FPA Australia Project Proposal:

Revision of FPAA101D and Amendment of FPAA101H

Submitted: 12 June 2020

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2. Proposer's details and date of submission

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3. Overview

The proposed revision of Technical Specification FPAA101D, as detailed below, mirrors the original intent for this specification. Had there been more time available before the deadline for implementation into the NCC 2019, we would have both developed FPAA101D as proposed below (by revising the format of the specification) and undertaken further discussion with State and Territory water authorities.

3.1 Summary of proposed revision and amendment and issues to be addressed

It is proposed to revise Technical Specification FPAA101D and amend Technical Specification FPAA101H to implement improvements based on feedback received in the 18 months since their publication. Such feedback has been received through FPA Australia's many interactions with individuals, companies and organisations as they work to implement these new Technical Specifications.

While both FPAA101D and FPAA101H are to be updated based on the feedback we have received since their publication in December 2018 (and subsequent adoption in the NCC 2019), FPAA101D is to be a revision rather than an amendment because there is to be a substantial (but expected) structural change.

The proposed issues and changes to be made to address these can be summarised as follows:

Issue	Proposed changes
• Difficulty in reading FPAA101D, reduced reference of AS 2118.5 content.	Structural changes to FPAA101D to improve readability and reconciliation of the level of AS 2118.5 content referenced.
• Request from some water supply authorities' for an option (for billing purposes) for FPAA101D water to the SOU to come under the SOU water meter not the common water meter.	Add option for FPAA101D to go through SOU water meters.

• Referenced Australian Standards have been revised, amended or are in the process of being so for adoption in the NCC 2022.	Update the Technical Specifications to refer to the updated Australian Standards and clause numbers.
• General minor issues as identified over time.	General minor improvements.

3.2 Summary of impacts of the proposed revision and amendment

These proposed changes will make FPAA101D far easier to read than the current version, and therefore, practitioners will be able to understand and apply it better. This will provide greater assurance that FPAA101D's requirements are interpreted correctly and therefore that systems to this Technical Specification are designed, installed and commissioned correctly and improve the housing affordability that this option for sprinkler protection provides for Class 2 and 3 buildings less than 25 m in effective height.

The addition of an option for the FPAA101D system to go through the SOU water meter has been requested by some water supply authorities for billing purposes. This is expected to offer these authorities—as well as any designers, building developers, building owners or building tenants—who are considering using FPAA101D the option to address any concerns about billing as a result of some SOU water usage (i.e. the sprinkler system and toilets) coming under the common water usage meter.

The changes to reflect current standards is a necessary and typical administrative change to ensure the Technical Specifications reflect the latest Australian Standards.

The other minor improvements will again make it clearer how the Technical Specifications are to be applied ensuring that they are designed and installed correctly.

By making the above changes, FPAA101D and FPAA101H will be brought up-to-date and made clearer and therefore will ensure these Technical Specifications are applied correctly and thus continue to achieve their purpose of providing increased available safe egress time.

The impact of taking no action is the inverse of the above:

- FPAA101D will remain difficult to read and apply.
- FPAA101D water usage will only be able to come under the common water meter.
- FPAA101D and FPAA101H will continue to refer to superseded standards making these Technical Specifications less and less up to date. Plus, when they are applied under the NCC, users will be required by the NCC to use the current editions of these referenced standards making these Technical Specifications difficult to apply as referenced Clauses will no longer be correct.
- FPAA101D and FPAA101H would continue to no longer reflect current requirements; and remain unclear and difficult to apply therefore the likelihood of them continuing to be applied correctly would decrease as would their ability to ensure they achieve their life safety purpose and their contribution to ensuring improved housing affordability through cost effective sprinkler protection.

4. Scope of proposed changes

The proposed changes can be summarised as:

- Structural changes to FPAA101D to improve readability and reconcile the level of AS 2118.5 content referenced.
- Addressing the request from some water supply authorities' for an option for FPAA101D water to the SOU to come under the SOU water meter rather than come under the meter for common water usage for the building.
- Updating the Technical Specifications to refer to the updated Australian Standards and clause numbers.
- General minor improvements.

The details of the proposed changes are as follows.

4.1 Structural changes to FPAA101D to improve readability and reconcile level of AS 2118.5 content used

As identified by the ABCB and others during public consultation on the Technical Specifications, significant concern was raised about the readability of FPAA101D.

FPAA101D adopted AS 2118.5 and varied its clauses therefore making the content of Section 5 of FPAA101D the exceptions to the AS 2118.5 clauses rather than something that could be read on its own. This has made it a very difficult document for users to navigate as it resulted in two sets of clause numbers – one for FPAA101D (e.g. 1.0, 2.0, etc.) and another for the variations to AS 2118.5 (Clause 1.3.2, 2.5.3.1, etc.).

Due to the time constraints to achieve the NCC 2019 adoption, this was unable to be addressed at the time. However, as we now propose to update both Technical Specifications, we are taking the opportunity to reconcile this issue.

Accordingly, it is proposed to re-structure FPAA101D to reflect the structure used in FPAA101H. Essentially, where FPAA101D currently adopts AS 2118.5 and varies the requirements, in the updated FPAA101D this will be reversed. Like FPAA101H, FPAA101D will include its specific requirements under its own heading and clause structure and refer to the parts of AS 2118.5 used, where required.

In undertaking these changes, just how much of AS 2118.5 is in fact now referenced shall also be reviewed. Changes made in the late stages of the development of FPAA101D and FPAA101H* resulted in less and less of AS 2118.5 being referenced. As such, as FPAA101D is restructured, if it is found that only very minor elements of AS 2118.5 are referenced, it may be more appropriate to use the relevant requirements of AS 2118.1 so that users do not need to buy this additional reference document when only a very small percentage of its content is referred to.

*As a result of the independent engineering review requiring these Technical Specifications to also include the non-Class 2 and 3 parts of the protected building.

4.2 Addressing the request from some water supply authorities' for an option for FPAA101D water to the SOU to come under the SOU water meter not common water meter

Some water supply authorities have expressed an interest in having all water into the SOU being individually metered for the purpose of billing, rather than have the FPAA101D sprinkler system (and toilets) coming under the common water supply meter.

Running the required pressure and flow through such a water meter into the SOU was in fact how the CSIRO tested system that FPAA101D was based on was originally tested therefore we already know that the FPAA101D system is capable of performing in this configuration (see the Fire & Rescue NSW, Fire research report – Residential Sprinkler Research, found here).

As such, it is proposed to add the option so that you can have either a system as per the current FPAA101D design (separate domestic and sprinkler pipework into the SOU) or with this combined into the one system of pipework within an SOU. This gives water authorities (and designers) the opportunity to use the option they prefer to address the desired method of metering water usage.

4.3 Updating the Technical Specifications to refer to the updated Australian Standards and clause numbers

Many of the Australian Standards referenced by these Technical Specifications have since been revised or amended or are in the process of being so for adoption in the NCC 2022. As such, it is key that these Technical Specifications are revised or amended to reflect the current editions of these referenced standards and the relevant clause references for the new editions of these referenced standards.

FPAA101D was finalised prior to AS/NZS 3500.1:2018 therefore it references AS/NZS 3500.1:2015. Under the NCC mechanisms*, because the 2018 edition of AS/NZS 3500.1 is referenced in the NCC, FPAA101D is considered to reference this 2018 edition anyway when applied under the NCC DTS Provisions. However, as this Technical Specification is being revised, this can now be addressed so FPAA101D itself now refers to the latest edition of AS/NZS 3500.1 and the applicable clauses within it. It should be noted that AS/NZS 3500.1 is also currently being revised again.

*BCA Clause A4.0, particularly Exemption 1.

Similarly, AS 2118.1 has been amended twice since FPAA101D and FPAA101H were published and this should also be updated.

AS 1670.1 has been revised since FPAA101H was published and an amendment is also underway for NCC 2022.

AS 2419.1 is also to be revised for adoption in the NCC 2022.

4.4 General minor improvements

As with any NCC referenced document, as the documents are increasingly used over time, minor areas of ambiguity, misinterpretation and other issues are identified that can be addressed through minor improvements.

Such general issues and minor improvements identified for this revision and amendment include:

- **FPAA101D**
    - There has been some feedback received on FPAA101D that suggests a need for more direction on how to address floors without toilets in certain instances, particularly for levels used solely for carparks.
- **FPAA101H**
    - Adding the exemption from FPAA101D (new Clause 4.2) for other classifications less than 75m^2 in area in a storey containing Class 2 or 3 uses.

      Following the adoption of these Technical Specifications, the full impact of implementing Clause 3.3.3 (for Class 5-9 parts of a building)—which was included as a result of required changes from the independent engineering review—has been identified. This requires another layer of work and additional requirements, which may not be proportional in all instances. Where this area is of negligible size (as per new Clause 4.2 of FPAA101D) this should similarly be exempt whereas where this is above this size the existing requirements are suitable.

      This is particularly to address a very minor area of another classification in an otherwise residential building (e.g. a convenience store on the ground floor of an apartment building).
    - We have observed from feedback that some practitioners are not picking up how Clause 2.2 and AS 2419.1 interact and are not accounting for whether the system is boosted or not.
    - Similar to the review of the AS 2118.5 content referenced in FPAA101D, we will also be reviewing the amount of AS 2118.4 content referenced to determine whether this is necessary or could be covered by similar requirements from AS 2118.1. This could eliminate the need to acquire this additional reference document when only a very small percentage of its content is referred to.

FPA Australia will also be seeking additional public input to this revision and amendment (primarily from purchasers of the Technical Specifications) which may expand these minor improvements. However, given FPA Australia's ongoing engagement with individuals, companies and organisations as they work to implement these new Technical Specifications we are comfortable that the above issues represent the significant issues to be addressed and any additional items will likely be of a minor nature.

5. Impacts of the proposed work

5.1 Health and safety

The proposed revision and amendment are primarily aimed at providing further clarification to the existing content through the restructure of FPAA101D and more general improvements to both FPAA101D and FPAA101H.

These are expected to make these Technical Specifications clearer to understand and therefore better ensure that they are followed correctly and achieve their purpose of providing fire life safety through the provision of additional time for egress.

The addition of the option of having the sprinkler system run through the SOU water meter in FPAA101D will not alter the health or safety of the sprinkler system or domestic water system. As already required under the existing FPAA101D requirements, this system will continue to require WaterMark compliant components (sprinklers, pipework, fittings, etc.) and will continue to require the sprinkler pipework to avoid deadlegs.

The revision and amendment to reference updated Australian Standards will also mean these Technical Specifications will benefit from the health and safety improvements in these updated standards.

5.2 Social

The only aspect of the proposed revision and amendment that is expected to have any social impact is the addition of the option of having the sprinkler system run through the SOU water meter in FPAA101D.

This will result in a positive impact because it means designers, building developers, building owners, building tenants, etc. have the option of having the water use of the FPAA101D system (particularly the connected toilets) either metered individually from each SOU or, as current, metered from the common water usage. This gives people more options and can potentially avoid disagreements between tenants on water usage.

Aside from this change, as per health and safety above, the revision and amendment are expected to make these Technical Specifications clearer to understand and therefore better ensure that they are followed correctly and achieve their purpose of providing fire life safety through the provision of additional time for egress. That is, ensuring these Technical Specifications continue to provide a suitable option for protecting building occupants in Class 2 and 3 buildings less than 25 m and provide social benefits through the reduction of the impact of any fire events in these buildings.

5.3 Environmental

The only change in the proposed revision and amendment that will have an environmental impact will be adding the exemption from FPAA101D (new Clause 4.2) to FPAA101H to allow for other classifications less than 75m^2 in area in a storey containing Class 2 or 3 parts to be covered as per Class 2 and 3. This will have a positive environmental impact in that it will reduce the amount of water that would be used during routine servicing activities. Also, in many cases this change will reduce the water supply required such that it will no longer trigger the need for diesel pumpsets to be installed, thereby eliminating the negative environmental impact of testing and servicing these for the lifespan of the building.

Importantly, this change will not result in any significant impact on the life safety due to the severely limited size of the areas to which this exemption can be applied. Also, this exemption is already acceptable under FPAA101D and AS 2118.4 and, in the context of the NCC, may already be acceptable under Exemption 1 of Clause A6.0 (which, if an area of another classification is less than 10% of the floor area of the storey, allows the storey to be classified as per the classification of the majority of the storey).

5.4 Competition

There are no aspects of the changes that are expected to have any effect on competition in terms of components, technology, etc. used. However, there are two aspects of the changes that may affect competition in terms of the usage of FPAA101D over other options under the NCC for sprinkler protection of buildings of 4 or more storeys and less than 25 m in effective height that contain Class 2 and 3 parts.

First, the restructure of FPAA101D will make it much easier to apply and therefore may increase usage of FPAA101D over other options allowed under the BCA. However, it should be noted that use of FPAA101D is limited based on the amount and location of non-Class 2 and 3 buildings. Therefore, this is not expected to have a significant impact on the options used under the BCA for protection Class 2 and 3 building less than 25 m.

Second, and similar to the first, the addition of the option of having the sprinkler system run through the SOU water meter in FPAA101D may also increase the usage of FPAA101D over other options as it removes one possible obstacle to its selection—concern regarding management of individual billing for toilet water usage. Again, this is expected to be balanced by the limitation of where FPAA101D can be used.

5.5 Economic

The most significant economic impact is not from the changes themselves but from the improved ability to apply these Technical Specifications and the benefit this provides in housing affordability.

FPAA101D and FPAA101H were developed as a result of the recommendation of the coroner's report into the Bankstown apartment fires for development of fit-for-purpose, cost effective sprinkler systems in Class 2 and 3 buildings less than 25 m in effective height.

FPA Australia, AFAC and Fire and Rescue NSW submitted a PFC to the NCC to require sprinklers in these building, and as part of the RIS for this it was demonstrated that only FPAA101D achieved below cost neutrality, while FPAA101H was slightly above cost neutral and AS 2118.1 was the most expensive sprinkler system to install.

As such, the cost effectiveness of FPAA101D and FPAA101H, especially FPAA101D, was a major part of the reason sprinklers are now required under the NCC in Class 2 and 3 buildings less than 25 m in effective height.

Despite their inclusion in the NCC, there has been advocacy from some elements of the industry that the most expensive sprinkler system, AS 2118.1, be the only permitted sprinkler system that should be installed in these buildings.

By improving FPAA101D and FPAA101H, this project will continue to promote the aims of the coroner's recommendations and the NCC to provide solutions that not only provide for the health and safety of building occupants but which also improves housing affordability.

Another potential economic impact may be that the restructure of FPAA101D and review of referenced AS 2118.5 material may reveal that there is insufficient AS 2118.5 content referenced to warrant its inclusion and this would reduce the cost impact of someone wanting to apply FPAA101D as this would reduce the number of reference documents a user of the Technical Specification would require. This would similarly apply to the review of the references to AS 2118.4 in FPAA101H.

6. Consultation

The changes included in this project proposal are partly the result of feedback from the original public consultation on FPAA101D that could not be implemented at the time but, more significantly, are the result of ongoing interaction (since the publication of these new Technical Specifications) between FPA Australia and individuals, companies and organisations as they work to implement FPAA101D and FPAA101H.

In addition to this consultation, FPA Australia will be consulting with:

- AFAC, the National Council for Fire and Emergency Services
- WSAA, the Water Services Association of Australia as well as specific water authorities that have engaged with FPA Australia on how FPAA101D is implemented.
- FPA Australia's Technical Advisory Committee for Fire Sprinkler & Hydrants Systems, Tanks and Fixed Fire Pumps (TAC/4/8/9), which consists of subject matter experts across the industry including manufacturers, suppliers, designers, installers, certifiers, routine service companies, insurance bodies and, among these, members of Standards Australia's committee for automatic fire sprinkler systems (FP-004).
- Other organisations that sit on FP-004 that are not otherwise covered by the above.

7. Administration and development

7.1 Compliance with the ABCB protocol

This project is being undertaken in accordance with the requirements of the ABCB Protocol for the development of NCC Referenced Documents as these Technical Specifications are referenced in the NCC and the revision of FPAA101D and amendment of FPAA101H are intended to continue to be referenced in the NCC 2022 (as per revised or amended Australian Standards).

Technical Specifications FPAA101D and FPAA101H are referenced in:

- The BCA, Volume One, in Specification E1.5 and Specification E1.5a; and
- The PCA, in B4.2.

7.2 Development committee

Similar to the process used in the original development of FPAA101D and FPAA101H, the revision and amendment will be developed by an internal team at FPA Australia with review by our Technical Advisory Committee for Fire Sprinkler & Hydrants Systems, Tanks and Fixed Fire Pumps (TAC/4/8/9), which consists of subject matter experts across the industry including manufacturers, suppliers, designers, installers, certifiers, routine service companies and insurance bodies.

FPA Australia will be:

- Providing the updated Technical Specifications to TAC/4/8/9 for consideration before it goes to public comment;
- Seeking TAC/4/8/9's input on how we address public comment; and
- Seeking TAC/4/8/9's review on the final pre-publication document.

7.3 Development deadline

The revision and amendment of FPAA101D and FPAA101H will be completed and ready for publication by 1 May 2021 (so that these can be adopted in the NCC 2022).