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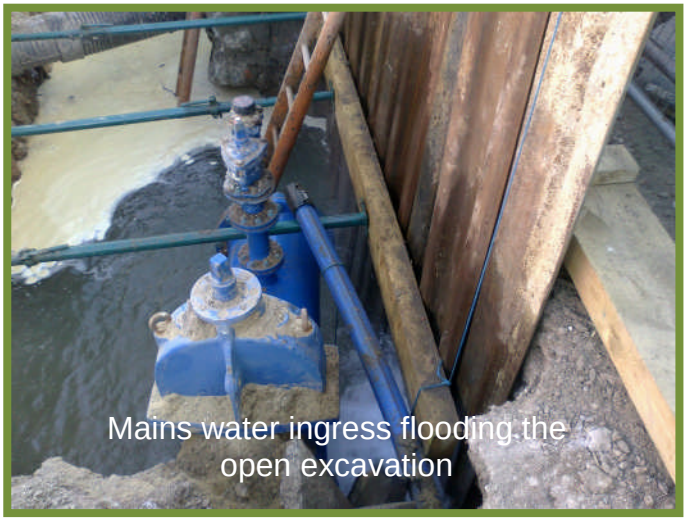
Environmental Alert

Water main flooding 'near miss':

A recent flooding 'near miss' occurred during modifications required to a Developer main in advance of its connection to a new section of water undertaker's supply main.

As part of the installation of a new 450mm diameter supply main to service a Development Site in N. London, the section before the final connection with the previously laid main on the Developer's site had to be amended due to underground obstructions. Part of the private section of main including a hydrant needed to be dismantled to provide adequate space for the final connection to be made in accordance with the changed design.

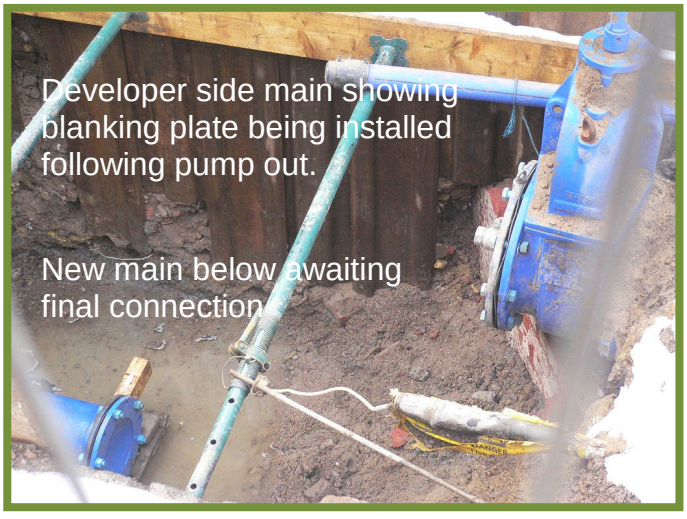
In order to prepare the revised design, which included a fabricated 'special', a supported excavation was created around the main which was then exposed. The existing hydrant on the site main side was carefully opened to check the ambient water pressure and was found to be 'dry' i.e. no water was discharged. Accordingly, it was assumed that the site main was not pressurised and operatives proceeded with the dismantling operation to remove pipework back to the valve flange, including fitting of a temporary blanking plate.



Mains water ingress flooding the open excavation

During this operation, pressurised water began leaking into the excavation from the part dismantled joint into the excavation, and an attempt to stem the flow from the site main was made by checking that the valve was fully closed. This initially failed until it was realised that the valve operation was non-standard (i.e. anti-clockwise closing). Only after the excavation had become flooded was the water flow and ingress finally stopped.

Examination of the hydrant following its removal showed that it had become frozen due to the ambient weather conditions (a number of days of sub-zero temperatures), exposure of the pipe end and hydrant within the open excavation, and lack of frost valve on the hydrant.



Developer side main showing blanking plate being installed following pump out.

New main below awaiting final connection

The excavation was in close proximity to a Network Rail tunnel structure which luckily was not directly affected by the floodwater, however the situation could have had much more serious consequences had the flow not been brought under control when it was. The floodwater was pumped to a nearby surface water drain.

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Good Practice:

- Ensure that comprehensive 'as-built' drawings and information are provided for 'private' mains and infrastructure; these should be available from the developer as part of the 'Health and Safety File' (particularly for mains installed under the CDM regs), or as part of the client (i.e. water undertaker) 'pre-construction information'.
- Be mindful of the prevailing weather conditions! Water mains are installed at depth to prevent or minimise the risk of freezing. If exposed by removal of soil, and left un-insulated they may quickly become frozen and fracture, or (as in this case) create a false impression of being dry or de-pressurised.
- As part of contingency planning, always check valve operation before dismantling pipework that may be 'in service'. If in doubt about its operation or function, ensure that thorough investigation is carried out to check markings and instructions on the infrastructure, or contact the developer / installer for advice and / or technical support.
- Ensure that a detailed contingency plan is in place that considers 'what could go wrong' and ensure that suitable equipment is available on stand-by to handle any emergency situation that may arise.
- Carefully check trench and excavation supports following flooding and subsequent pump out of an excavation to ensure that the supports are in good condition and ground stability has not been compromised (i.e. they are not at risk of collapse).

Additional guidance:

- In accordance with CDM regulation 31:

(4) Construction work shall not be carried out in an excavation where any supports …. have been provided …. unless:

(a) the excavation and any work equipment and materials which affect its safety, have been inspected by a competent person:

(i) at the start of the shift in which the work is to be carried out,
(ii) after any event likely to have affected the strength or stability of the excavation, and
(iii) after any material unintentionally falls or is dislodged, and

(b) the person who carried out the inspection is satisfied that the work can be carried out there safely.

- EA guidance / position statement for dealing with 'Temporary Water Discharges from Excavations': H:\Company Policies\Environmental Management\Environmental Guides\EA
- EA PPG6 'Working at Construction & Demolition Sites' provides comprehensive guidance on managing a range of issues that may cause an environmental problem: H:\Company Policies\Environmental Management\Environmental Guides\Pollution Prevention Guidelines