

# DEWATERING OF A DEEP BUNKER EXCAVATION

## PETERBOROUGH EFV

**CLIENT** INTERSERVE

**DURATION** 9 MONTHS | **VALUE** £225,000

### PROJECT INVOLVEMENT

INSTALLATION OF A PERIMETER EJECTOR WELL SYSTEM OF 35 WELLS TO 17 M BGL AROUND A DEEP EXCAVATION TOGETHER WITH A NUMBER OF PASSIVE RELIEF WELLS TO MANAGE RISK OF BASE HEAVE

### INTRODUCTION

In October 2013, Project Dewatering Limited (PDL) were contacted by Interserve, to propose a design to manage groundwater during deep excavation works at the Peterborough EfV project. The excavation was being undertaken to construct a 7.5 m deep bunker structure, with a 33 m x 43 m perimeter, as storage for the new plant.

The system needed to manage groundwater within the Upper River Terrace Deposits, together with potential 'over bleed' at the gravel clay interface, and also to manage the risk of base heave caused by an underlying sub artesian groundwater body.

### THE WORKS

PDL were contacted by Interserve following their commencement of works. Following a review of the provided data together and a site visit, PDL proposed a 35 well ejector system to pump from up to 17 m bgl. The ejector system was designed to dewater the Kellaway Sand beds through which battered slopes were formed, combined with depressurising the low permeability Limestone layers which contained significant groundwater pressure below the base of the excavation. A further 12 no. passive relief wells were installed to relieve the pressure from sub artesian waters (with a recorded rest water level of 1.2 m bgl) within the footprint of the excavation.

The system was installed within 3 weeks of contract award and then took a further two weeks of operation to achieve the required drawdown to allow excavation to commence.

The system was installed with both a duty and standby pumping system and with an ejector located in each well. The ejector is a form of venturi which uses a recirculated high pressure water flow to suck in water from the screen section of the well. Using this method allows for effective dewatering of lower permeability soils where borehole pumps would run dry and overheat, with the added benefit of generating a vacuum in the soils. The passive relief wells were completed with gravel and linked with surface drains to an engineered sump pumping system.

The system achieved the drawdown required, managed base heave risk, maintained a dry excavation base and allowed the client to complete the works on schedule. The project showed that PDL were able to respond quickly and were able to be flexible, tailoring the installation such that the system was effective and robust, but that the system was also cost effective.



**PROJECT  
DEWATERING**

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Call us now on **01473 658807** or email us at **enquiries@project-dewatering.co.uk**

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