

# Sustainable Golf Course Design

## INTRODUCTION

For golf courses, sustainability is about:

- Providing playing surfaces of a suitable quality.
- Constructing and maintaining the golf course in a way that minimises the impact on the environment.
- Ensuring that the business associated with the golf course is sustainable.

Golf clubs will only survive if they can afford to maintain playing surfaces to a suitable standard. On the revenue side, providing a golf course that presents all players with both suitable playing conditions and an engaging golfing experience will help to attract and retain members and green fee players (which equals economic sustainability). With regard to environmental matters, minimising resource use (e.g. water, fertiliser, fuel, pesticides, etc) is a key component of reducing environmental impact. How a golf course is designed (and built) will have a major impact on these aspects – this is what sustainable golf course design is about.

## GOLF COURSE DESIGN “PHILOSOPHY”

People with an interest in golf course design will be familiar with terms such as “strategic” and “penal” golf course design.

Strategic design provides players with a range of options for how they might play a hole. A strategic golf hole is a test of both thought (How will I play this hole today?) and execution (Can I successfully execute my chosen option?). A penal golf hole provides the player with no options – the hole dictates how it must be played (narrow, tree lined fairways are a familiar example). Hence, penal golf holes are a test of execution only.

New Zealand golf courses tend to be quite penal, whilst also often lacking interest in the greens and surrounds. Green and surround design should have a major influence on the strategic playing options, by creating favourable and less favourable angles of approach.

This is important because penal golf courses with uninteresting greens and surrounds are not particularly engaging and are unlikely to captivate and retain new (or even existing) golfers. Worse still, such holes can be impossible for some to play – hardly a recipe for attracting and retaining customers.

Strategic golf course design is advocated because it creates more engaging golf courses where each hole provides all players with a realistic playing option. ‘All’ means everyone from the scratch player through to elderly (male and female) golfers or beginners (both adult and children). Unfortunately, a lot of design changes are implemented either solely with the best golfers in mind or because the designer wants to create something with the “wow” factor.

## EFFECT OF GOLF COURSE DESIGN ON MAINTENANCE COSTS

How a golf course is designed and constructed will have a profound effect on how much it costs to maintain.

One of the problems faced in this respect, is human nature – things that are eye-catching have instant appeal and consequently this is what designers often build. Unfortunately, such spectacular and eye-catching golf landscapes are almost invariably more expensive to maintain.



*Spectacular bunkering: eye catching but expensive to maintain.*

In summary, clubs need to be realistic about how much they will be able to afford for golf course maintenance and avoid design changes that will be too expensive to maintain. With good design it is possible to create something that is inexpensive to maintain but at the same time is interesting and engaging to play and visually appealing. It might lack a bit up-front eye appeal but that is potentially more charming in the long run.

## SUSTAINABLE GOLF DESIGN IN PRACTISE

Detailed below are some aspects of sustainable golf course design.

### ***Use/Retain Existing Features***



*Par 3 2<sup>nd</sup> green at Roxburgh Golf Club*

Consider if and how existing site features (contours, water courses, trees, etc) can be incorporated into the design. The aim of sustainable golf course design is to always retain and enhance what is there rather than ignore it and impose something completely new on the landscape.

### ***Sustainable golf green design***

Minimising inputs is important to both reduce costs and minimise potential effects on the environment. Hence, sustainable design principles dictate that putting greens should be as small as possible, yet big enough (but no more) to cope with the amount of wear that will occur. For most New Zealand golf clubs, a green size in the 400 to 450m<sup>2</sup> range is sufficient.

Why waste money building and maintaining unnecessarily large golf greens?

It's not as if big greens offer anything special from the design point of view. In fact, just the opposite - big flat greens are often just dull and who gets their kicks out 35m putts? Conversely, small greens are great because when coupled with good surround features, every approach shot is inherently interesting.

Small greens ensure that all of the green surround features are in play at all times. Compare that to large, expansive putting greens where surround features like a lake or a bunker on one side of the green can be so far away from certain hole locations that they simply aren't in play.

One reason for overly-large putting greens is in order to incorporate "excessive" contour and something that is visually spectacular. Excessive contour in putting greens is generally difficult and more costly to maintain.

One of the ironies with large but highly contoured greens is that they can become hopelessly small in terms of 'cuppable' area as the green speed increases, making more and more hole locations unusable. With sustainable green design, the green contours would be matched with the normal green speeds maintained on the golf course to maximise the 'cuppable' area and hole locations.

### ***Sustainable green surround design***

The emphasis with sustainable golf course design is on creating interesting and varied green surrounds to complement the relatively simple, elevated putting surfaces. For "sustainability", these surrounds must be easy to maintain so excessively steep contours that are difficult to both mow and retain grass cover on, are to be avoided. Once again that is not to say uninteresting – the type of surround slopes I am talking about are the flowing green surround contours seen on courses like Royal Melbourne, Pinehurst No. 2 and on many of the British Links courses.



*13<sup>th</sup> hole at Muriwai Golf Club. An example of a relatively small and moderately contoured green where the surround features create all the challenge necessary.*

One of the keys to the effectiveness of such green surrounds is short (fairway length) grass, particularly on the slopes that fall away from the putting surface. The short cut grass means that balls that miss the putting surface roll further away rather than hold up close to the green edge in rough length grass.

As innocuous as it might appear, short grass then becomes a fearsome hazard, especially for players of above-average ability. These good player's near misses run further away from the putting surface and then present the player with several shot options (e.g. bump and run, lob it onto the green, "pop" it off the up slope or putt it). Choice leads to doubt and good players hate that.

Conversely short grass in the surrounds does not fill lesser players with dread in the way that bunkers or, to an extent, rough can.

### ***Sustainable bunker design***

Sustainability requires maintenance costs to be minimised as much as possible and that the course is attractive to a wide range of players (for revenue generation). A large number of bunkers is counter to both of these requirements.

However bunkers are an integral part of the game and so there really should be some bunkering on all serious golf courses. Sustainable golf course design principles call for careful placement of a small number of bunkers with a minimal maintenance requirement. This will minimise both the total cost of bunker maintenance and the annoyance factor for lesser players who can't play bunker shots.

The primary role of bunkers is as hazards to defend targets (e.g. greens or fairway landing areas). However, it is probably fair to say that the main driver of bunker installation on modern golf courses is not so much the provision of thoughtfully placed hazards but rather for visual impact.

Sustainable golf course design will avoid maintenance excesses at clubs but this does not preclude the creation of golf courses with real substance.



*High maintenance inputs required here.*

Sustainable golf course design will construct bunkers in a way that keeps the maintenance requirement to a suitable level given the club's resources. It will also make use of appropriate local materials. For example, importing sand from hundreds of kilometres away simply because its colour is considered to be better than the local alternative is hardly sustainable.

## ***Sustainable tee design***

Sustainable tee design is about building teeing areas that are both functional and simple to maintain. This means avoiding unnecessary elevation and associated steep batters that are difficult to mow. Retaining walls and gardens adjacent to tees are also to be avoided wherever possible. Tees should be shaped in a way that is in “harmony” with the existing landscape.

## ***Rough***

On most golf courses there are out of play areas that could be left un-maintained, thus reducing the overall maintenance cost. To be successful this may require some weed control and/or the introduction of new species. The contrast between highly maintained areas and un-maintained roughs can create visually spectacular landscapes whilst increasing biodiversity and wild life habitat.

Great care must be taken with the placement of such areas. If they are too penal and too much in play, they will completely disillusion lesser-skilled players.

## ***Water: ornamental ponds, streams or wetlands and water storage***

Sustainable golf course design will utilise natural water courses that are present on a site as an integral part of the golf course design. Many of our golf courses have (or had) excellent water ways, wetlands or ponds that were piped, drained or filled as part of the golf course development. Restoration of these features to their original form would enhance both the design and the ecology of many of our golf courses.

Conversely, there have been numerous attempts to establish water features on golf courses where they simply aren't appropriate due to the soil type or the lack of a suitable water source. Some of the results have been both embarrassing and tragic – for example, lakes that don't hold water and the classic Kiwi children's-paddling-pool-next-to-green water feature.



*Paddling pool water features are better suited to mini-golf*

The sustainable approach to golf course design dictates that if a water course or pond is not naturally well-suited to a site, don't do it. An exception would be the formation of lakes to collect and store water for irrigation. Such water harvesting is an example of a sustainable practice and it may be the only irrigation water source option on some sites. However, for water storage to be successful, there needs to be a suitable catchment to collect water to store and there needs to be room to create a reservoir of adequate size. Irrigation storage ponds are “drawn down” in the summer and this can be very unattractive. The best place for small irrigation water storage reservoirs is out of sight.

If you are interested in how these principles would be applied to your golf course, contact Alex Glasgow – Ph: 027 496 2486; Email: alexg@nzsti.org.nz