

ECO
BUNKER
build it once





"A big thank you to all the people at the Ecobunker team for their above and beyond support to this project which has added to its enjoyment".

Stephen Monk, Head of Resort Greenkeeping



Fleesensee G.C, Germany, the largest completed synthetic bunker project in Europe.

Bunkers – A Maintenance Burden



Pennard 11th, traditional sod wall February 2015

Pennard 11th, January 2016, Collapsing

'Bunkers may only cover 1% to 2% of the total area of the golf course but can require 20% to 25% of the available resources to maintain'

Jonathan Tucker, Golf Course Architect, STRI, January 2011

At EcoBunker Ltd we agree completely with this statement. Our research (conducted with clients such as Southerndown and Pennard) shows that it is not unusual for golf courses to spend at least £20000 (\$32000) per annum on bunker maintenance. As further research by Master Greenkeeper Paul Worster (Minchinhampton GC) proves, this figure is often a lot more where clubs set a very high standard, often reaching £40000. In the US, where Hazeltine GC is preparing for the Ryder Cup, Chris Tritabaugh, the superintendent has instigated a major bunker improvement scheme to reduce their annual maintenance bill which exceeded those figures given above.

What triggers this onerous maintenance bill? There are many factors but the two most common are the erosion of edges and faces (particularly on links courses) and sand wash down and resultant contamination and drainage problems often seen on inland courses with steep sand faced bunkers.

Until recently, major scientific advances over the years which have helped many other aspects of greenkeeping have not been applied to bunker construction and maintenance. This situation is fortunately now changing, with more sustainable materials and methods entering the bunker arena. At EcoBunker Ltd we have become the world leader in resilient bunker face and edge construction. Now golf clubs prepared to make a modest investment can meet the bunker challenge, and have consistently beautiful, low maintenance bunkers.



Why EcoBunker?

EcoBunker Ltd has a worldwide reach, and the volume of business undertaken since foundation in June 2014 has far outstripped competitors in this niche sector. Why is this? Trust. Trust is vital when promoting an innovative new product to a relatively conservative marketplace. Leading architects with fine reputations, Bobby Weed, David Krause, Bruce Devlin and others have all shown their trust in Richard and his construction method.



At EcoBunker Ltd we have built a skilled and committed team that golf clubs trust will deliver. Founded in June 2014 by civil engineer Richard Allen, the company can draw upon his 26 years of professional experience, design skills and innovative approach (Richard is the inventor of the construction method formerly known as 'envirobunker').

The first person to join Richard at EcoBunker Ltd was Llewellyn Matthews, a fully qualified greenkeeper, ex Walker Cup and professional golfer. Llewellyn has built more bunkers to Richard's design than any other person, by some margin. His knowledge of golf, combined with a flair for shaping, passion for quality and incredible work ethic have made him the 'go-to' man for bunker construction.



In summary, our tight knit team has a great rapport and mutual respect. Our contrasting skills combined mean that we lead on research and development, range of innovative products, technical expertise, reliability, quality and value for money. The construction method is simple, but over the next few pages you will see what remarkable features can be created by stacking layers of recycled artificial grass!

What we do?

We enable golf courses to have better, attractive and consistent bunkers which are long lasting and easy to maintain.

Secession Golf Club, Beaufort, South Carolina

Constructed in the early 1990's, Designer Bruce Devlin wanted to introduce a links style feel to this traditional, walking only golf course. Revetted (or stacked sod wall) bunkers were a key design feature, but these walls proved to be difficult and costly to maintain. The cohesive turf found in the UK is not easy to source in the US, and more extreme climatic conditions added to the rate of erosion. A solution was needed, and it was found by Secession Director of Golf Mike Harmon. Mike, a previous member of the PGA Tour, first saw EcoBunker when he was competing at Southerndown GC in the final qualifying round for the 2014 British Seniors Open. His caddy on that day was our Llewellyn Matthews, and whilst it was disappointing for Mike to just miss out on place at Royal Porthcawl, he nevertheless travelled back to South Carolina with a great story to tell.

In September 2014, Llewellyn travelled to Secession and built two trial bunkers, for member approval. Not only were the members delighted by the bunkers, the club management and Course Superintendent Mark Mitchell were highly impressed by the input and skill of Llewellyn.

A full course 50 bunker renovation project was planned for the summer of 2015. The club decided to use in-house labour, but realised that a project manager would be needed. Llewellyn was the natural choice for them, and in a 14 week period from June to the beginning of September, often in stifling heat, the determined and motivated team built 50 of the best bunkers ever built. At Secession, Llewellyn demonstrated how he could manage a large team, and coordinate works, delivering the project on time and within budget. The feedback from Secession speaks for itself.

Secession was also the first club to invest in our painted bunker face option. This innovation is only available through EcoBunker, and the results were stunning. In recognition of the role Mr Harmon played, we have Christened this shade of brown 'Harmony Brown'.



'We sent Llew on his way, and he will be sorely missed. Not only did the crew love working with him, but I know he gained a few close friends in his time spent here, one of them obviously being me. You are very lucky to have him as part of your team. The project went great this summer and I appreciate all your help and support. The members love the bunkers. And let me know if there is anything you ever need from me and please stay in touch and let me know what you all are up to in the future'.

Mark Mitchell , Course Superintendent, Secession GC





'That looks wonderful, just the way the notes we made were written. EcoBunker has enabled me to finally deliver what I originally intended. I believe we made the right decision to go with them.'

Bruce Devlin, International Golf Course Architect and Designer of Secession GC



'It was fascinating to see your new eco- bunker construction comprising revetment of the faces using artificial turf to thwart erosion caused primarily by sheep. You are pioneers in the field. I congratulate you on your initiative as well as the skill of Andrew and his team in implementing the extensive work. They have not only achieved your aim but have improved the appearance of the course dramatically in consequence.'

Donald Steel, International Golf Course Architect

Southerndown GC, South Wales

Southerndown is really where it all began in earnest. In late 2010 Richard Allen met Course Manager Andrew Mannion. The club had been struggling with their bunkers for many years. A range of different solutions were tried in an attempt to resist the intense erosion of bunker edges which was accelerated by grazing sheep, rabbits and an exposed clifftop location. Nothing had worked, and whilst the rest of this Championship course was well maintained, bunkers were a serious let down. Andrew had heard of 'envirobunker' as Richard's invention was then known as, and he thought it could be the solution to his problems. After the meeting, the club decided to experiment on a practice bunker. At the same time (January 2011) several other bunkers were re-built using natural turf.

Six months later, the natural turf bunkers were already deteriorating rapidly, whilst the heavily used practice bunker was in perfect condition. The club then took the bold and innovative decision to become the first golf club in the world to commit to Richard's synthetic face solution. The club then embarked upon a 5 year phased replacement of all 84 bunkers. Training was provided by Richard and Steve Summerton, and then the club undertook the build under a licence and supply agreement (see page 14 for more details) using their own staff.

In 2014 Southerndown committed to finish the project (40 remaining bunkers) with EcoBunker Ltd. During that summer the course was used as a final qualifying venue for the British Seniors Open. Virtually all the world class golfers in the field failed to notice that well over half of the bunkers were synthetic. We are extremely proud to remain associated with Southerndown, and it is likely that they will, this year, 2016, become the first golf club in the UK to complete the switch to the most sustainable bunker edge solution.



'We held the British Seniors Open final qualifying here in July 2014. The players were very complimentary about the course and especially the bunkers. None of them to my knowledge noticed that they were artificial'

John Peters, Director of Golf, Southerndown Golf Club



The Medalist GC, Hobe Sound, Florida

November 2nd 2015 was an exciting day for EcoBunker Ltd. At Hobe Sound, Florida, Bobby Weed's much anticipated remodelled Medalist Course was opened to golfers for the first time. Members such as Tiger Woods, Dustin Johnson and Rickie Fowler got the chance to experience the course as it was intended by the original designers Pete Dye and Greg Norman. Pete Dye has always been a fan of steep bunker faces, but the lack of suitable turf in the US was always a restraining factor. It would have been interesting to see how Mr Dye's designs would have evolved if Ecobunker had been available in the 1970's and 1980's.

Ex PGA Tour architect, Bobby Weed explains the background to the renovation: 'The course, originally built in the early 1990's, had lost much of its original character. A cornerstone of the project was returning sod wall bunkers to the layout. The natural sod wall bunkers first built –with their sharp edges and clean lines – became victims of erosion. Over time, they were never replaced and the course slipped into a conventional appearance. It might have been no coincidence that many of the original members drifted. Not anymore. As part of a new bunkering scheme, we relied exclusively on Ecobunker to re-establish the sod walls. Once again, the long and strong lines with strategic angles central to the course's strategy stood out. Medalist now features more Ecobunker material than any course in the United States (nearly 7000 sq ft). The impact on playability and aesthetics has been dramatic. Some of those old members who have had a sneak preview of our renovation have already renewed their membership. Furthermore, Pete Dye, with whom I worked on many projects has inspected the finished work and is highly satisfied'.

After winning the tender to supply, EcoBunker provided training to Contractor LePanto. Llewellyn Matthews flew to Florida for a 9 day long intensive build period. He created a range of different designs, all using the 'double stacked' construction method, invented by Richard Allen in 2010, which was first installed at Pyle and Kenfig GC in Wales. LePanto performed superbly, a great example of our sub-contractor option (see page 14) which is available to all golf clubs, and probably a prudent move if a quick build period is essential.

EcoBunker Ltd is very grateful to Mr. De Mudd (President), Bobby Weed and all at Medalist for putting faith in our innovative product that we know will help to reduce bunker maintenance and preserve Medalist's unique charm for many years to come.





Pete Dye inspects work with Bobby Weed at Medalist'



'Llewellyn and Steve's input and experience in this type of bunker build is essential to what we are trying to achieve at Druids Heath GC. We were able to secure their skills by engaging EcoBunker Ltd to build our latest projects on the 7th and 16th holes. The superb results speak for themselves. We will continue to use the EcoBunker construction method for future bunker projects and would strongly recommend Llewellyn and Steve to any other clubs considering similar works.'

Jason Macnamara, Chairman of the Greens

Druids Heath Golf Club

This well managed golf club has improved year on year since opening in the 1970's. Not afraid to invest money where it matters, on the golf course, the course has matured to become one of the best in the area, attracting a high income from repeat visitors and societies. Like many courses, while the greens tees and fairways have improved, it has been more difficult to get the bunkers to match that quality. In response to this challenge, forward thinking Chairman of Greens, Jason Macnamara turned to EcoBunker for the solution.

Typically the bunkers have high sand faces, that are beautiful under perfect weather conditions. However, heavy rain causes regular wash down and sand contamination, leading to costly sand replacement and drainage problems. Furthermore the steep slopes are a magnet for burrowing animals. By using a deeper face, built from resilient EcoBunker, the sand face can be lowered, greatly reducing washdown, and providing a barrier to burrowing. The resultant aesthetics fit perfectly into the parkland/heathland environment: sand is still visible, and the shadows created by the deeper bunker edges provide beautiful contrast especially during morning and evening.

Following a successful restoration of all the bunkers on the 11th hole in 2013, Jason and Head Greenkeeper Jim Lake wanted to bring back the same team of Llewellyn Matthews and Steve Summerton to complete projects on the 7th hole (2014) and the 16th hole (2015). Druids Heath GC is an example of our Principal Contractor option, where we provide the key staff, and sub contract out elements of the work as appropriate. In this instance Jim Lake and his team provided excellent support. It has now been proven that if a project is to be completed within a fixed time frame, to a fixed budget, this is the most reliable method of procurement. At Druid's Heath (and other venues such as Haningestrände, Sweden) our team installed nearly 20 pallets (60 sq m of bunker face), building 4 completely new bunkers in just one week.



Steve and Llew with Jim Lake and Jason Macnamara



Fox resistant EcoBunker



Portfolio

In addition to the four wonderful projects you have just read about, EcoBunker Ltd has over 30 other active projects, in the UK and abroad. We have 5 ongoing projects in the US, major projects in Denmark, Sweden, Germany and The Netherlands, as well as over 20 in the UK and Ireland. The list includes Open Qualifiers, A European Tour venue, historic courses, highly ranked championship venues as well as many hidden gems and traditional members clubs. In the next 12 months we expect 5 of our clients to complete the renovation of all of their bunkers using the EcoBunker method, with many more likely to complete the following year. Here are just a few more.



Lee on Solent



Royal Winchester



Potters Bar GC



Rosslare (Ireland)



Chart hills



Apeldoer GC (Germany)



Sutton GC (Ireland)



Royal St Georges

How We Work

EcoBunker is a highly sustainable solution which involves the construction of retaining walls formed from recycled artificial grass and other components. It is protected by granted international intellectual property (GB2490637B and USD6829665). Whilst the concept is simple there are some key skills and tricks of the trade which need to be learned so that construction can be completed to the highest quality, efficiently and safely. The bunker will last at least 20 years so it makes sense to make sure it is built perfectly.

We are flexible and can offer a range of procurement options, usually following a two stage process.

Stage 1:

Initially we would seek to undertake an economic appraisal of the benefits of installing Ecobunker at your golf course. If EcoBunker can meet your needs, we will identify a small scale project (1 to 3 bunkers) and if required can use this project to train the local greens team or the club's preferred contractor.

Stage 2:

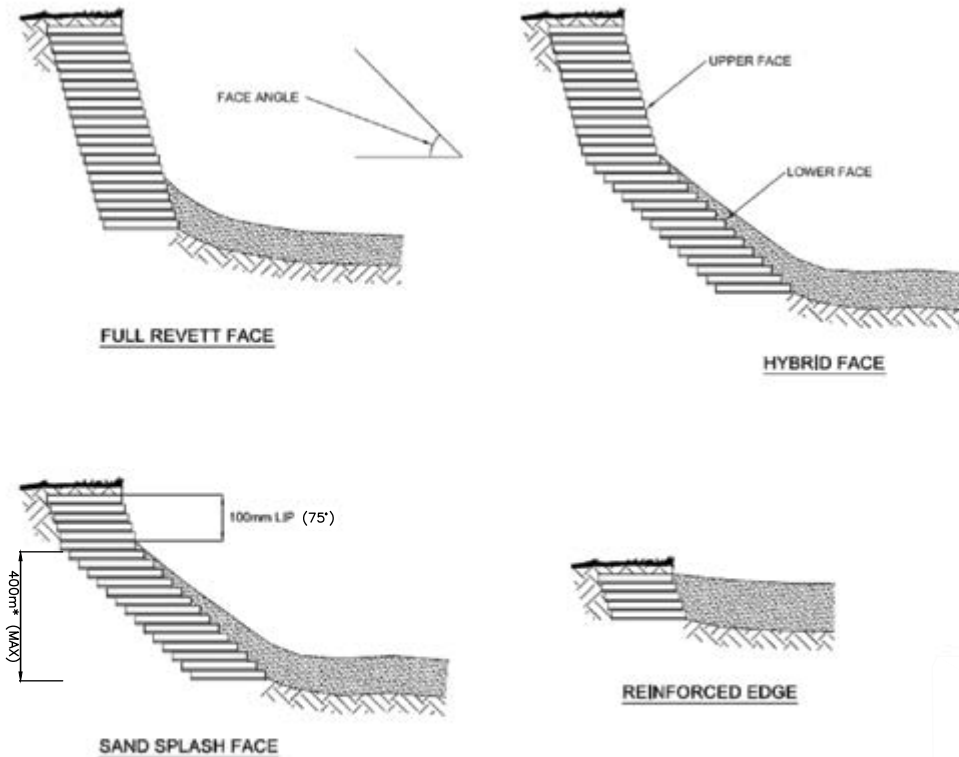
We then offer basically 4 options for larger scale construction:

- Retain EcoBunker Ltd as Principal Contractor (e.g. Druids Heath)
- Use your own staff, 'Licence and Supply' (e.g. Southerndown)
- Use an approved Contractor (e.g. The Medalist)
- EcoBunker provides Project Management (e.g. Seccession)

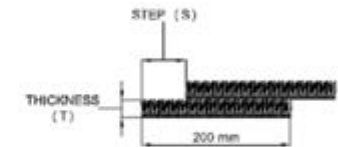
We have a wide range of products and combinations of options, and as a result every project is priced individually. Our quotations are always highly competitive, and if your golf course has a fixed budget we can design a project to fit within that budget and give you maximum value.



Pennard GC, Outstanding work built under a Licence and Supply Contract



FACE ANGLES (DEGREES*)		
OPTION	GREENSIDE	FAIRWAY
FULL REVETT	65-75	65-75
HYBRID	75 (UPPER) 45 (LOWER)	60 (UPPER) 45 (LOWER)
SAND SPLASH	30	30



THICKNESS (T) mm	ANGLE / STEP CALCULATION			
	ANGLES / STEP (S)			
20	45°	55°	65°	75°
19	20	14	9	5
18	19	13	9	5
18	18	12	8	5

*ABOVE 400mm, ALTERNATIVE LINERS ARE BETTER OPTIONS. ECOBUNKER CAN ADVISE AND INSTALL.

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TITLE:
APPROVED DESIGN STYLES

FIGURE No:
ECO-ERD03

Research and Development

No product is perfect. Richard Allen's invention, 'envirobunker' was very good, but there were many aspects that could be improved. At EcoBunker we have raised the product to a new level. Our team members were the first to use artificial grass as a bunker liner, and the first to propose the use of the double stacked turf construction, most recently seen at Medalist GC. We are also the only company able to offer a painted bunker face option. Yes: you can have bunker faces any colour you want! Furthermore we have worked closely with our supply chain partners to improve quality, consistency, efficiency and hence keep costs to a very reasonable level.

Our team comprises the inventor of the construction method, a civil engineer, a highly experienced greenkeeper, a Walker Cup Golfer, a golf club Director and a Contractor. No other team comes close to the combined experience we have at our disposal, and this is why we have the confidence to invest time and money into continual product development and improvement. An example of our research was a study designed jointly by Richard Allen and Dr Christian Spring of the STRI to investigate the best methods of constructing a natural turf edge.

We are problem solvers and we look forward to helping solve you bunker problems and deliver the beautiful, consistent and affordable bunkers that your club members desire.

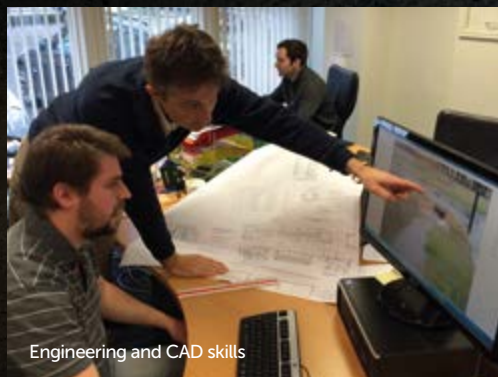
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With a bound aggregate liner at Loch Lomond



With EcoLiner at Lee on Solent



Engineering and CAD skills



Photo of Southerndown and Chart Hills courtesy of EnviroSports Ltd.



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Secession GC; Reminiscent of legendary architect Seth Raynor