

## Deep Excavations

Document No: IW-HSQE-SA-59

Revision:1.00

Approved By: Finbarr Gubbins

## 1. What Happened?

A critical raw water main burst which resulted in a significant underground leak. The raw water main is nearing end of life (built circa 1950) and is situated in hazardous wet boggy ground. An emergency reactive repair was required to maintain water supply to the network due to no alternative water source available in the local area. Due to the depth of the main and ground conditions, access and egress into the excavation was difficult and there was a risk of material falling/bank slippage into the excavation which presented a major risk to an operator completing the repair.



Image 1.0 – Photos of excavation

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## 2. Immediate Actions

- Sloping, benching, and battering excavation methods were adopted.
- Additional specialist plant (including wide track machines, bog mats & pumps) were hired to remove spoil from the excavation to reduce the likelihood of material coming back into the repair site making it as safe as possible.
- A suitable trench support system put in place for remainder of the works.

## 3. Further Actions

- In the event of any reactive, planned or emergency excavation works, establish a safe system of work, and communicate this to workers.
- A detailed risk assessment must be carried out by a competent person prior to works commencing and must take into account soil saturation levels, adjacent structures, weather expected, worker exposure, falling materials, safe access/egress.
- Weak, saturated, or otherwise unfavorable ground can have a significant effect on the construction and performance of an excavation. Consider having ground investigations and geotechnical assessments for excavations that are complex or may affect nearby structures or harm workers and others nearby.
- Temporary works design, by a competent designer, is critical to identify the most appropriate controls to maintain the integrity of the excavation during the works. Controls are always dependent on the specific excavation but may include the following: sloping/shoring / sheet piling and or other engineering controls and other requirements relevant to the specific excavation.
- Depending on the permeability of the ground, water may flow into any excavation below the natural groundwater level. The supports to the side of the excavation should be designed to control the entry of groundwater and the design should take any additional water loading into account.
- Make sure that the people, equipment and precautions needed (trench sheets, props etc.) are available on site before work starts.
- All temporary works should be installed /completed by competent personnel prior to works commencing and should be checked by the Temporary Works Supervisor.
- If the conditions during construction are not as expected, or if conditions change during the course of the work (e.g., different soils, heavy rain/flooding) take immediate action to protect workers, other people, and property.

# SAFETY ALERT



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- Provide a safe means of getting into and out of an excavation. If a risk assessment identifies that ladders are a reasonable means of access and egress from an excavation, they must be suitable and of sufficient strength for the purpose and must be secured in place at all times.
- Where personnel are required to work in trenches and excavations, it must be ensured that they are inspected by a competent person daily and that this is recorded on an AF3 form, regardless of their depth, Inspection of support systems should also be carried out and should be recorded.
- Ensure that plant, machinery, and excavated material are kept a suitable distance back from the edges of trench/excavations to prevent surcharging and collapse of the trench/excavation's sides. Suitable edge protection must be in place to prevent personnel from falling into excavation.
- A specific Emergency Rescue plan should be in place for all deep excavations and all involved should be briefed so that they know what to do.

## 4. Further Information

For further information on this safety alert please contact [hsqe@water.ie](mailto:hsqe@water.ie)

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