



## Kingsknowe Golf Club

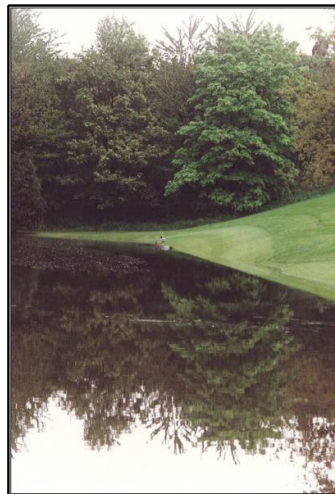
### Draining Rolling Terrain and Natural Valleys



Kingsknowe Golf Club is an 18-hole parkland golf course, located on the western side of Edinburgh. The original course was laid out by Alec Herd, the 1902 Open Champion, in 1908 before being re-designed by the famous golf course architect James Braid in the 1920's. The course, renowned for its tree-lined, dog leg holes and rolling terrain, is a Par 69 course of 5,938 yards in length offering an enjoyable yet challenging golfing experience for golfers of all abilities.

#### The Challenge

- Kingsknowe golf course is set amongst rolling terrain and therefore is very susceptible to run-off water collecting within natural valleys across the golf course from the numerous slopes framing many of its holes.



- In particular, many of Kingsknowe's greens suffered due to being sited in the lower lying areas of the golf course where excessive run-off water collected - puddling and flooding the greens on a frequent basis.
- Kingsknowe GC is hugely reliant on one main drain running across the golf course in a North Easterly direction. The outflow feeds into the Water of Leith and services the collection of all excess water from fairways, approaches and green drainage systems close enough to be linked.
- **The key challenge is therefore to get excess surface water off the playing surfaces during inclement weather allowing the course to remain open for more days each year, providing firmer drier playing surfaces and enhancing the golfing experience for all golfers at Kingsknowe GC.**



## The Solutions

- The club introduced a number of fairway intercept drains taking any surface water off the playing areas and routing into a recently constructed main drain running diagonally through the golf course.
- In areas where drains can be connected into the main drain, spider's web patterns of intercept and lateral drains have been created. These drains are connected into 'drainage chimney pots' along the main drain. The chimneys are situated in the lowest lying areas of the fairways along the main drain line – where excess surface water in areas of approx. ½ acre can feed through the drainage webs into the main drainage chimneys – creating much drier, firmer fairway conditions in these areas.
- Creation of additional herringbone drainage systems on fairways too far away to use the main drain as the outlet, connecting into out-of-play areas housing newly created drainage sumps. These drainage sumps have significantly dried out and firmed up the fairways within the targeted in-play areas of the golf course.

## The Outcomes

### *Golfing Benefits*

- Drier, free draining fairways, promoting a healthier environment to optimise turf conditions.
- Firmer turf conditions reducing divot damage in the in-play areas of the golf course.
- Reduction in weeds – daisies, dandelions etc., incidences of pest infestation and worm casting. Green approaches now also aerated and top dressed in the same manner as the greens. This has resulted in a measurably higher sand content in the upper soil profile of these areas of the golf course, creating less desirable habits for earthworms.

### *Economic Benefits*

- Full golf course remains open, more days of the year, for play for members and visitors alike.

### *Environmental Benefits*

- Reduction in surface run-off collecting in the natural valleys of the golf course where the water often lay stagnant for extended periods of time, particularly on lower lying greens, enhancing turf health.

## The Success Criteria

- Commitment and support of the Committee to fund the required drainage works.
- Reduction in the number of days golf lost due to flooding.
- Much drier, firmer underfoot conditions throughout the golf course.
- Reduced Health & Safety risks on the golf course, with less incidences of wet and slippery slopes.
- Enhanced golfing experience for members and visitors alike.
- Reduced damage to the golf course from play in wet weather.

# Sustainable Golf Course Management Project



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## What Next?

- Additional fairway drainage to be added to the remaining wetter/softer in-play areas, particularly in fairway landing zones for all categories of player.
- Commence a more aggressive Verti-draining programme combined with top dressing on all fairway landing zones and high divot take areas to assist natural drainage of these surfaces and speed up recovery from golfer traffic.
- Overseed weaker spots on fairways and in-play areas with a bent / fescue mix.