MANAGEMENT OF GROUNDWATER DEPRESSURISATION TO PREVENT SEAFRONT SOIL EROSION ASHCROFT HOLIDAY PARK

CLIENT PARKDEAN RESORTS **DURATION** 3 YEARS **VALUE** £255,000

PROJECT INVOLVEMENT

INSTALLATION AND LONG TERM MANAGEMENT OF A BOUNDARY, GROUNDWATER LEVEL CONTROL, SYSTEM TO PREVENT ONGOING SEAFRONT SOILS EROSION.

INTRODUCTION

In 2014, Project Dewatering Limited (PDL) were approached by Parkdean Resorts to suggest approaches to stop the ongoing seafront erosion of soils at the Ashcroft Holiday Park. The seafront erosion was caused by saturation of the underlying Bagshot Formation due to elevated groundwater levels. This led to elevated pore pressures and reduction of effective shear strength, which together with slope instability caused by seepage pressures at the cliff face, resulted in the erosion of cliff base soils into the sea. PDL proposed an automated ejector well system to manage groundwater levels and so to reduce the ongoing soils erosion.

THE WORKS

Following a review of the provided data together with site monitoring and groundwater modelling, PDL proposed an initial system to protect the most valuable site boundary structures, namely the existing park sewage treatment plant and the amenity building which includes a swimming pool.

For the area around the amenity building the system proposed was centred around the installation of 17 no. deep ejector wells installed along a 170 m sea frontage, with a 10 m spacing, to a depth of 14 m bgl. For the sewage treatment plant 26 no. ejector wells were installed (on a 5 m spacing) to 7 m bgl along a 130 m sea frontage. The systems were designed to reduce groundwater levels to the top of the underlying London Clay formation.

EXTRACT



The system, designed to protect the amenity building, was installed between November 2015 and January 2016. A bespoke pump and control cabin was manufactured off site, with 17 pump chambers and over 400m of pipework installed across the park to connect the dewatering system to the parks own water treatment plant. The system is continuously monitored from the PDL head office in Ipswich with scheduled maintenance visits to keep the system in peak performance.

A duty and standby pumping and control system with internet management was containerised, with an ejector located in each of the wells. 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 system is not limited by the depth of groundwater.

The system achieved the drawdown required. The managed groundwater levels have prevented the erosion of soils which are still ongoing in areas of the site not protected by this system. PDL are shortly to commence the installation of the next phase of the project which extends the system to protect more of the site boundary. The project showed that PDL were able to provide an innovative, effective solution to tackle a difficult and unique groundwater related problem.



MONITOR | CONTROL

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www.project-dewatering.co.uk