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Queensland Floods Commission of Inquiry
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Dear Commissioner

Queensland Urban Utilities

Thank you for your correspondence dated 16 November 2011.

This submission is in response to the Commission's invitation to Queensland Urban Utilities (**QUU**) to provide further comment on possible amendments to the proposed Australian Building Codes Board (**ABCB**) standard and more particularly, on:

1. additional costs considerations (capital and operating) relating to; and
2. the advantages and disadvantages of, sealed and pressure wastewater systems.

Sealed wastewater (sewer) systems

3. We are instructed that generally:
 - (a) Sealed wastewater systems may be either gravity or pressure systems;
 - (b) Gravity systems are generally preferred as pressure systems have higher operating and maintenance costs and are more obtrusive for private homeowners;
 - (c) However, pressure systems are preferred in certain physical situations such as flat or undulating terrain and poor ground (for example, rocky) conditions. In these types of situation, the use of gravity systems is less economic. For example, with respect of flat or undulating terrain, the performance of gravity systems is reduced and for that reason, they require the installation of multiple network (large) pump stations. By comparison, the use of pressure systems avoids the need for multiple network pump stations;

Our reference

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- (d) Queensland Urban Utilities constructs wastewater infrastructure in accordance with its sewerage standards; and
- (e) In accordance with QUU's sewerage standards, sealed systems are mandatory for all new sewer networks installed by private developers that become part of QUU's sewer network within QUU's service area.

Sealed gravity systems

4. We are instructed that:
- (a) Sealed gravity systems comprise pipes and maintenance shafts made from plastic material which uses welded joints. These welded pipe systems form a barrier from many of the traditional causes of service failure, which include tree root intrusion and stormwater ingress;
 - (b) Sealed gravity systems are resistant to stormwater and floodwater ingress, with newer ones only made from plastic; and
 - (c) Private sewers which are connected to the sewer network may be either sealed or unsealed gravity systems. Neither type of gravity systems prevents backflow of wastewater from the sewer system onto the homeowners' properties, unless non-return valves are installed in the homeowners' private plumbing.

Sealed pressure systems

5. We are instructed that:
- (a) Sealed pressure systems comprise a sewer network of sealed pressure mains, together with individual pumping units installed at each private household connected to the network. Wastewater is pumped from each household into the sealed sewer network;
 - (b) Each individual pumping unit:
 - (i) Is located close to the house so that there is only a short section of gravity line (private sewer) from the plumbing fixtures to the pump unit; and
 - (ii) forms part of private plumbing and for that reason is owned and maintained by the private homeowner.
 - (c) Sealed pressure systems effectively eliminate points for stormwater ingress to the pressure network, and unlike unmodified gravity systems (see paragraph 4(c) above) prevent the backflow of wastewater from the sewer system onto the homeowner's property.

Additional cost considerations

6. We are instructed that:
- (a) Capital costs for new sealed pressure systems are not significantly different to capital costs for gravity systems (sealed or otherwise) as the additional cost for pumping units is offset by lower costs for the wastewater network;
 - (b) To that extent, the capital costs of installing new sealed wastewater systems is not particularly onerous. However, the capital costs of replacing existing non-sealed systems would be significant, and for that reason, mandating such replacement would be onerous;

- (c) Lifetime operating costs for a sealed gravity system are relatively low for both service providers and private homeowners as the welded joints prevent tree root intrusion, which is the primary cause of blockages; and
- (d) Lifetime operating costs for a service provider of a sealed pressure network are similarly low. However, for private homeowners with a pressure sewer system, power costs would be approximately \$12 per year whilst annualised maintenance costs would be approximately \$85 per year. These are direct costs to homeowners.

The proposed ABCB standard

7. We are instructed that:

- (a) As noted above at paragraph 3(d), QUU requires private developers to install sealed sewer network, either gravity or pressure which will become part of QUU's sewer network.
- (b) As stated in previous submissions, private plumbing is regulated by local government, not service providers such as QUU.
- (c) Private sewers which are not sealed systems may be points for stormwater ingress to a service provider's sewer network, particularly as they age. However, service providers have no control over the type and quality of private sewers connected to their sewer networks, and hence over stormwater and floodwater ingress from private plumbing to those networks.
- (d) Having regard to the above matters, the proposed ABCB standard should require sealed systems for private sewers. The type of system required is dependent on the service provider's network that is being connected to, as follows:
 - (i) For connection to a sealed gravity network, the private sewer should be a sealed gravity type;
 - (ii) For connection to a sealed pressure network, the private sewer should be a sealed pressure type;
 - (iii) For connection to an existing, conventional (non-sealed) gravity network where the property is not subject to flooding or sewage overflow, the private sewer should be a sealed gravity type; and
 - (iv) For connection to an existing, conventional (non-sealed) gravity network where the property is subject to flooding or sewage overflow, the private sewer should be a sealed pressure type. This would not only prevent backflow from the mains sewer to the private sewer, but also allow the homeowner's sewage to be discharged to the mains sewer even when it is surcharging.

We hope this information is of assistance. If you have any queries, please do not hesitate to contact us.

Yours faithfully

