CLADDING SAFETY Victoria

Protocols for Mitigating Cladding Risk
Implementation

G.02 – IF-SCAN Procedure/Method

Version 2
Date: 13 March 2024

VICTORIA State Government

Aboriginal acknowledgement

Cladding Safety Victoria respectfully acknowledges the Traditional Owners and custodians of the land and water upon which we rely. We pay our respects to their Elders past, present and emerging. We recognise and value the ongoing contribution of Aboriginal people and communities to Victorian life. We embrace the spirit of reconciliation, working towards equality of outcomes and an equal voice.

Application of Minister's Guideline 15

These documents contain information, advice and support issued by CSV pursuant to Minister's Guideline 15 - Remediation Work Proposals for Mitigating Cladding Risk for Buildings Containing Combustible External Cladding. Municipal building surveyors and private building surveyors must have regard to the information, advice and support contained in these documents when fulfilling their functions under the Act and the Regulations in connection with Combustible External Cladding on buildings:

a) which are classified as Class 2 or Class 3 by the National Construction Code or contain any component which is classified as Class 2 or Class 3;

b) for which the work for the construction of the building was completed or an occupancy permit or certificate of final inspection was issued before 1 February 2021; and

c) which have Combustible External Cladding.

For the purposes of MG-15, Combustible External Cladding means:

a) aluminium composite panels (ACP) with a polymer core which is installed as external cladding, lining or attachments as part of an external wall system; and

b) expanded polystyrene (EPS) products used in an external insulation and finish (rendered) wall system.

Disclaimer

These documents have been prepared by experts across fire engineering, fire safety, building surveying and architectural fields. These documents demonstrate CSV's methodology for developing Remediation Work Proposals which are intended to address risks associated with Combustible External Cladding on Class 2 and Class 3 buildings in Victoria. These technical documents are complex and should only be applied by persons who understand how the entire series might apply to any particular building. Apartment owners may wish to contact CSV or their Municipal Building Surveyor to discuss how these principles have been or will be applied to their building.

CSV reserves the right to modify the content of these documents as may be reasonably necessary. Please ensure that you are using the most up to date version of these documents.

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Abbreviations

Term	Meaning
ACP-PE	Aluminium Composite Panel with a polyethylene core
CRMF	Cladding Risk Mitigation Framework
CFSR	Cladding Fire Spread Risk
CSV	Cladding Safety Victoria
EPS	Expanded Polystyrene
Framework	Cladding Risk Mitigation Framework
IF-SCAN	Initial Fire Spread in Cladding Assessment Number
MBS	Municipal Building Surveyor
MG-15	Minister's Guideline 15
NCC	National Construction Code
PMCR	Protocols for Mitigating Cladding Risk
RWP	Remediation Work Proposal
SOU	Sole Occupancy Unit as defined in the National Construction Code

1 Introduction

The Cladding Risk Prioritisation Model (CRPM) B.01 establishes a framework to prioritise buildings according to risk. Building risk data is collated and used to divide buildings into different risk cohorts and then to order the buildings within each cohort.

A critical first step of the data included in this process is the Initial Fire Spread in Cladding Assessment Number (IF-SCAN) for each building. The IF-SCAN serves to classify and triage buildings according to the level of risk of a significant facade fire which may occur prior to emergency services intervention.

1.1 Document purpose

The purpose of this document is to describe the process used to assess clusters of combustible cladding using the IF-SCAN as the main determinate in the categorisation of combustible cladding risk on an existing building. The figure in Section 8 outlines the core steps undertaken for each building in determining the initial risk category and the subsequent further combustible cladding review of each building to assist with the potential lower cost and proportionate intervention pathway.

1.2 What is an IF-SCAN?

The Initial Fire Spread in Cladding Assessment Number is intended to identify those buildings on which cladding could plausibly result in a facade fire of significant scale. The IF-SCAN is an estimate of the number of apartments that would be directly impacted under a worst-case scenario by a fire that ignites and spreads in combustible cladding prior to the first suppression response by fire fighting agencies. As the first step, it is a single measure for the entire building's risk-based classification in accordance with the CRMF.

1.3 How is an IF-SCAN used for prioritisation?

The IF-SCAN assessment is the primary determinant of prioritisation for CSV.

For this reason, the IF-SCAN is a conservative measure and assessments tend towards over rather than under estimation. For example:

- Where the estimate is expressed as a range, the maximum value in the range is used to represent the IF-SCAN; and
- Where the type of cladding is unclear, it is assumed a worst-type of cladding is in place.

The IF-SCAN thresholds are an integral part of the Cladding Risk Prioritisation Model adopted by the Victorian Government for a risk-based approach in the reduction of fire risk associated with combustible external cladding on certain residential buildings in Victoria.

The IF-SCAN thresholds are tabulated below.

Table 1: IF-SCAN thresholds

	Risk description	
Cladding risk rating category	**Sprinkler protected**	**Not sprinkler protected**
Unacceptable	Risk of fire spread across the combustible external cladding of **≥ 4 SOUs**	Risk of fire spread across the combustible external cladding of **≥ 3 SOUs**
Elevated	Risk of fire spread across the combustible external cladding of **3 SOUs**	Risk of fire spread across the combustible external cladding of **2 SOUs**
Low	Risk of fire spread across the combustible external cladding of **≤ 2 SOUs**	Risk of fire spread across the combustible external cladding of **≤ 1 SOU**

2 Key features of an IF-SCAN

2.1 Qualitative assessment – Step 1

The analysis to determine the IF-SCAN is qualitative and is performed by the Cladding Safety Victoria Expert Panel. An assessment methodology informed by co-operative enquiry[1] has been adopted as the most appropriate method for the assessment of a large number of properties achieving consistency across the building pool.

This approach is designed to provide a consistent and repeatable method for identifying the contribution that cladding makes to a building's fire risk. It is not overly reliant on quantitative data, which is generally:

- Unavailable
- Unreliable as a risk differentiator, or
- Not captured universally for the buildings to be assessed.

This has the following advantages:

- Minimal external resource requirement
- Expedited decision making
- Ensures that the primary focus of risk assessments is on cladding on buildings that has the highest levels of combustibility
- Assists in the determination of the high-level fire safety risk presented by the cladding (The Cladding Risk Premium)2
- Extends upon cladding configuration and building data obtained through the State-wide Cladding Audit (SCA), captured using the iAuditor Inspection Report and Risk Assessment Tool (RAT), where available.

Other fire safety features of a building are important but remain secondary consideration for the purposes of determining the IF-SCAN.

2.2 Assumptions

The following assumptions are applicable to the assessment of the IF-SCAN:

- A qualitative judgement is made about the plausibility of a combustible cladding fire starting in a location that will directly impact all connected SOUs in the Early Fire Spread Estimate. Likely ignition source is considered.
- The influence of any fire dynamic behaviour is approached qualitatively and not quantitatively. The behaviour of a surmised cladding fire is derived through the discussion and agreement of the assessing expert panel.
- It is assumed the fire brigade would arrive quickly, in accordance with their charter and response targets, to manage evacuation and begin suppression activities.

[1] A participatory research method pioneered by John Heron (social scientist).

[2] All buildings present some level of fire safety risk. The principal CSV assessment focus is on how cladding adds to a building's fire risk above other risk factors. The additional risk that cladding brings is akin to a Cladding Risk Premium and is the focus of the IF-SCAN measure.

2.3 Identification of cladding type

It is important to identify the type of combustible external cladding on a building. The types of cladding that represents the highest risk and forms part of the Cladding Risk Mitigation Framework approved by the Victorian Government are:

- aluminium composite panels (ACP) with a polymer core which is installed as external cladding, lining or attachments as part of an external wall system; and
- Expanded Polystyrene (EPS) used as an external insulation and finish rendered wall system.

These two material types are recognised as being highly combustible and have been the subject of some very serious cladding fires throughout the world.

It is acknowledged that within each category there are a variety of product compositions with different fire spread behaviour properties. As such it is acknowledged that some products may contribute to the spread of fire more than others due to the percentage of combustible material present in the product or flame retardant additives in their composition.

Material groups that have been used as cladding or as attachments that represent a much lower combustibility than that of EPS and ACP PE are listed as follows:

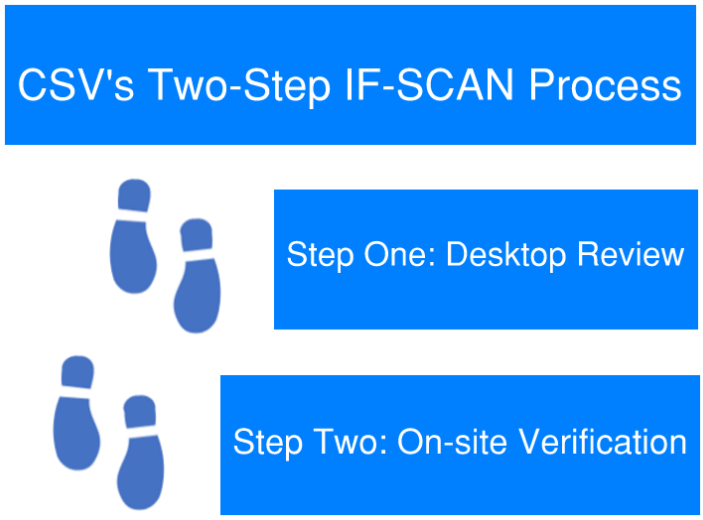
- ACP Flame Retardant (flame retardant panels are those with flame retardant additives included)
- Timber (Dense hardwood types)
- Timber Composites
- Insulated steel sandwich panel
- Conpolcrete or other equivalent composite concrete

The IF-SCAN has been developed based on the most combustible material types which gives the worst-case fire spread in the initial stages of a cladding fuelled fire. The low material combustibility and associated lower risk of the above products has resulted in exclusion from the IFSCAN assessment.

2.4 Two-step IF-SCAN process

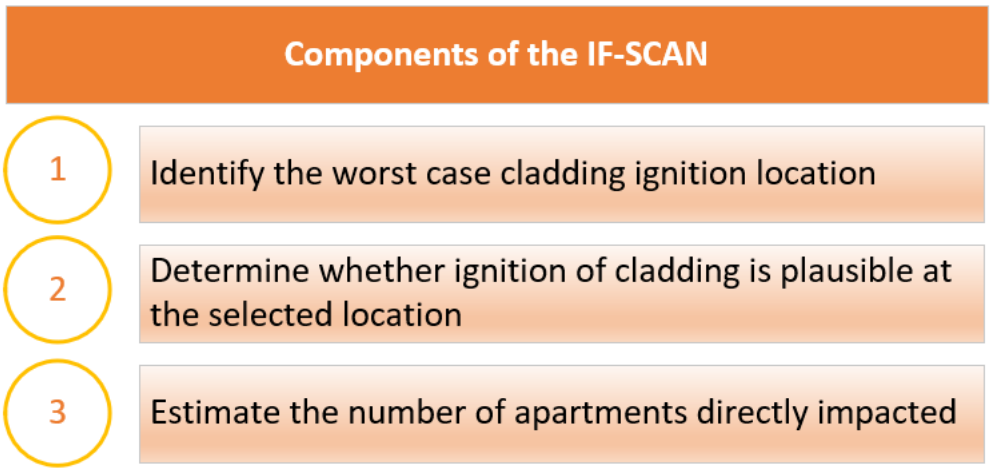
A desktop assessment is undertaken using a variety of information sources including; the statewide cladding audit report, architectural plans, fire engineering reports, destructive testing and laboratory reports, building location imagery via a web mapping platform (google earth, street view, Maps etc).

Following on from the desktop review, a site inspection is carried out to verify (ground truth) the desktop IF-SCAN assessment.



3 IF-SCAN desktop assessment

There are three steps to providing a quantitative estimate of the IF-SCAN as illustrated below. While these steps have the appearance of being sequential, they are interactive in reality.



3.1 Select the worst-case cladding ignition location

The Expert Panel must determine the point on the building facade where an ignition could conceivably give rise to the largest facade fire spread via cladding. For this assessment, the fire does not need to originate in cladding, but be capable of reaching cladding. The worst-case location is the point where the fire first ignites cladding.

This entails considering where the type, quantity and configuration (vertical/horizontal) of combustible cladding provides for the largest continued run of fire across the facade via cladding only. This places an emphasis on the selection of locations associated with extended vertical runs of cladding over multiple building levels.

Consideration should be given to the following broadly:

1. The proximity of the cladding to a fire source.
2. Proximity of the cladding to openings in SOU external walls.
3. The potential fuel load that combustible cladding could contribute to fire of the cladding (size of the combustible panels).
4. The configuration and connectivity of the cladding.
5. The external wall geometries including:
    - balconies and balcony returns;
    - connectivity through to SOU external walls;
    - eave overhang, soffit and canopy depths;
    - balustrades and the potential for ‘leapfrogging’; and
    - size, location and configuration of attachments.
6. Building articulation.

3.2 Determine whether the ignition of cladding is plausible at the selected location

A test of plausibility is essential to ensure that a building is not prioritised on the basis of a cladding ignition risk that is highly unlikely to eventuate. For instance, in a sprinklered building where there may not be any external ignition threats, sprinkler failure is considered highly unlikely.

The Expert Panel can only select a worst-case cladding ignition location where a qualitative judgement indicates that ignition in cladding at the selected point is plausible.

Consideration was given to two key categories of ignition threat: (i) threats manifesting at the ground-level or balcony, typically from external sources; (ii) threats manifesting over the facade of a building typically from within an SOU out through openings to the building facade.

A facade location is considered a plausible location for cladding to ignite where the cladding is proximate to:

- A balcony;
- A building opening;
- Established vegetation;
- Ground level/basement carpark;
- Laneways and street-side traffic; or
- Adjacent buildings.

3.3 Estimate the number of apartments directly impacted

Combustible cladding has properties that allow a cladding fire to intensify, accelerate fire spread and so facilitate penetration of fire to internal structures/compartments.

The IF-SCAN is an indicator of the level of exposure (consequence) to the worst of these cladding properties. In that sense, this measure indicates the extent to which combustible cladding will rapidly engage multiple SOUs in a fire after it has become established.

Having established the potential initial spread of fire across the cladding on a facade, the CSV Expert Panel can use architectural plans to relate that external spread to the internal apartments (or SOUs). The IF-SCAN is a count of the SOUs impacted by a worst case cladding fuelled fire spread across a building facade.

A building may have many clusters of cladding that connects apartments across several or all elevations, however the IF-SCAN value is the value where the highest number of apartments are connected via combustible cladding representing the worst case and possibly the most significant area of fire spread.

While these steps have the appearance of being sequential, they are interactive in reality. The practical experience of conducting these assessments shows that it is no point selecting a worst case cladding ignition location in phase 1, only to render the fire implausible in phase 2.

4 Site inspection

A process of verifying (ground truthing) the desktop analysis and IF-SCAN is required.

4.1 Intent of site inspection

External site inspections (verification inspections) are required to:

1. Review and validate the desktop-based assessments.
2. Allow for adjustments to the IF-SCAN where additional information or evidence is observed or made available.
3. Identify and/or acknowledge any *exceptional circumstances* that may require further CSV discussion and consideration.

Pictures of each facade and notes should be taken and appended to the original assessment report for each building verified.

4.2 Matters to verify during site inspection

The following matters should be verified during the site inspection:

- Confirmation of the cladding material on the facade where the IF-SCAN was determined during the desktop assessment.
- Verify that the selected location represents a worst-case cladding fire scenario.
- Verify that the estimated number of SOUs connected by cladding is correct.
- Note the distance between the combustible facade elements and an adjoining building, i.e., less than or more than 3m from an adjoining building.
- Identify any *exceptional circumstances* or cladding related risk that may not have been represented appropriately by the IF-SCAN assessment.

**Exceptional circumstances* might include but not limited to the configuration or location of combustible cladding that may not be directly connected to SOUs but may substantially impact occupants in a plausible fire scenario.

5 Configuration of cladding to determine critical path

The configuration of the various cladding elements is identified to ascertain the critical path for the spread of fire for the purposes of the IF-SCAN. In addition to cladding type considerations, this section looks at some general concepts relating to cladding element proximity and geometry.

5.1 Direction of fire spread

The orientation of the cladding on the facade (horizontally, vertically or irregularly arranged) is an important focus of cladding cluster assessments.

Whilst horizontal spread flame is plausible, the above image highlights buoyancy as a driving force in flame propagation.

- For vertical flame spread, there is a greater likelihood that a fire will reach a second cladding panel from the cladding panel of first ignition than is the case for horizontal fire spread.

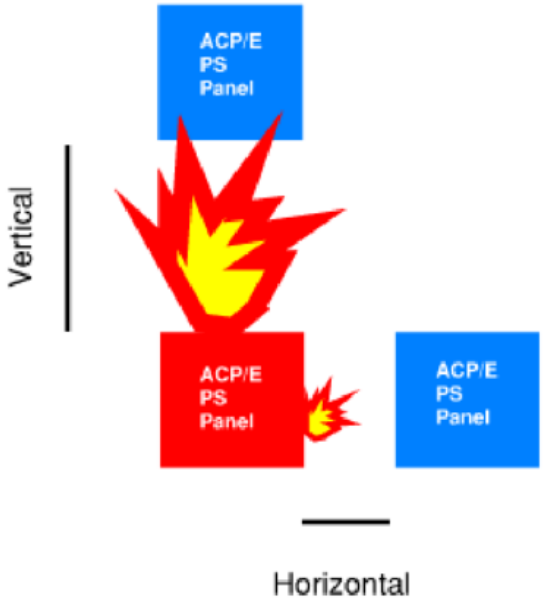


Figure 1: For the purposes of ignition, it is generally assumed that flames from a burning ACP/EPS panel are more likely to spread vertically than horizontally

5.2 Fuel package of cladding panel

The Expert Panel consider the size of cladding elements and thus the potential of these elements to contribute to the spread of flame and overall fire severity.

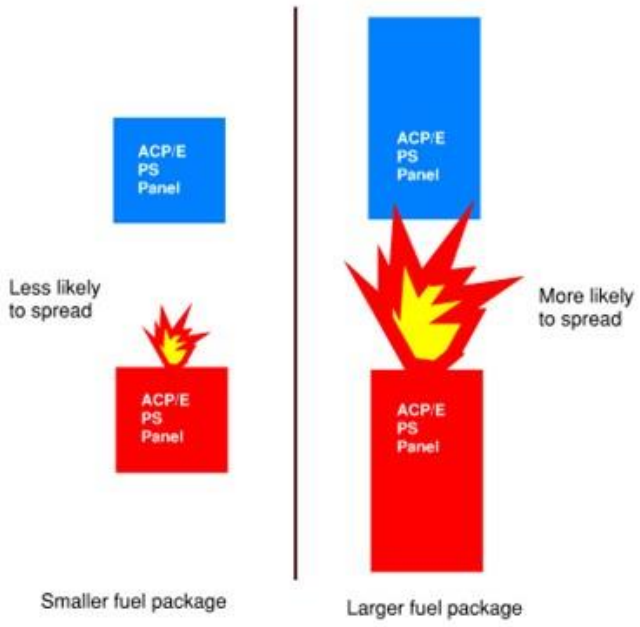
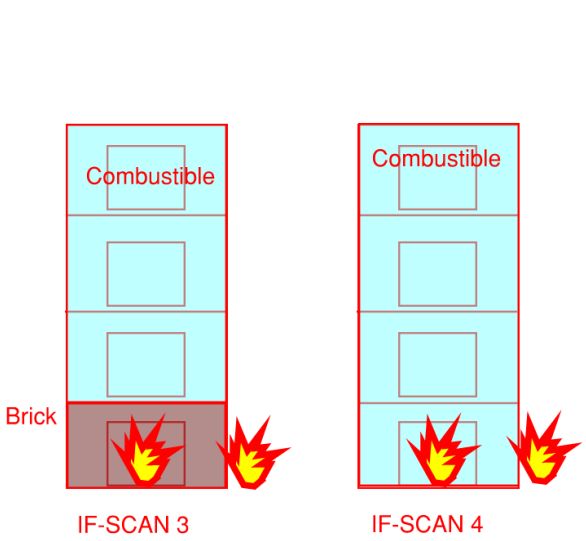


Figure 2: For the purposes of ignition, it is also assumed that the larger the burning panel (greater fuel load density), the more likely neighbouring panels will be ignited

6 IF-SCAN counting rules

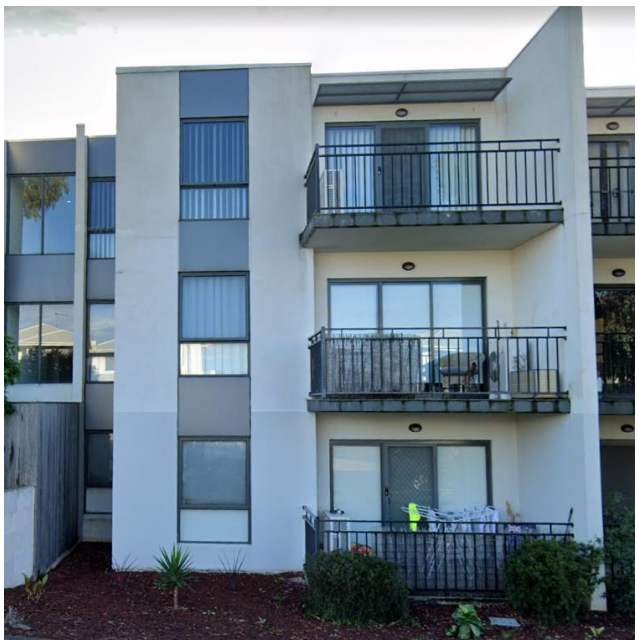
This section reviews a range of examples that highlight different considerations that inform the discussion about how to count the number of apartments (SOUs) impacted by the early stages of a cladding fire.

6.1 Originating SOU or ground based, balcony or external fire sources



When considering an IF-SCAN count from an external ground based fire, balcony or a flash over fire, the originating SOU is not counted unless that SOU has combustible cladding that extends down to its floor level. **IF-SCAN is 4**.

6.2 Spandrels



Combustible spandrels - non sprinklered building (used as infill panels above windows). In this example there are 6 SOUs configured in a 3 vertical x 2 horizontal centred around the vertical fire rated separating wall. The spandrel infills are clad with a combustible material. **IF-SCAN value is 2** vertically from a possible SOU flash over event. The size of the panel compared to the windows does not provide a likely vertical spread past the SOU immediately above the spandrel. In this configuration, the combustible infill panel must be limited to a maximum 900mm vertical height between levels.

6.3 Horizontal balcony elements

An ACP balcony attachment that is external to the building envelope would not generate an IF-SCAN if it meets <u>all of</u> the following criteria:

- may return back to the wall of the building if the cladding on that wall is non combustible;
- no adjacent SOU window or door openings within 450mm of the ACP attachment;
- is not more than 1.0m in height;
- is constructed of non-combustible material on the inside face;
- spacing between attachments is more than1:1.5 ratio panels to gap; and
- soffits are non-combustible.

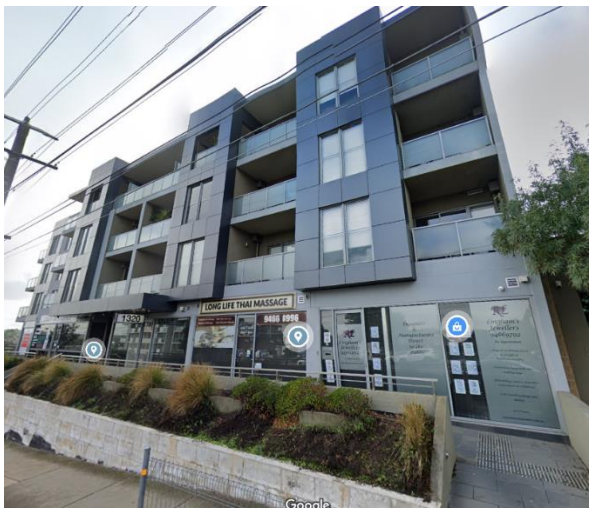
The above examples meet the criteria and therefore **IF-SCAN is 0**.

An EPS balcony attachment that is external to the building envelope would not generate an IF-SCAN if it meets <u>all of</u> the following criteria:

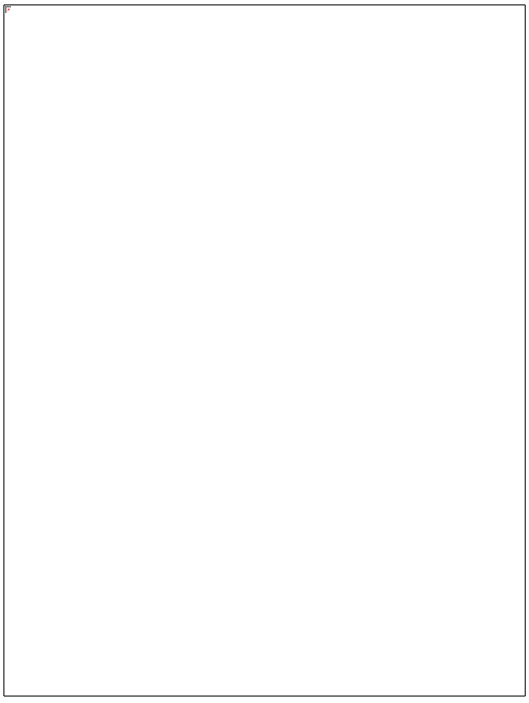
- may return back to the wall of the building if the cladding on that wall is non combustible;
- no adjacent SOU window or door openings within 450mm of the EPS attachment;
- not more than 1.2m in height;
- not constructed of combustible material on the inside face;
- spacing between horizontal attachments a minimum 1:1 ratio gap to horizontal attachments; and
- soffits are non-combustible.

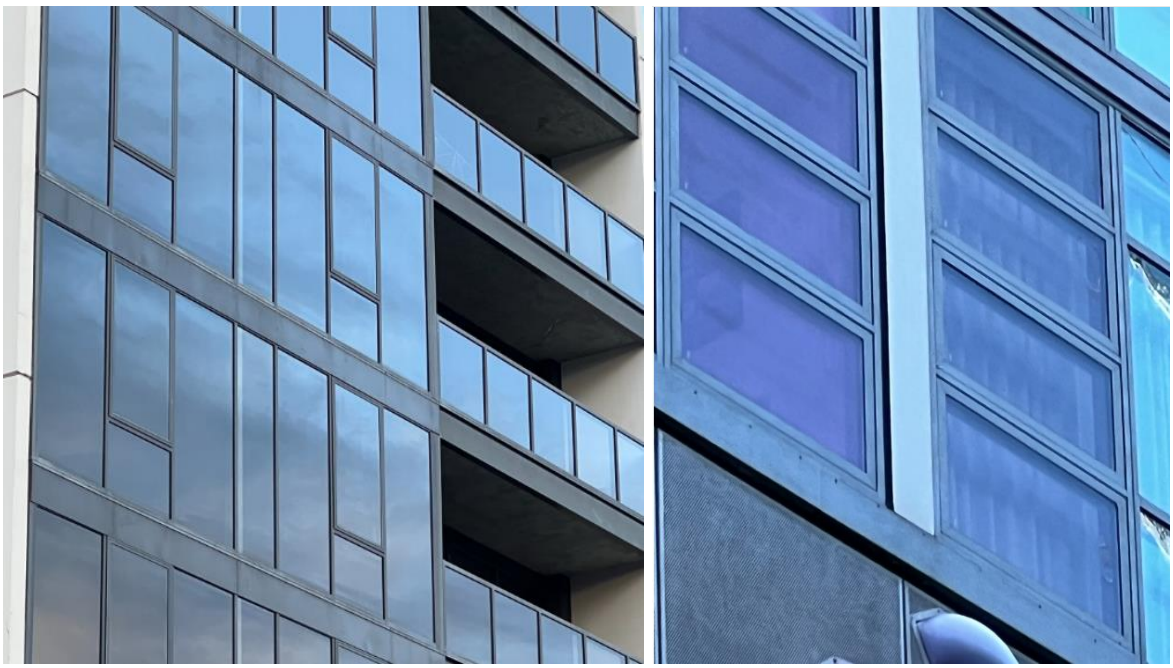
The above example meets the criteria and therefore **IF-SCAN is 0**.

6.4 Feature boxed attachments and capping

	
Architectural box/capping that does not return into the balcony (its size is about 75mm-150mm in depth), is not considered of sufficient size to spread into the SOU. The absence of a combustible soffit between SOUs also ensures no unreasonable spread into SOUs from an external fire source. **IF-SCAN is 0**.	This boxed feature does generate an IF-SCAN vertically (unsprinklered building), it surrounds the windows of the SOUs and is of a sufficient size to generate unreasonable fire spread. **IF-SCAN is 3**.

6.5 Small horizontal and vertical infills

	
In a sprinklered building, where combustible cladding is EPS and has been used in small strips covering slabs and or dividing walls between SOUs, that configuration does not give rise to a vertical or horizontal IF-SCAN (maximum of 4 storeys connected and limited to clusters where no part of the cluster is located above the fourth storey). The small area of cladding is considered to be trivial and not unreasonably contributing to the spread of fire in a sprinklered building. In this configuration an external hazard such as private courtyard or balcony will not affect the assessment. **IFSCAN is 0**.	



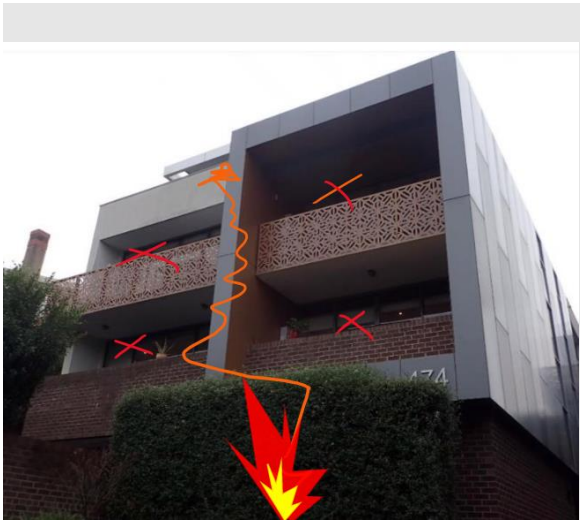
Sprinklered buildings - small ACP cover strips or flashings that are over slabs or dividing walls do not generate an IF-SCAN as the amount of cladding is unlikely to significantly contribute to the spread of fire. In the case of vertical strips, the vertical strips must not be in proximity to an external fire source. Maximum of 3 storeys connected and limited to clusters where no part of the cluster is located above the fourth storey. **IF-SCAN is 0**.

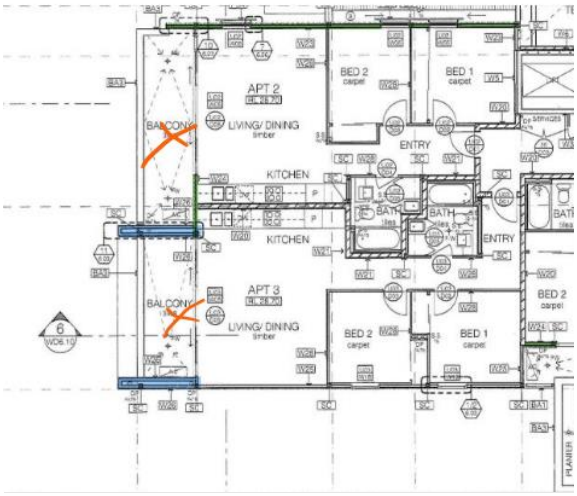
6.6 Eaves, soffits and canopies

Combustible eaves which have a projection of 600mm or less from the facade does not generate an IF-SCAN. In the case of small eaves projections, extreme heat is less likely to be trapped within the horizontal soffit to give rise to a plausible horizontal fire via the eave.

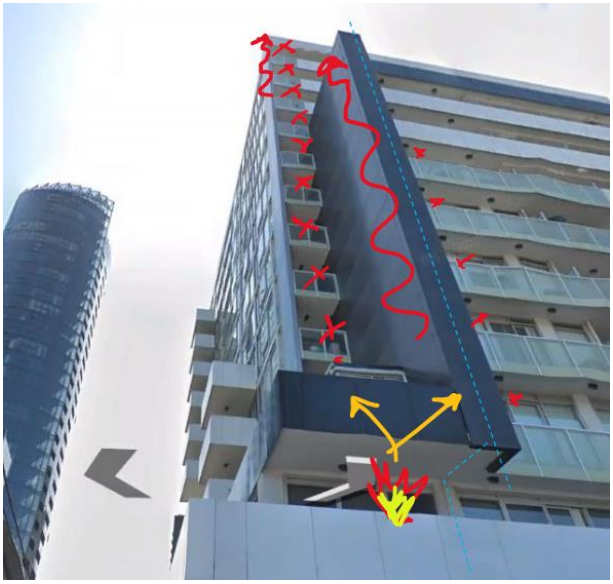
	
The first level soffits are more than 600mm in width and generate an IF-SCAN but in this case, these are broken up by a non-combustible dividing wall. Therefore resulting in only an IF-SCAN of 1 to the level 1 SOUs.	Combustible fascia does not generate an IF-SCAN due to it being offset from the building and is horizontally configured.

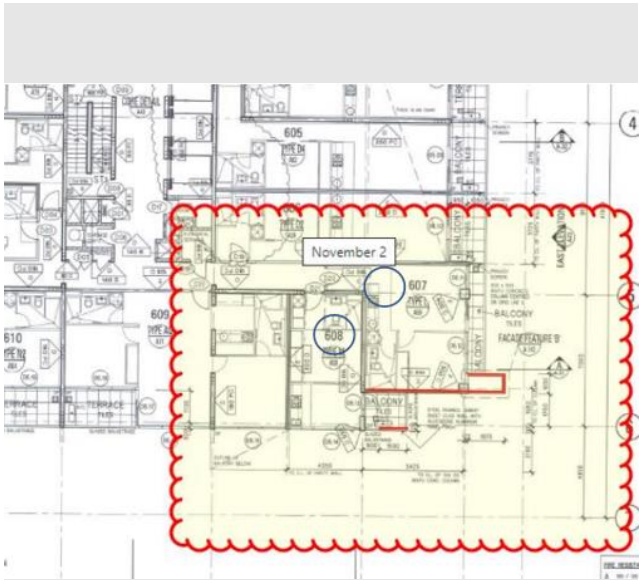
6.7 Return walls and fins





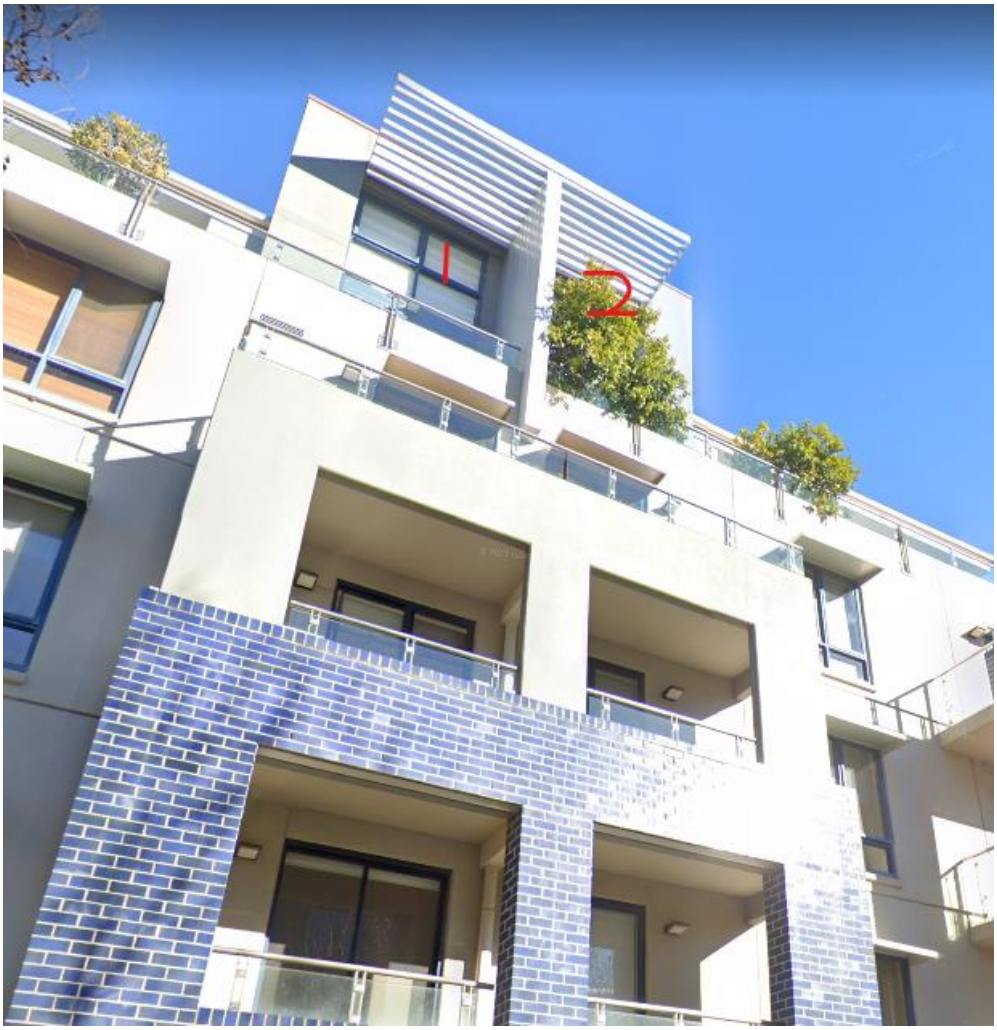
1. The critical path for the spread of fire is identified as the continuous ACP panel connecting 2 SOUs horizontally (returning into balconies) and 2 levels vertically, with a fire starting at the ground level.
2. The location of the separating wall is confirmed through available architectural plans (right).
3. The selected path results in an **IF-SCAN of 4**.



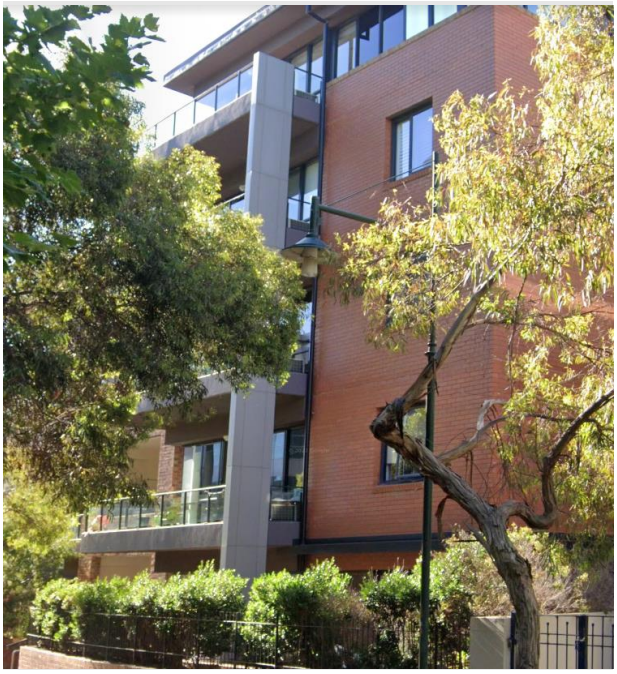


The assessment of this building estimated that cladding could (at maximum) carry fire to 17 SOUs (via Black and White ACP). The ACP returns horizontally into an adjoining SOU as shown on the plans. **IF-SCAN is 17**.

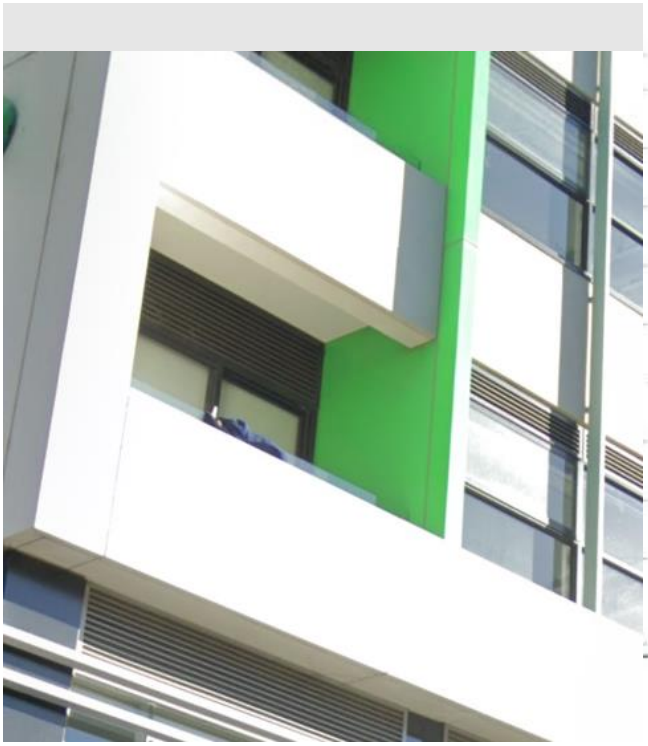
6.8 Vertical attachments



Vertical combustible fin does not extend down to lower apartments, only upper-level apartments have connectivity via cladding with an **IF-SCAN of 2** horizontally.



Vertical attachments not directly connected to SOUs, lower fuel loads inherent in this configuration, and the elements are offset from the SOU openings. In these examples the balconies are considered open in nature, therefore not allowing for excessive heat to build up within the balcony space.



The green ACP extends vertically and returns horizontally to the adjoining SOU and generates an **IFSCAN of 14**. The adjacent small vertical attachment is not of a sufficient size and it is off-set to the building in a perpendicular orientation. It would not be considered as contributing to an unreasonable fire spread. The worst case connectivity via the green ACP is selected as the IF-SCAN value for the building.

The attachment on the left does not generate an IF-SCAN, however the one on the right would as it is close to windows and could involve up to three SOUs If the vertical combustible attachment is within 450mm of an openable window- **IF-SCAN is 3.**

6.9 Canopies and feature walls

Potential fuel load of the ACP is considered:

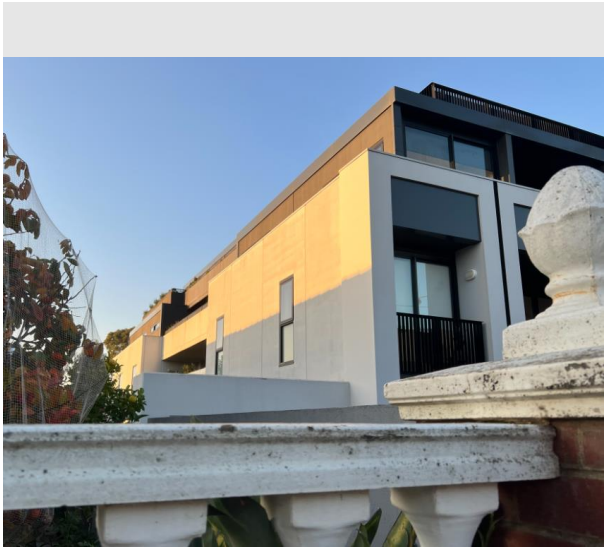
- Radiative feedback between ACP panels on opposing vertical elements.
- Glass failure to the recessed area.
- Deep overhangs that may assist horizontal spread via the ACP between SOUs.
- Large fuel load and potential fire size.

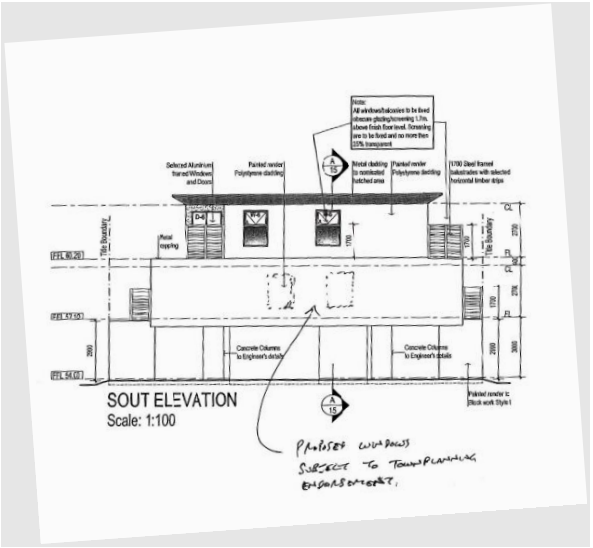
IF-SCAN is 8.

6.10 Articulations

The podium level residential parts are set back from the ACP columns at the ground floor level and level 1. It is considered unlikely that the podium level SOUs would be subject to the spread of fire from the ACP clad columns.

Masonry walls highlighted in blue directly behind the ACP columns will likely shield the level 1 SOUs from radiant heat flux resulting from a cladding fire in this area. **IF-SCAN is 0**.





Upper level articulation (or wedding cake) breaks up any potential vertical fire spread. If the setback of the upper storey is more than 1.1m then an IF-SCAN cannot be generated vertically. Consider only horizontal IF-SCAN between SOUs if applicable in this case.

7 Cluster identification and mark up method – Steps 2 to 4

7.1 What is cluster analysis

A cluster analysis identifies all areas of concern where combustible cladding on a building facade connects two or more sole occupancy units (SOUs) and could promote fire spread between SOUs.

“Area(s) of concern” means areas where, a fire could ignite and has the potential to reach to external cladding and spread between two SOUs or more. This spread could be vertical, horizontal or combination of vertical and horizontal spread.

7.2 Rationale for cluster analysis

Cluster analysis identifies and quantifies all areas of concern for external fire spread between two or more SOUs, connected through combustible external cladding material. This will assist CSV to develop Remediation Work Proposal (RWP) on those targeted areas of concern for immediate intervention and/or interventions through the Procedure for Mitigating Cladding Risk (PMCR).

Cluster analysis will assist to develop an efficient and cost-effective solution for unacceptable and elevated cladding fire risk to reduce to acceptable/low level of cladding fire risk on a building.

7.3 Assumptions and limitations

There will be a certain level of assumption on the extent of combustible external cladding(s) on the building due to access limitations, for all unacceptable and elevated risk buildings. Assumed extent of cladding will be marked up according to CSV colour convention (see Appendix C, which provides the Colour Legend for Combustible Cladding Markup).

Cluster analysis considers CSV’s in scope products on the external facade. These include Expanded Polystyrene (EPS) and Aluminium Composite Panel (ACP-PE). Typically, aluminium composite panel with black core and/or ≥50% polymer content will be considered as ACP-PE. Cluster analysis will not consider the wall system on the buildings. Cluster analysis will not consider low combustibility cladding such as Composite Concrete Panel (CCP)/QT, Timber/Composite Timber, Stainless Steel Sandwich Panels and ACP Flame Retardant.

Cluster analysis will be carried out on elevation drawings (with supplement of layout drawings) based on identification through site inspections and desktop analysis of available information. The External Facade Consultant will provide markup drawings for buildings with unacceptable cladding fire risk. CSV will identify and markup drawings for buildings with elevated cladding fire risk.

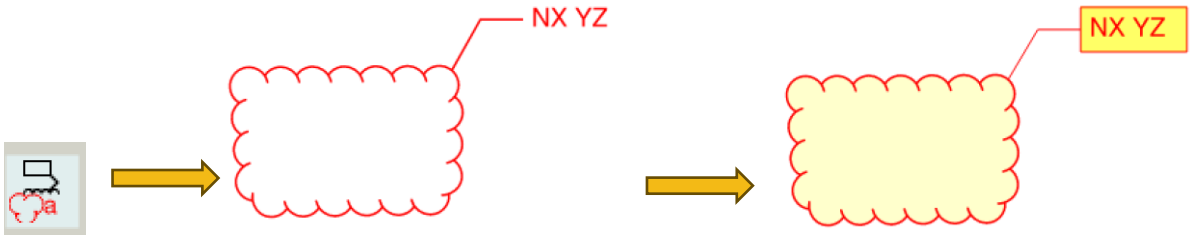
7.4 Method of cluster analysis

Cluster analysis for buildings will be done on elevation drawings with assistance of layout drawings. Buildings with unacceptable cladding fire risk should have markup drawings provided by the external facade consultant through the Due Diligence inspection. Markup will be done according to CSV’s colour legend (see Appendix C, which provides the Colour Legend for Combustible Cladding Markup). Buildings with elevated cladding fire risk shall have markup drawings done by CSV’s internal resources.

Once markup is complete, cluster analysis can commence to identify area(s) of concern on each elevation. The method is to identify the number of areas where two or more SOUs are connected through external combustible cladding either:

- Vertically (V), and
- Horizontally (H), and
- Both Vertically and Horizontally (S).

Identified areas shall be marked in cloud on elevation drawings. A typical coloured cloud marker should be used using the below example.



More information provided in the Tool Settings section.

7.5 Marking convention

Marking convention for cluster analysis shown below:

NX YZ

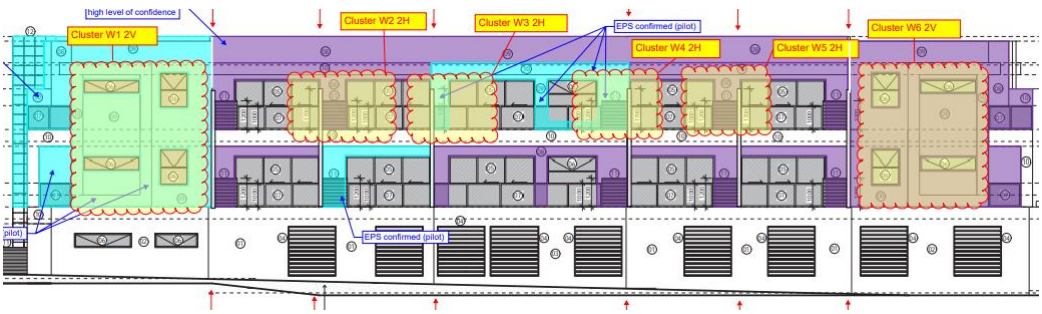
N = North elevation

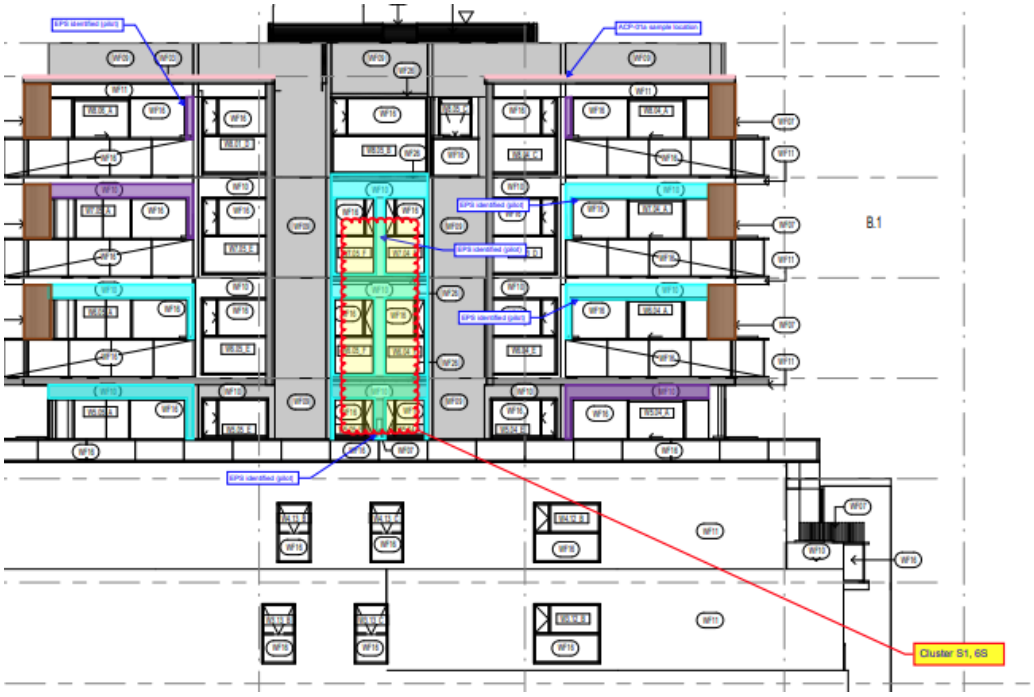
X = Number identifier of the particular cluster in this elevation

Y = Number of SOUs connected

Z = The way SOUs are connected, i.e. Vertically, Horizontally, or Special (both). Use ‘V’, ‘H’ or ‘S’

Some examples of marking convention for cluster analysis are shown below for different scenarios:

Cluster	Description
Cluster **W1 2V**	 W=West elevation 1=Cluster number on the west elevation 2=Number of SOUs connected through combustible cladding V=SOUs connected vertically
Cluster **E5 2H**	 E=East elevation 5=Cluster number on the east elevation 2=Number of SOUs connected through combustible cladding H= SOUs connected horizontally

Cluster	Description
Cluster **S1 6S**	 S=South elevation 1=Cluster number on the south elevation 6=Number of SOUs connected through combustible cladding S= SOUs connected vertically and horizontally

If building contains internal elevations, use **IN**, **IS**, **IW** and **IE.**

For example, cluster “IW1 2H” represents the first cluster in internal west elevation with two horizontally connected SOU.

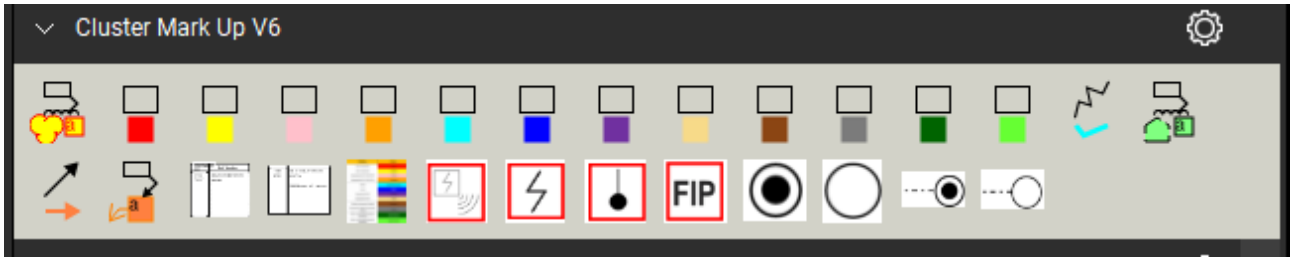
If a facade facing in North-East, use **NE** and accordingly for other elevations. I.e., **SE** for South-East; **SW** for South-West and **NW** for North-West.

For example, cluster “NW3 4S” represents the third cluster in North-West elevation with four SOUs connected horizontally and vertically. It is recommended that you use the nominated elevation description used in the architectural drawings for consistency.

In the end of cluster mark up on each elevation, list all the clusters and SOU numbers associated to each cluster.

Go to ‘Cluster Mark Up’ section of the tool bar and click and drag ‘Text Box’ tool for the input (see below). If there’s not enough space in elevation drawings, add a blank page by going to Document tab and select Insert Blank page.

Note: For new Bluebeam users, CSV has set up a toolbox for commonly used symbols and markers.



In Step 4, the identified clusters are reviewed after the completion of the detailed cluster assessment including further information which may not have been available during the initial IF-SCAN assessment.

Where cladding clusters are not in proximity to plausible ignition sources, or the cladding comprises of low combustibility materials, those clusters are eliminated. The reason for these clusters being eliminated is that they are not considered at Step 4 as ‘clusters of concern’ which give rise to the consideration of interventions. They are subsequently eliminated from the cluster count.

A test of plausibility is essential to ensure that a building is not counted on the basis of a cladding ignition risk that is highly unlikely to eventuate. For instance, in a sprinklered building where there may not be any external ignition threats, sprinkler failure is considered highly unlikely.

For ignition threats, other than sprinkler failure, consideration is given to two key categories of ignition threat: (i) threats manifesting at the ground-level or balcony, typically from external sources; (ii) threats manifesting over the facade of a building typically from within an SOU out through openings to the building facade.

A facade location is considered a plausible location for cladding to ignite where the cladding is proximate to:

- A balcony;
- A building opening;
- Established vegetation;
- Ground level/basement carpark;
- Laneways and street-side traffic; or
- Adjacent buildings.

8 Final facade IF-SCAN variation post cladding cluster assessment – Step 5

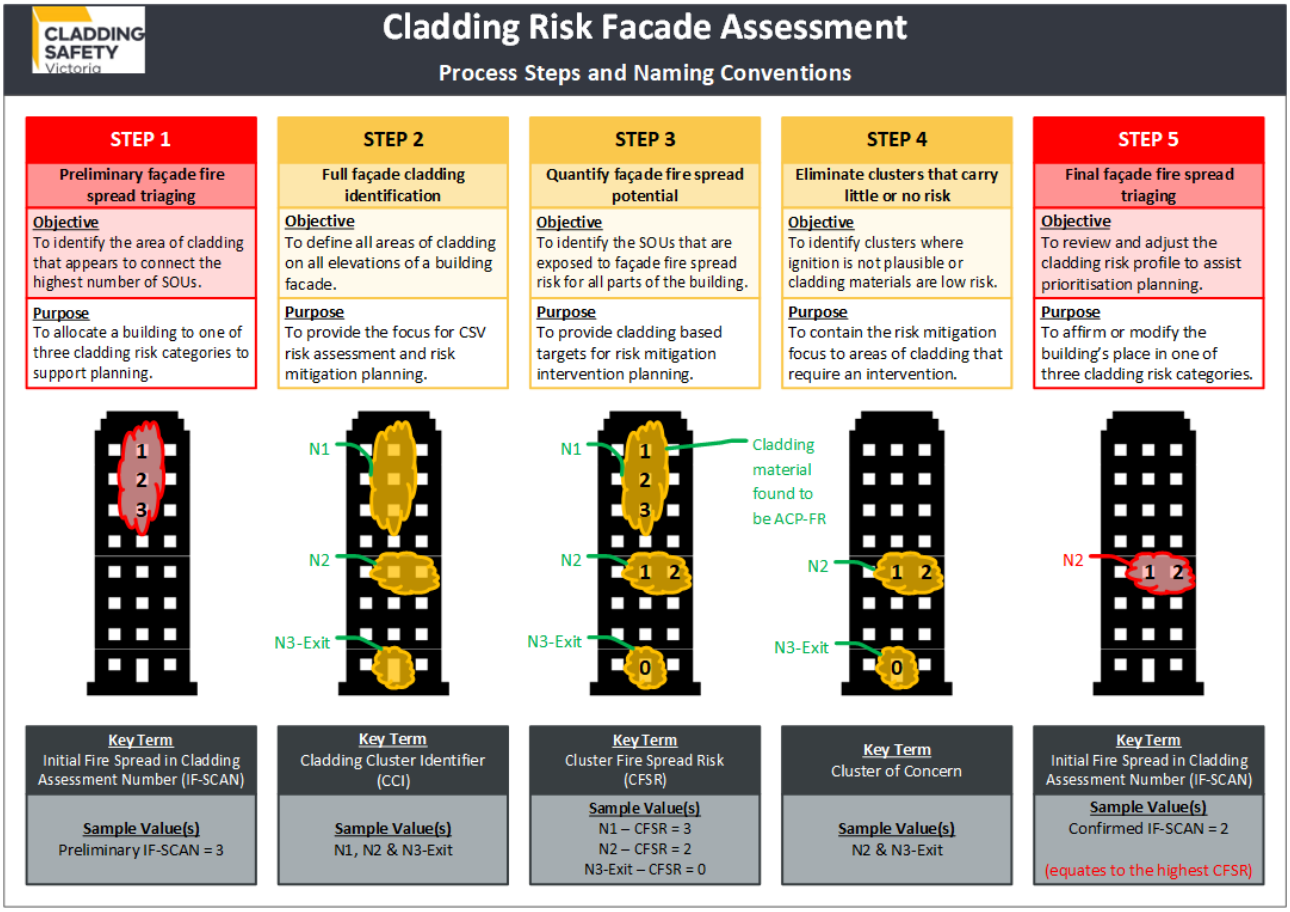
The IF-SCAN value is the initial value given to the building depicting the worst location and representing the highest area of cladding connectivity between SOUs. However, in some cases when a further detailed analysis has been undertaken of all of the *clusters* of combustible cladding and an assessment of cladding type and plausible fire scenarios, the final IF-SCAN value for the building may be subject to change.

The following diagram is a summary of a five-step process in identifying and naming cladding *clusters* and resultant *confirmed IF-SCAN* value for the building.

- **Red** indicates building level assessment – and remains tethered to the term “IF-SCAN”;
- **Yellow** indicates cluster level assessment – and introduces new terms that include the word “cluster”; and
- The flow of steps shows the connection between building and cluster level assessments.

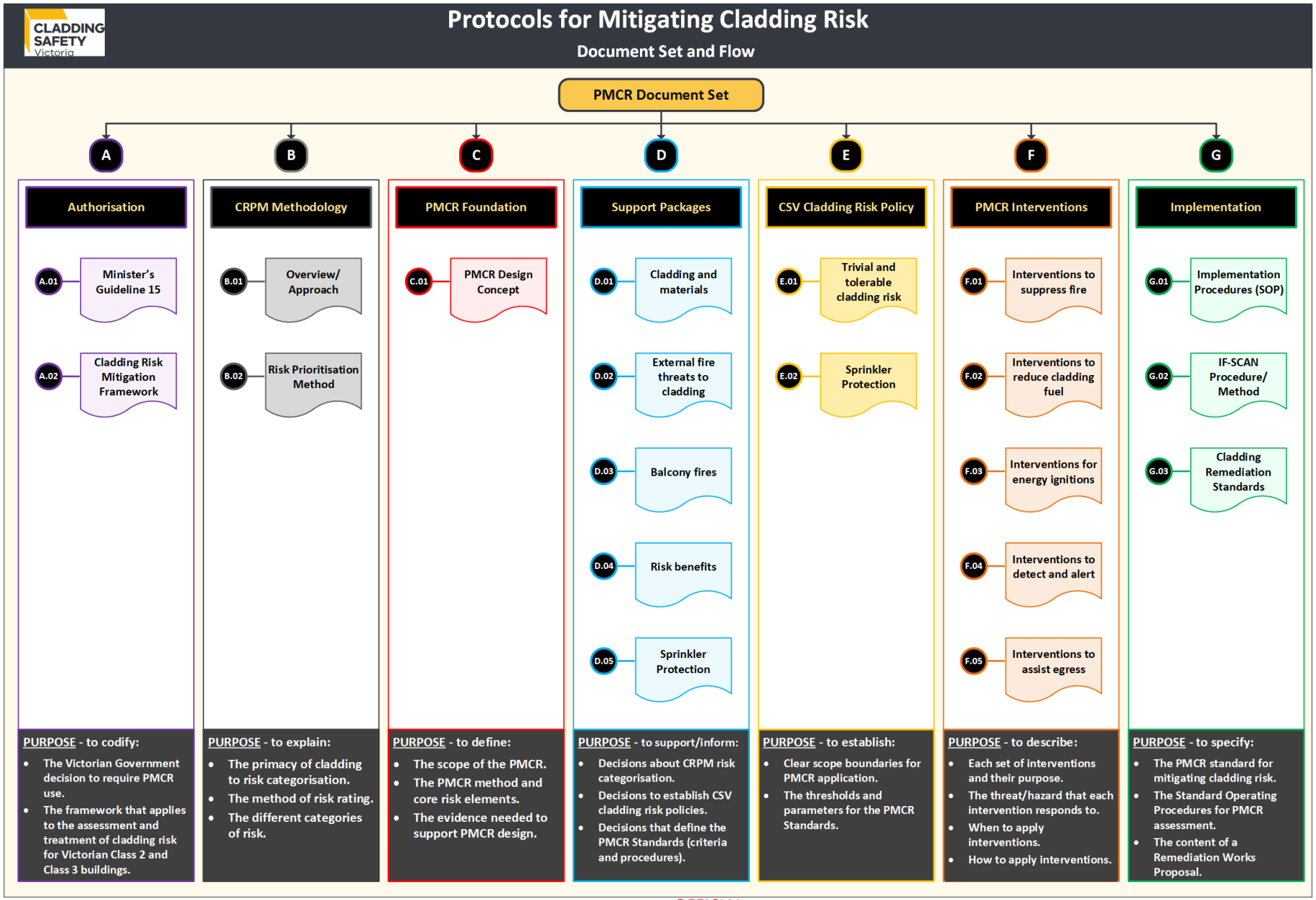
While the IF-SCAN represents the overall risk rating of the building, each cladding cluster has its own risk profile. When treating cladding risk, a solution must be developed to address the risk associated with each cladding cluster.

The process of identifying, marking up and assessing cladding clusters is detailed in Section 7. The application of the Cladding Rectification Standards to each identified cluster is covered in a suite of supportive document packages to the PMCR.



9 Appendices

Appendix A: PMCR document set and flow



CLADDING SAFETY Victoria

Initial Fire Spread Cladding Assessment

BXXX; Street name, Suburb

INSERT COUNCIL NAME Council

VICTORIA State Government

Introduction

The Victorian Government established Cladding Safety Victoria (CSV) to assist owners corporations (OCs) of Class 2 residential apartment buildings faced with the issue of combustible cladding, with potential funding for the highest risk building.

Critical to this task has been the development of a detailed view and understanding of the risk of each building, relative to all other buildings referred to CSV.

In 2021, CSV, in partnership with CSIRO (Data 61), developed the ***Cladding Risk Prioritisation Model (CRPM).*** A key plank of this work is a methodology referred to as the ***Initial fire Spread Cladding Assessment Number*** **(IFSCAN)**, which is provided through this document.

About CSV's IFSCAN methodology

The IF-SCAN is a measure for determining a building's combustible cladding risk by estimating the number of apartments likely to be directly affected in the early stages of a fire that may spread via combustible cladding elements.

The methodology requires the selection of a worst-case cladding ignition location where a qualitative judgement indicates that ignition in cladding at the selected point is plausible.

The methodology then allocates a figure (IF-SCAN) for the building based on the number of apartments directly impacted.

The process for the determining the IF-SCAN involves a two-stage qualitative assessment, conducted by a panel of appropriately qualified subject matter experts (SME). The two stages are:

1. A desktop review of the building and an initial IF-SCAN
2. Verification of the desktop review (and IF-SCAN score) via a site inspection.

The two-stage review process enables the triaging and prioritisation of buildings entering CSV's program based upon the potential impact of a cladding fire to the subject apartments.

About this document

This document has been drafted to validate CSV's view that the cladding risk on the building. It is provided to Municipal Building Surveyors (MBS) upon request to assist them in their review of the building.

As this document demonstrates, CSV's view is that this building presents a **xxxx cladding risk**.

Disclaimer

This document is provided to the MBS of INSERT COUNCIL as advice based on CSV's assessment of the fire risk posed by combustible cladding on the building at ADDRESS, CITY. It does not constitute a holistic building review or audit. This document should not be considered in isolation from other relevant factors nor used without consultation with CSV.

While CSV has a statutory ability to provide advice, it is not a regulator and any regulatory direction should not be implied or assumed. Noting that the MBS is to have regard to any information, advice or support provided by CSV in accordance with Minister's Guideline 15 pursuant to section 188(1)(c) of the Building Act 1993.

Please note that this document is not intended to be used for construction. Intellectual property rights pertaining to items contained within this document remain with the original intellectual property owners. This document is not to be provided to other parties (other than agents or representatives of the MBS or lot owners/tenants of the building) without the consent of CSV. This document is provided as advice only and is not an indication of CSV's funding intentions.

Number of SOUs impacted = X (Value from CRP Verification)

Overview Image of Building

Insert overview image of building here (streetview, google earth, photos, real estate etc.

Aerial Image

Insert standard floor plan that represents a typical floor in this building.

Desktop Assessment Images

Images should indicate areas chosen to be the worst-case scenario for cladding fire spread

Elevation 1: Comment	**Elevation 2:** Comment
Elevation 3: Comment	**Elevation 4:** Comment

Additional Documentation

Early fire spread estimation mark up: Comment	**Description** Comment
Description Comment	**Description** Comment
Description Comment Delete rows as needed	**Description** Comment

IFSCAN Assessment:

Date: Click or tap to enter a date.	**Assessed by:** *Insert Name Here*
Documentation available	iAuditor, Plans, Google
Elevation and Area considered	X elevation considered for the assessment.
Location of plausible ignition	Ground/Podium, Balcony, Flashover
Early Fire Spread Estimate	No. of SOUs = X
Exceptional circumstances?	Insert here any commentary or exceptional circumstances that should be considered upon verification (*if any*)
Discussion:	

IFSCAN Verification:

Date: Click or tap to enter a date.	**Verified by:** *Insert Name Here*
Initial comments (if any)	
Number of SOUs impacted	No. of SOUs = **X**
Actions required? *(if any)*	
Verification comments	

Verification images:

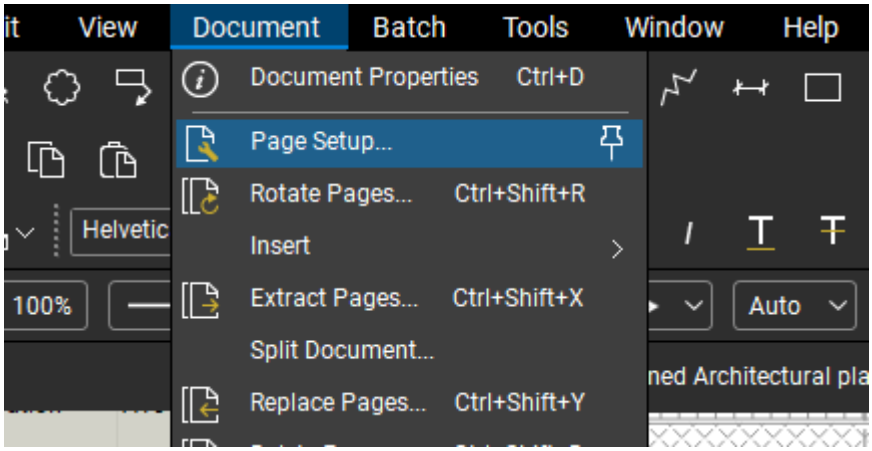
Elevation 1: Comment	**Elevation 2:** Comment
Elevation 3: Comment	**Elevation 4:** Comment

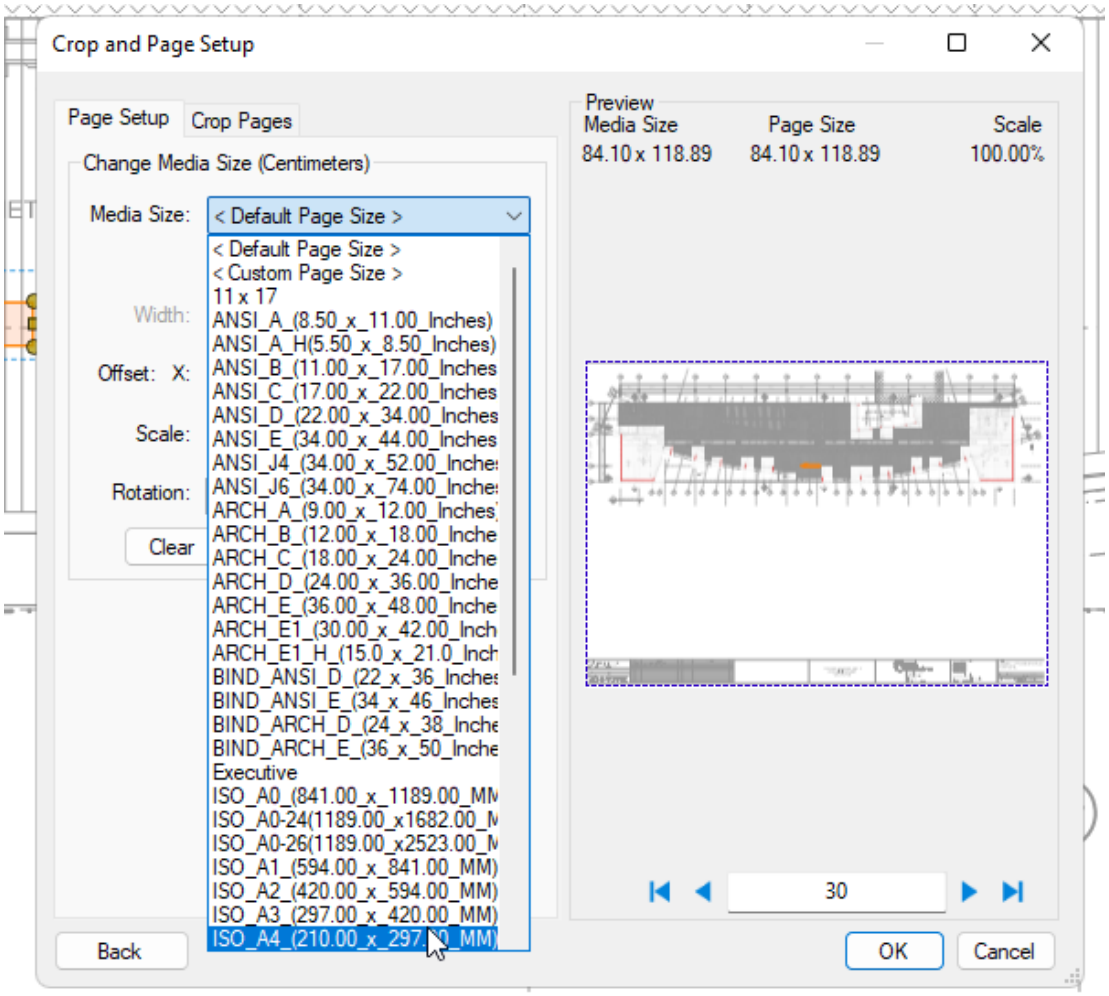
Additional Documentation

Description Comment	**Description** Comment
Description Comment	**Description** Comment

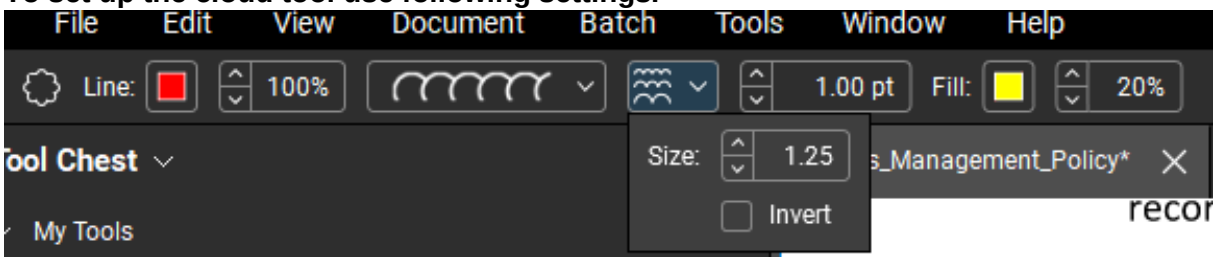
Appendix C - Tool settings

Before marking up plans, the document scale will need to be set to A4 to ensure a consistent size.



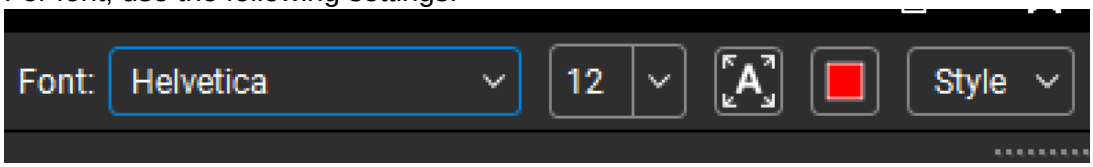


To set up the cloud tool use following settings.

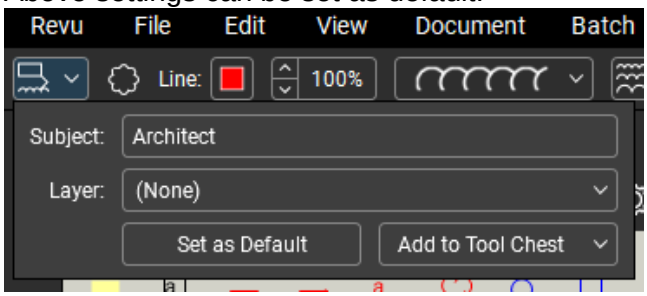


For marking, use the following settings.

For font, use the following settings.



Above settings can be set as default.



Colour legend for combustible cladding markup

Cladding	Colour	Colour Code (R, G, B)
ACP >50% PE	Red	255, 0, 0
ACP <50% PE	Yellow	255, 255, 0
Suspected ACP >50% PE	Pink	255, 192, 203
Suspected ACP <50% PE	Orange	255, 160, 0
EPS	Light Blue/Aqua	0, 255, 255
CCP	Blue	0, 0, 255
Suspected EPS	Purple	112, 48, 160
Suspected CCP	Gold	247,218,137
Timber/Composite Timber	Brown	139, 69, 19
Suspected Timber/Composite Timber	Grey	123, 123, 123
Other Combustible Material (Identify)	Dark Green	0, 100, 0
Other Combustible Material (Identify)	Light Green	102, 255, 51

Notes:

- ‘Other Combustible Material’ includes any potentially combustible material outside the scope of ACP/EPS/CCP, such as polyurethane (PUR), polycarbonate sheeting, Expanded Perlite (EPL), calcium and magnesium-based boards, etc.
- Red is used for ACP >50% PE and light blue/aqua is used for EPS as they are the most visible colours on white drawings.

Standard symbol library

The following symbols are to be used to identify new active fire safety system components for inclusion in the proposed interventions when preparing RWPs.

Heat detector- AS1670 

Smoke detector- AS1670 

Smoke alarm 240v hard wired- AS3786 

Fire indicator 

Sprinkler head below ceiling 

Appendix D - Worked example of an IF-SCAN

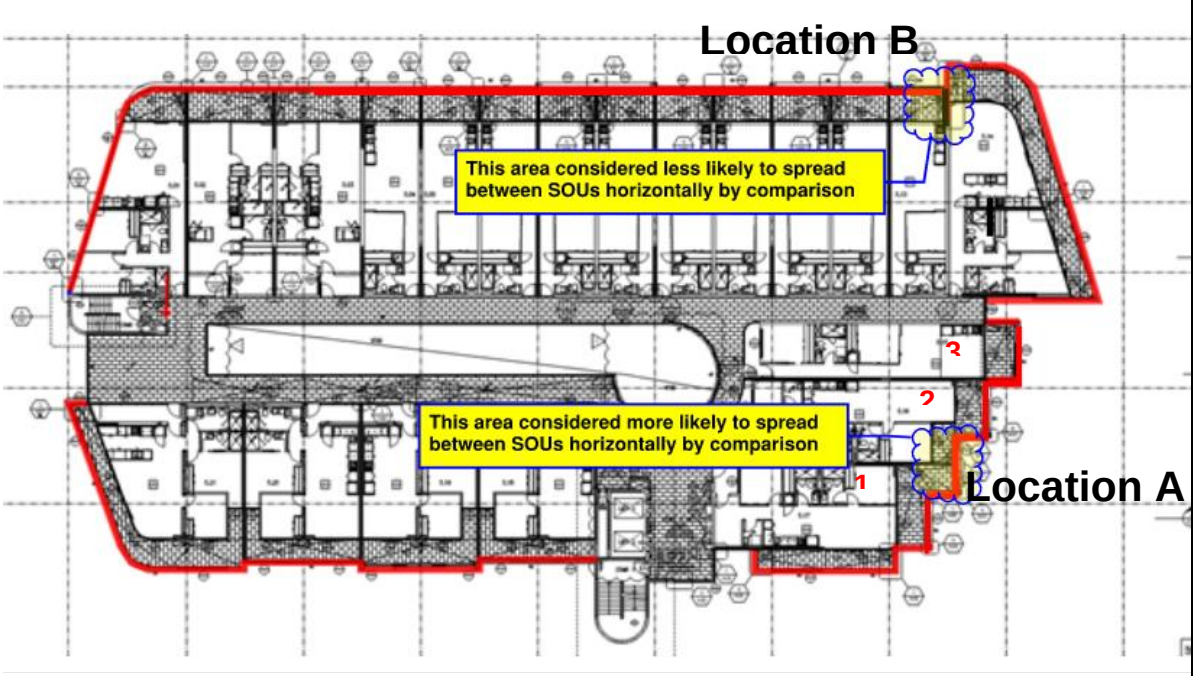
The following is a brief example of an evaluation of the building's elevations for the desktop stage of the IF-SCAN.

Selection of a worst case location for the IF-SCAN

The following is a brief example of an evaluation of the building's elevations for the desktop stage of the IF-SCAN.

It will be seen in the following example that upon evaluation of all building elevations, the worst-case location for a cladding fire is identified at Location A. It is determined that Elevation 1 (Location A) will provide the highest IF-SCAN.

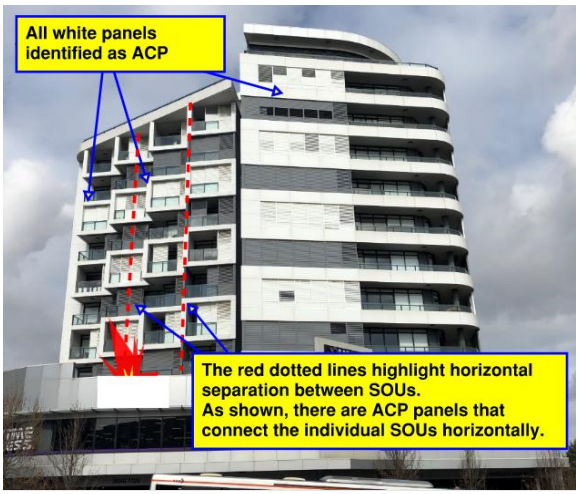
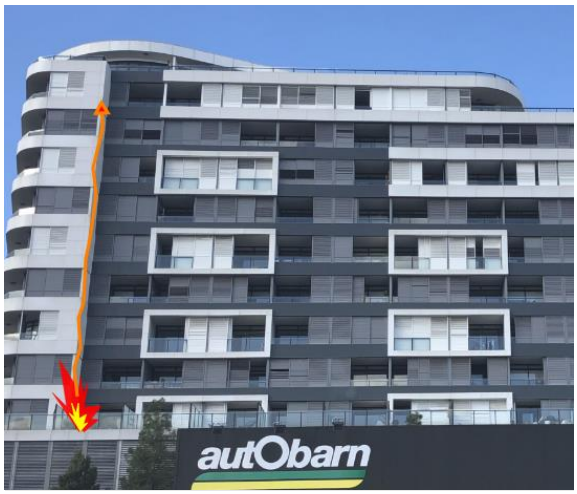
Location selection example

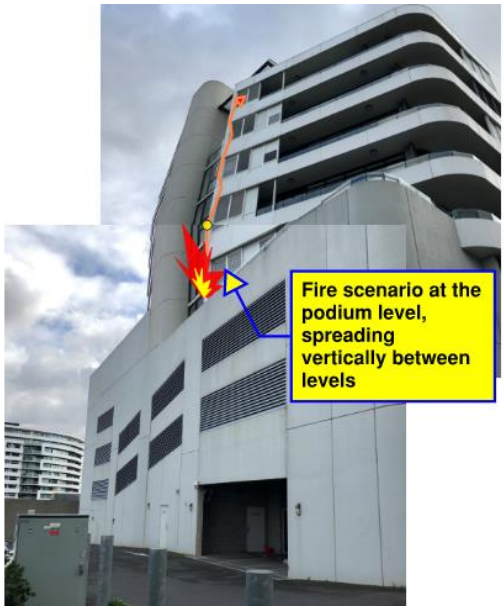


Floor plans: -

Floor plans are required to understand where ACP connects multiple apartments horizontally, more specifically to identify the location of SOU separating walls.

In the above example, Locations A and B present similar opportunities for vertical fire spread, as shown in Elevations 1 (location A) and Elevation 4 (location B) respectively. It can be seen here in ***location A*** that the ACP connects apartments 1, 2 and 3 horizontally by way of the balcony fascia at the elevation. For the above, it is considered that Location A presents the greater potential for a cladding fire comparatively due to the complexity of the balcony geometries and the arrangement of the ACP.

Location selection example	
	
Elevation 1 (Location A) Multiple apartments in a complex arrangement are connected by the white ACP - horizontally and vertically on the left hand side. The white ACP is also located to the soffit of these apartments. On the right-hand side of Elevation 1, there is one SOU per level with balconies that span the full width, partly covered by louvres. The dark grey areas of this elevation are predominantly tilt panel (masonry) construction.	**Elevation 2 (Location B)** Elevation 2 predominantly consists of narrow single bedroom apartments with balconies separated by tilt panel construction. The grey balustrades and white architectural features are ACP. Metal louvres located to all balconies.
	
Elevation 1 (Location A) Upon closer inspection of Elevation 1 (Location A), due to the presence of ACP to the soffits of apartment balconies and the complex configuration of the external ACP	**Elevation 2 (Location B)** The Expert Panel concluded for the above elevation, that the fire would largely remain external to the balcony and SOUs. The ACP is broken vertically and attached to tilt

Location selection example	
vertically and horizontally, there is the potential for a large number of SOUs to be involved in a cladding fire.	panel construction. The vertical white ACP returns and stops at the edge of the neighbouring SOU balconies (as indicated at Location B of the floor plan). It is considered for this elevation that a cladding fire could likely jump levels, however for the early stages of a cladding fire, Elevation 1 presents a greater potential for a cladding fire to involve a higher number of SOUs than Elevation 2.
	
Elevation 3 The above elevation was not considered to be worst case as there are only 5 levels connected vertically by the ACP.	**Elevation 4** Again, the above elevation was not considered to be worst case as there are only 5 levels connected vertically by the ACP.

Outcome

For the above example, it can be concluded that Elevation 1 (Location A) presents the greater potential for the highest number of SOUs to be involved in the early stages of a cladding fire due to the complexity of the balcony geometries and the horizontal and vertical arrangement of the ACP.