PRELIMINARY IMPACT ANALYSIS

PROPOSAL: This proposal seeks to review Joint Australian New Zealand Standard (AS/NZS) 3500, *Plumbing and drainage Part 1: Water services* and *Part 4: Heated water services,* to amend the requirements for jointing plastics pipes

Responsible Technical committee: Australian Standard Committee WS-014, *Plumbing and Drainage*

NCC REFERENCE: For revisions or amendments to existing National Construction Code (NCC) referenced documents, provide additional information	**BCA Volume One:**	N/A
	BCA Volume Two:	N/A
	PCA Volume Three:	
	AS/NZS 3500.1	B1.4, B3.3, B4.2, B5.2, B5.3, B5.4, BS5.1.2, B6.4, B6.5
	AS/NZS 3500.4	B2.2, B2.6, B2.7, B2.8, B2.9

PROPONENT:	Nominating organisation:	N/A
	Nominating individual:	Fred Reynolds
	Position:	Independent Chair WS-014
	Contact email:	fredreyn@tpg.com.au

DATE OF PIA: To differentiate between versions include the document date and/or version number	Date:	24 Jan 2020
	Version:	1
	Status:	DRAFT

NATURE AND EXTENT OF THE PROBLEM:

Whilst some jointing methods and material combinations are explicitly referred to in AS/NZS 3500.1 Section 5 and AS/NZS 3500.4 Section 4, a number of common jointing methods and products are not mentioned. This has resulted in representations by a number of plumbers to include additional methods such as electrofusion jointing of PE pipes.

Plastics Industry Pipe Association of Australia (PIPA) also advised there is a need to ensure fittings and pipe combinations are appropriately matched. For example, PB pipes should only be jointed with fittings that comply with the commensurate fittings Standard. Similarly, for PE-X, PP-r and MLP products. There is no assurance mismatched pipe and fittings combinations are fit for purpose. For example, polyethylene fittings being used with PE-X or PB pipes. Such mismatches may result in leaks and therefore the practise must be avoided.

At present there is a reliance on the pipe and fittings suppliers to advise what fittings are to be used with a number of plastics pipes in hot and cold plumbing. In the absence of deemed to satisfy requirements in AS/NZS 3500 it is possible the wrong pipe – fittings combinations could be used with leaking joints resulting. For buried pipe applications ground water infiltration is possible with mismatched systems if negative pressures are experienced. Leaking joints can damage buildings resulting in expensive repairs, particularly if the joints are not readily accessible.

In addition, another amendment to 3500 involves the removal of all requirements to comply with a product standard. The ABCB advised that all products used in plumbing and drainage systems (with the exception of stormwater) must be WaterMarked. It is in this system that compliance with product standards is determined. This has necessitated some changes as to how jointing requirements are expressed.

There are 3 installation Australian Standards for plastics pipes:

- AS/NZS 2033 for polyethylene - referenced in 3500
- AS/NZS 2032 for PVC - referenced in 3500
- AS/NZS 3690 for ABS - NOT referenced in 3500 even though the product Standard AS/NZS 3518 is currently referenced. (due to be removed in the WaterMark alignment project).

With the need to avoid referring directly to the product standards and to provide coverage of all appropriate jointing methods, all three installation standards are to be referenced. As well, the requirement to ensure compatible fittings are used for jointing of other plastics pipes has been introduced.

The proposed changes to the Standard reflect what should be occurring in practice and in the vast majority of cases is actually occurring (but is reliant on the advice of suppliers). The proposed changes would have no additional cost implications. There may be ongoing benefits due to a possible reduction in the likelihood of pipes and fittings being mismatched resulting in leaking joints.

There is a specific clause relating to just solvent cement joints for PVC pipes, but to simplify the text this clause is to be deleted since all methods of jointing, including solvent cement, flanged, elastomeric seals and threaded, are detailed in the installation standard AS/NZS 2032.

OBJECTIVES:

The objective of the proposed change is to direct all practitioners to the relevant installation standard for jointing of PVC, PE and ABS piping. The proposed change is also to make it clear that fittings designed for and tested with one pipe material should not be used with another pipe

material.

OPTIONS:

Option 1. Status Quo

This option would see no change made to either AS/NZS 3500 parts 1 or 4.

Option 2 Non regulatory.

This option would have explanatory information inserted into the standard in the form of a commentary box or note.

Option 3. Regulatory.

Amend the Standard, Parts 1 and 4 to specify jointing of PE, PVC and ABS to be in accordance with the relevant installation standard, and require compatible fittings for the joining of other plastics pipes.

IMPACT ANALYSIS (OF ALL OPTIONS):

Option 1. Status Quo

This is not considered to be a viable option due to changes resulting from a different amendment project (WaterMark Alignment project) as the jointing clauses will be adjusted through this project.

Without modifying the text there would continue to be no recognition of the permitted range of jointing methods in PE pipe, e.g. electrofusion, and PVC, and there would be no permitted methods of joining ABS piping.

Option 2 Non regulatory.

This option is not considered viable as the issues described above would continue and the explanatory information would contradict that of the normative clause. For this reason further exploration of this option has not been undertaken.

Option 3. Regulatory.

The proposed changes would direct all practitioners to the relevant installation standard for jointing of PVC, PE and ABS piping and make it clear that fittings designed for and tested with one pipe material should not be used with another pipe material. The changes will result in no additional costs, and there may be ongoing benefits due to a possible reduction in the likelihood of pipes and fittings being mismatched resulting in leaking joints.

TRANSITIONAL MEASURES

Transitional measures are not recommended since the changes will take place as part of the NCC 2022 revision cycle.

CONSULTATION:

Consultation that has occurred in relation to this project includes:

- PIPA supported the change and provided information on the likely affects.
- WS-014 have agreed to the changes to both Part 1 and Part 4
- PCC were consulted on the project proposal and provided support.
- ABCB have reviewed the changes proposed and have supported the change to ensure consistency with the objectives of the WaterMark alignment project.

Public consultation is intended to occur in the first half of 2020.

CONCLUSION AND RECOMMENDED OPTION:

Based on this analysis, Option 3 is recommended to appropriately address this issues described and present the highest level of societal benefit.

IMPLEMENTATION AND REVIEW:

Amendment to these standards are intended to be implemented as part of the 2022 NCC revision cycle.

LIST OF ATTACHMENTS:

- Appendix A – Major changes

Attachment A: CHANGES TO 3500.1

~~**5.6.9 Solvent cement joints**~~

~~Pipes and fittings of PVC material shall be joined by solvent cementing (using a suitable cleaner/primer) in accordance with AS/NZS 2032.~~

~~Solvents cements and priming fluids for PVC-U and PVC-M pipes and fittings shall conform to AS/NZS 3879may be used, except where a gap-filling solvent cement is required. For PVC-C pipes, solvent cement and priming fluids can be used. shall conform to ASTM F493.~~

5.6.9 Jointing of Plastic pipes

5.6.9.1 PVC

Jointing of pipes and fittings of PVC material shall be carried out in accordance with AS/NZS 2032.

Where gap-filling solvent cement is required for PVC-U and PVC-M pipes and fittings, solvent cement joints shall not be used

5.6.9.2 PE

Jointing of PE pipes and fittings shall be carried out in accordance with AS/NZS 2033.

NOTE: Acceptable methods for fusion jointing are mechanical, electro-fusion, butt-fusion and socket-fusion.

5.6.9.3 ABS

Jointing of ABS pipes shall be carried out in accordance with AS/NZS 3690.

5.6.9.4 Other plastics pipes

Jointing of PB pipes shall be carried out using suitable fittings.

NOTE: The following contain additional information:

(a) AS/NZS 2642.3 contains information on mechanical jointing fittings for use with hot and cold water polybutylene piping systems.

(b) AS 5082.2 contains information on mechanical and fusion jointing of polybutylene piping systems.

Jointing of PE-X pipes shall be carried out using suitable fittings.

NOTE: The AS/NZS 2537 series contains information on mechanical jointing fittings for use with crosslinked polyethylene for pressure applications.

Jointing of MLP pipes shall be carried out using suitable fittings.

NOTE: The AS 4176 series contains information on a multilayer pipes for pressure applications.

Jointing of PP-R pipes shall be carried out using suitable fittings.

NOTE: ISO 15874.3 contains information on plastic piping systems for hot and cold water installations including appropriate PP-R fittings.

5.6.10 Jointing of stainless steel pipe and fittings

Attachment B: CHANGES TO 3500.4

4.4.8 Jointing of Plastics pipes

4.4.8.1 PVC

Jointing of pipes and fittings of PVC material shall be carried out in accordance with AS/NZS 2032.

4.4.8.2 Other plastics pipes

Jointing of PB pipes shall be carried out using suitable fittings.

NOTE: The following contain additional information:

(a) AS/NZS 2642.3 contains information on mechanical jointing fittings for use with hot and cold water polybutylene piping systems.

(b) AS 5082.2 contains information on mechanical and fusion jointing of polybutylene piping systems.

Jointing of PE-X pipes shall be carried out using suitable fittings.

NOTE: The AS/NZS 2537 series contains information on mechanical jointing fittings for use with crosslinked polyethylene for pressure applications.

Jointing of MLP pipes shall be carried out using suitable fittings.

NOTE: The AS 4176 series contains information on a multilayer pipes for pressure applications.

Jointing of PP-R pipes shall be carried out using suitable fittings.

NOTE: ISO 15874.3 contains information on plastic piping systems for hot and cold water installations including appropriate PP-R fittings.