



15 December 2011



Sealed manhole cover causes accident

Review fitting of sealed manhole covers on sewers before their use

During heavy rainfall, a Combined Sewer Overflow operated at a road junction in Knutsford. A sealing plate had previously been fitted to a nearby manhole on a problematic sewer. As a result of high sewer flows, the sewer surcharged and the system became pressurised, causing the road surface around the manhole to lift. The damaged road surface caused an accident involving a bus.

Sealing a cover on a sewer system prone to hydraulic surcharge will result in the sewer flooding at another location, the cover being blown off, or water being forced under the cover and then under the road surface. In cases where water is forced out from under the sealing plate, this will cause a ripple effect and make the road uneven.

It is therefore essential that before fitting a sealed cover or sealing plate on a sewer, that pipeline sewer is subjected to a topographical assessment or hydraulically modelled to ascertain what effect this will have on the network.



Such activities will identify what effect the sealing work will have on other parts of the network or locations where flooding may take place. When the need is identified, the metallic manhole cover (and/or sealing plate) has to be structurally tied to the manhole structure i.e. the concrete cover slab. The concrete cover slab also has to be structurally tied to the manhole walls and base. The manhole is effectively becoming a low pressure vessel. We should always consider putting in a vent which will permit compressed gases (air) to escape, even if the water can't.

Sealed covers do have their place for dealing with odour complaints. It is a recognised method to prevent complaints from our customers and is a visual reassurance to customers that we are doing something to divert/control odours. If we have a fixed ancillary, such as a pumping station, then odour can occur locally and sealing plates may be used then. However, Designers should be aware that any failure will put the pumping station at risk.

What you need to do:

- When considering using sealed covers, full consultation with the Network Manager and their District Engineer should be sought to agree if this is the most appropriate course of action to take in the particular circumstance
- The sewer must be topographically assessed or hydraulically modelled to ascertain what effect this will have on the network
- Sealed covers should not normally be fitted on sewers where hydraulic inadequacy has been identified

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 Date issued: 15 December 2011
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