

Ground Water Dynamics Silverstone Case Study



Improving infrastructure at Silverstone



BEFORE



Drilling



AFTER



Drilling

The Problem

Silverstone race circuit maintains a significant internal road network which provides access and transportation for staff, workers and members of the public. During racing events it is crucial that these roads are in good condition as service vehicles may need to access the track. One such road, adjacent to a two-meter high grass bank, was continuously flooding and the integrity of the road was being undermined as the road surface itself was sinking due to the amount of water present underneath the tarmac. Also, the pooling water was also flooding a communication duct which carries live cabling. GWD were chosen to deliver a drainage and ground stabilisation solution which would remove the standing water, stop the continuous flooding, enabling the ground to dry out and the road to be resurfaced.

Our Solution

Following a site survey it was established that there was just enough room between the side of the road and the grass bank for the GWD drill-rig to drill the required bore holes. The design itself used the tried and tested "linear formation" of 6 metre lengths of Energy-passive Groundwater Recharge Pumps (EGRPs). At depths of 6 meters and beyond, 3 x 6 metre lengths of EGRP are

PROJECT FACTS

Client



Location

Towcester, Northamptonshire, UK

Project Facts

20 bore holes at 1.5 metre centres to a depth of 6.1 metres and then inserting the EGRP solution.

interconnected and then capped to form a much more powerful groundwater pump. Three additional 6 metre EGRPs were installed on the other side of the road to form a defensive barrier to sub-surface water which was moving underneath the road and adding to the problem.



The Geology

The 770 acre estate is situated on the Blisworth Clay Formation – Mudstone and bordered by Limestone

The Installation

The installation involved drilling 20 bore holes at 1.5 metre centres to a depth of 6.1 metres and then inserting the EGRP as soon as the augers were finished drilling and the drill-rig was out of the way. In such wet ground conditions recently drilled bore holes can quickly collapse leading to a complete re-drilling exercise. The EGRP system was positioned 100mm below ground level and a free draining top dressing was used to close off the bore hole before gravel was spread out on the surface along the road side.



What are the benefits of EGRP?

- The EGRP System increases the rate at which surface water soaks into the ground. Vertical bore holes are drilled less than one metre apart, in a "diamond" pattern, and then the EGRPs are capped and inserted at varying lengths from 1.5m to 12m as per the design drawings.
- There is little or no disruption to playing surfaces and the ground remains in use during the install. Each EGRP is installed circa 20cm below ground level and once inserted the top 20cm of the bore hole is refilled with free draining top soil and/or the turf which was removed before drilling.
- There is an immediate localised improvement in percolation rates following the install of the system which is due to the physical drilling of the bore holes. It takes twelve weeks for the ground to resettle back around each EGRP which we refer to as the "acclimation process", after which the system begins to work.
- EGRP deals with rainwater at source by accelerating the infiltration rate of normally poor draining soil types and negating the risk of overloading natural water ways and/or municipal drainage systems.
- During hot dry spells the EGRP system enables moisture in the ground to return to the surface layers rehydrating the root zone and assisting the grass sward during the summer months.
- No maintenance of EGRP is required as the system is self-cleaning as it discharges into fissures which form over time around each device. Optimal performance for sports surfaces is achieved by ensuring that natural surfaces are well maintained i.e. aerated, free from thatch and organic matter.

The match is never off with Ground Water Dynamics EGRP solutions



Whatever type of sporting activity, efficient and effective drainage is essential in maintaining a good quality playing surface.

Loss of use due to water logging or damage to the grass can result in cancellation of games, lost fixtures, dissatisfied sports people and supporters and potentially financial losses.

An efficient drainage system which is capable of eliminating standing groundwater and which maintains steady moisture content within the ground even after the heaviest downpour, will vastly improve both the quality of the playing surface and the experience of those playing upon it.

Improved drainage also enables grounds people to deliver easier and more effective maintenance on time and on schedule.

Groundwater Dynamics fully understand the needs and pressure on sports clubs and local authorities to provide high quality, high yielding playing surfaces all year round. Our philosophy is to give honest and practical advice at all levels. We use our experience and technical knowledge to provide our clients solutions with their specific needs in mind. We investigate and evaluate each proposed project and produce site-specific recommendations.

Our EGRP technology is ideal for the use of the following sports: Football, Golf, Cricket, Rugby, Race Courses, Equestrian Events, Motor sports and Sports Training Facilities.



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