

Situations Deemed Unsuitable for Use of Performance-Based (PB) Approach

S/No	Category	Nature of deviations & related clauses
1	There is no suitable fire engineering methodology available and relevant to attain the fire safety objectives.	<ul style="list-style-type: none"> • Use of PB to assess fire-fighting provisions and ease of fire-fighting, fire lift, etc <ul style="list-style-type: none"> ○ Chapter 4 of Fire Code 2018. ○ Clause 6.6 of Fire Code 2018 on lifts e.g. compartmentation of fire lifts, etc. • Deviations involving provisions for Person With Disabilities (PWD) <ul style="list-style-type: none"> ○ Clause 2.4 of Fire Code 2018. • Variation in occupant load density <ul style="list-style-type: none"> ○ Table 1.4B of Fire Code 2018 on occupant load factors • Maximum width (2m) of each exit staircase <ul style="list-style-type: none"> ○ Clause 2.2.8 of Fire Code 2018
2	The consequences of the Fire Code deviation (regardless of whether there is a PB methodology to address the Fire Code deviation) are considered severe.	<ul style="list-style-type: none"> • Use of PB to assess the provision of single staircase internal discharge for residential development - <ul style="list-style-type: none"> ○ Clause 2.3.3(c)(3) of Fire Code 2018. ○ Clause 9.2.1(a)(10)(a) of Fire Code 2018 • Provide single staircase instead of multiple staircases <ul style="list-style-type: none"> ○ Clause 2.2.11 of Fire Code, and its related clauses in other parts of the Fire Code. • Remoteness of exits <ul style="list-style-type: none"> ○ Clause 2.3.12 of Fire Code 2018 • Cases involving provisions intended for redundancy e.g. provision of standby fans for engineered smoke control systems <ul style="list-style-type: none"> ○ Clause 7.4.5(m) of Fire Code 2018. • Omission of Smoke Stop Lobby and Fire Lift Lobby <ul style="list-style-type: none"> ○ Clause 2.2.13 b. of Fire Code 2018
3	The risk is not easily quantifiable, i.e. fire risks involving probabilities.	<ul style="list-style-type: none"> • Non-compliance to one-way travel distances or dead-end distance (There is a chance for the sole means of escape to be disrupted, leading to severe consequences.) <ul style="list-style-type: none"> ○ Clause 2.2.6 and Table 2.2A of Fire Code 2018. ○ Exception: The extended one-way distance is protected. • Omission of exit staircase protection for more than one side of the staircase (A much higher chance for exit staircase to be compromised)

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		<ul style="list-style-type: none"> ○ Clause 2.3.3(a)(1) of Fire Code 2018. ● There are more than 2 doors opening into internal exit passageway (this increases the chances of smoke infiltrating the exit passageway). <ul style="list-style-type: none"> ○ Clause 2.3.2(b)(2) of Fire Code 2018. ● No direct access to exit staircases for childcare occupancies (to safeguard children's escape and prevent them from disorientating when exposed to common egress routes without authoritative guidance) <ul style="list-style-type: none"> ○ Clause 9.3.2(d)(3) of Fire Code 2018 ● There are no dedicated staircases for cinema occupancies exceeding 200 persons (Occupants may be disorientated during egress, and there may be a sudden surge of cinema patrons into common escape areas, leading to congestion and affecting other occupants) <ul style="list-style-type: none"> ○ Clause 9.7.3(b)(2) of Fire Code 2018 ○ Can consider PB solution if there is at least one dedicated staircase solely for cinema patrons ● More than 4 residential units opening into discharge floor of residential development having not more than 50% of staircases discharging internally - <ul style="list-style-type: none"> ○ Clause 2.3.3(c)(3)(d) of Fire Code 2018.
4	The proposal does not align with prescriptive-based fire safety design policies.	<ul style="list-style-type: none"> ● Omission of both sprinklers system & fire rating <ul style="list-style-type: none"> ○ Sections 3.3 and 6.4 of Fire Code 2018 ○ Discourage stacked deviations ● Proposals to adopt mechanical ventilation for smoke stop lobbies in residential developments <ul style="list-style-type: none"> ○ Clause 2.2.13(b)(7)(b) of Fire Code 2018 ○ Lead to potential future requests for removal/non-maintenance of ventilation systems by condominium management ● Omission of sprinklers or fire alarm systems (Such systems are crucial for fire suppression as well as to provide early warning to occupants.) <ul style="list-style-type: none"> ○ Clause 6.3 of Fire Code 2018 & SS 645 ○ Clause 6.4 of Fire Code 2018 & CP 52 ○ Exceptions – PB can be considered only in situations when the fuel load is clearly limited based on building owner's operating processes, and there are site constraints which cannot be resolved.

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		<ul style="list-style-type: none"> • Compartmentation exceeds one-storey for areas above 24m in habitable height (Undesirable situation – fires can spread to multiple floors at high levels, making it difficult for emergency responders to mitigate) <ul style="list-style-type: none"> ○ Clause 3.2.4(b) of Fire Code 2018 ○ Exceptions – PB can be considered for large internal open spaces and unenclosed open-sided situations such as atriums, vehicle ramps, open-sided terraces, etc. There is lesser risk to occupants and emergency responders as smoke can easily disperse. • More than 50% of exit staircases for new sprinkler-protected buildings discharge internally (<i>For premises requiring multiple exit staircases</i>) <ul style="list-style-type: none"> ○ Clause 2.3.3(c)(2) of Fire Code 2018 ○ For new erections, it will be much easier for new buildings to design for proper discharge of exit staircases at the outset. This deviation should not be encouraged unless there are site constraints which cannot be overcome. • Delay in activation of engineered smoke control system (ESCS) – e.g. use of sprinklers instead of smoke detectors to activate ESCS <ul style="list-style-type: none"> ○ Clause 7.4.5 k. (1) of Fire Code 2018 ○ ESC should be activated early so as to prevent occupants from being exposed to more severe fire risk. ○ Exceptions – PB can be considered for such deviations in vehicle workshops, parking areas, loading bays and driveways where there is a buildup of exhaust smoke. • Maximum compartmentation size and storage height in Table 9.8A of Fire Code 2018. • Shortfall of separation distance between petrol service station and commercial/residential premises <ul style="list-style-type: none"> ○ Clause 9.6.2(a)(2) of Fire Code 2018