relevant clauses listed in Annex K) – Main door of unit of fire origin Clause 9.2.1 (3)

9.2.1 Main door of unit of fire origin

The opening of the main door shall be based on:

a If the main door is not a fire rated door, the door shall be modelled open throughout the simulation.

b If the main door is fire rated, it shall open

(1) When the detectors within the unit detect the fire, followed by suitable pre-movement time

(2) If there are no detectors within the unit, the main door shall open after the unit is 20% smoke filled

(3) The duration of door opening shall be determined by FSE. A safety factor of 2 shall be applied to the door opening time. If it is a sensitivity study, a safety factor of 1.2 shall be applied to the door opening time.

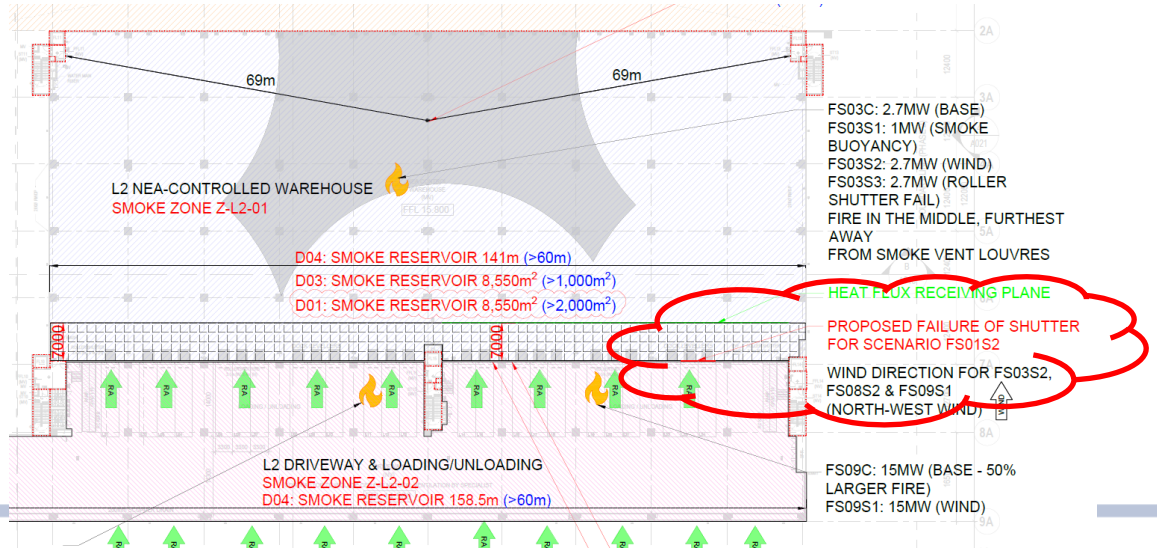
Other Fire Engineering Technical Requirements Update

Assessment to permit use of non-perforated automatic roller shutter as means of replacement air

- Typically for warehouses
- Sensitivity analysis to include failure of one roller shutter serving the space
  - ✓ Roller shutter failure shall be based on the largest effective opening area (or most critical location)
- Report to include table to show number and area of all the roller shutter serving the space to justify selected roller shutter failure.
- Selected roller shutter failure for sensitivity analysis shall also be indicated in the mark-up.

Smoke Zone	No. of Shutters Used for Replacement Air	Total Area of Replacement Air Through Shutters (m²)	Proposed No. of Shutters Failed for Sensitivity Analysis	Area of Replacement Air Affected (m²)	Relevant Fire Scenario
Z-L1-01	6	76.26	1	12.71	FS01S2; FS07S2
Z-L2-01	24	305.04	1	12.71	FS03S3
Z-L3-01	24	305.04	1	12.71	FS04S2; FS10S2
Z-L4-01	17	216.07	1	12.71	FS05S4
Z-L5-01	24	305.04	1	12.71	N.A.
Z-L6-01	13	165.23	1	12.71	FS06S4
Z-L6-02	11	139.81	1	12.71	N.A.

Table 6: Summary of Replacement Air Through Non-Perforated Roller Shutters and Proposed Failure of Roller Shutters for Sensitivity Analysis



NOTE: FSE to state if all shutters are of equal area. If there are different sizes, these shall be noted in the report with the larger shutter remaining close as sensitivity analysis.

Fire sterile zones

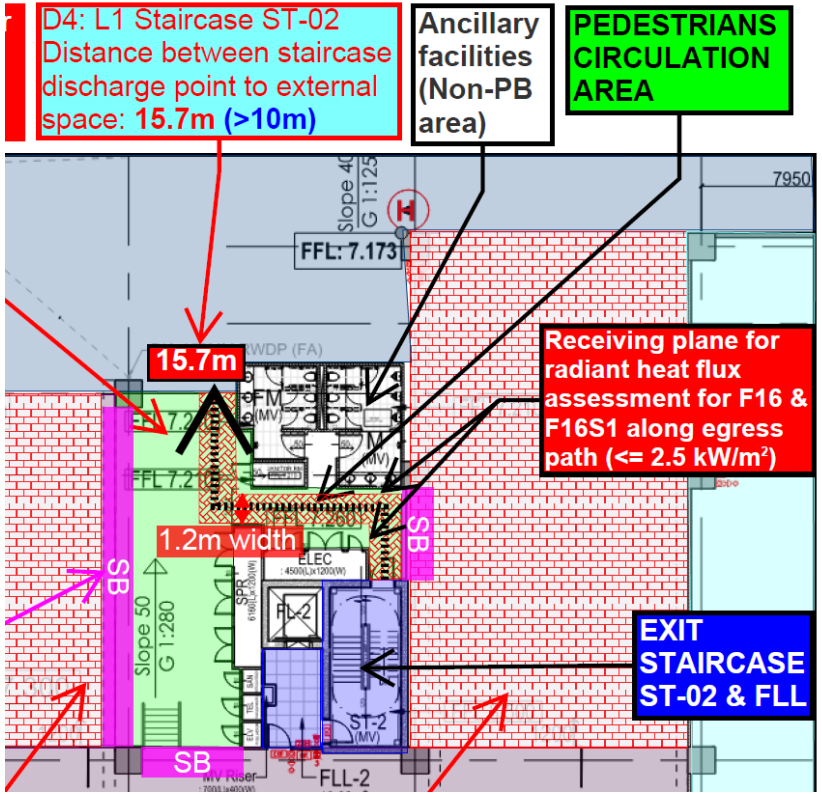
- Any areas that are required to be fire sterile as per the fire safety engineering assessment needs to be marked:
  - ✓ **On site,**
  - ✓ **On all submitted building plans, and**
  - ✓ **Recorded in the O&M**

Fire sterile zones – marking on site

- Floor markings to demarcate sterile zones need to be in:
  - ✓ Clear and contrasting colours for ease of identification
  - ✓ Permanent and able to withstand foot traffic – removable tape not recommended

Assessment for extended staircase discharge

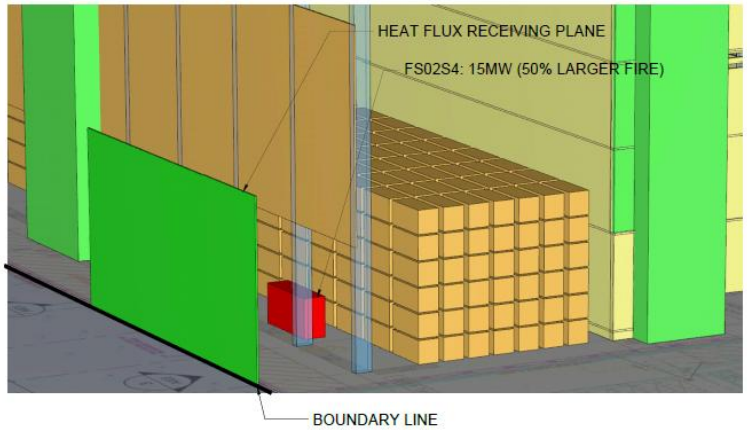
- There must be a designated discharge route from stairs to external
  - ✓ Has to be **clearly marked and signed**
  - ✓ Route to be marked out on site as well as on submitted plans
- Mark-ups for the discharge route needs to indicate the full width of the discharge route with receiving plane for radiation to assessment to be taken at the edge of the width of the discharge route.
- Note Cl 2.3.3.c.(2)(a) which requires the discharge point to be **within sight of** and **with direct access to an external space**. Deviations from this clause cannot be addressed by performance based.


D4: L1 Staircase ST-02
Distance between staircase discharge point to external space: 15.7m (>10m)
Ancillary facilities (Non-PB area)
PEDESTRIANS CIRCULATION AREA
Receiving plane for radiant heat flux assessment for F16 & F16S1 along egress path (<= 2.5 kW/m²)
EXIT STAIRCASE ST-02 & FLL
15.7m
1.2m width
FFL: 7.173
FFL 7.2
SB
SB
SB
Slope 50 G 1:280
Slope 40 G 1:125
7950
ELEC
FL-2
ST-2
FLL-2

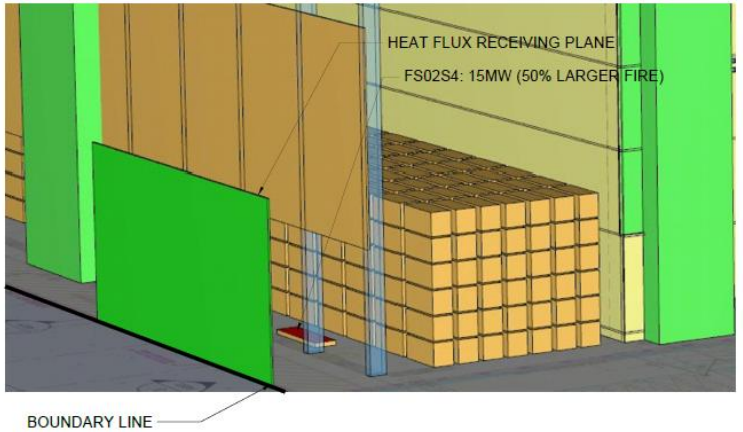
Radiation analysis by FDS

- For radiation assessment, FSE to represent the fire both as a block fire and plane fire in separate scenarios

BLOCK/3D FIRE (FIRE SURFACE ON 5 SIDES)



PLANE FIRE (FIRE SURFACE ON TOP)



Radiation analysis by FDS

- FSEs to note that radiation assessment via FDS is sensitive to mesh resolution.
- FSEs strongly encouraged to carry out hand calculations as sense check to ensure FDS results is within the same order of magnitude.

Thank you!

FSE-CPE = 3 hours
for FSE Workshop 2026 attendees