



A magnificent clubhouse and scenery to make every chocolate box tin designer salivate

"We commissioned drainage consultants Turf Trax, who had done some work for us at Dundonald, to GPS the entire site and worked extremely closely with Tim Colclough on the project.

"The GPS results, once they were put onto drawings, meant that we had a perfect picture of changes and movements underground and we could see where our main links should be. What it meant was that we could find an angle even on what appeared to be a flat area. Even if there was a one or two percent fall it was enough and it helped us go in and say we wanted a main line here and this is the lateral positions we want," said David, who added that the first fairway they did, the 12th, has laterals going in all different directions.

Previous drainage work had led David and Ken to appreciate that sand and not gravel was the best material to use as ochre can migrate easily when the drains are gravel filled, resulting in blocked pipes over time.

"We find that sand keeps things cleaner and when you think about it it's similar to a green construction. If you have a trench and you fill it with sand at the right depths it will work the same as how a green works and move water while retaining moisture."

There was a down side however and a series of meetings and much deliberation later saw the team looking at, and finally fabricating equipment to carry out the task.

"We knew we were putting wet sand into narrow trenches and that it wouldn't flow very well and had to come up with procedures to cope, particularly as we would be doing it over the winter months."

They agreed upon a matrix of a four inch main carrier pipe and then two inch pipes which would be the collectors or cut offs on slopes every four, or sometimes two, metre centres depending on contour slopes, on every fairway and as much rough and semi rough as we could get.

Estimates on how long the project would take varied. The contractor who carried out the initial work estimated 400 metres a day but David and Ken believed that with the peculiar nature of the Loch Lomond substructure and weather conditions 200 metres may have been more realistic. It is the in-house team which has since taken over the job and the 200 estimate proved the more accurate.

"It is more cost effective working out at about £2 per metre for us to buy pipe, joints, sand and parts for the trencher - our labour costs are fixed."

Having an empty golf course is obviously an advantage to Loch Lomond for such intensive work but it certainly didn't mean an easy time for the drainage team.

"We are doing it at the wrong time of year with it pouring with rain for weeks on end and it can be very dark. When it's wet it adds on a third more labour and the size of the team can go up from eight to 11 - Loch Lomond has a full time staff of 18. Cleaning the trench can become a two man job instead of one and you've got to have people laying boards for traffic and then continually moving them. It's not pleasant working when rain is running down your neck and the trench is filling with water, however the team still strive to give 100% in these circumstances said David, who explained it can be very frustrating when you start the day dry, then rain moves in and you have to stop the project. This can happen three to four days out the week.







The squad is around 40% through the drainage project



The scarring has to heal before the start of the playing season in April

They also have the additional complication of ensuring that everything is restored to perfection for April 1st each year and that any other maintenance practice being carried out is completed in advance of their tournament.

"We invested a lot in trackway which makes it easier to work off and we certainly benefited from the additional time we spent doing finishing work. Once the drainage work is complete on the fairway, there is a separate team who do the finishing work, re-turfing and doing repair works to any damaged areas. We almost treat it like a new grow-in fairway and feed it a little bit more and give it a little more height initially, until it is back to 100%.

The peculiarities of the site include the fact that the course is cut out of a peat bog, the fact that the site was used as a dumping ground for the main road that was built along side the loch shortly before the course was build and as a result lumps of concrete slab are regularly recovered, and caused the teeth of the trencher to be replaced every 200-300 metres. Oh yes, and during construction a dozer, which was left overnight on the 13th fairway, sunk, never to be seen again. Nothing could safely be sent in to rescue it.

The greens were rebuilt about five years ago again to solve a chronic drainage problem.

"The new greens were built to USGA Guidelines and now drain at between 300 and 450 mils an hour. The old greens didn't quite meet those standards - they drained at between one and 2.5 mils an hour," he revealed.

The drainage work is approximately 40% completed but already the benefits are there to be seen.

"We have completed seven fairways and the turf quality has improved dramatically because the water gets away quicker and not saturating the root system. In the past for example, if we got seven mil of rain overnight we would not be able to cut the fairways but now we can come in on the morning and cut the new drained holes while the other holes would be to wet to mow.

"Since these holes have been completed we are seeing a much healthier and tighter surface and the nutrients respond much better, while we have more opportunities to do punching or top dressing," said David, adding that as a result of their work they will also be able to reduce the amount of rye grass in the rough.

"Rye was the right choice at the time because it was very easy to get out there and it didn't need a lot of soil contact while we have the resources to cope with the additional mowing implications, but once we get the roughs drier and firmer we are going to introduce more fescues which will in turn reduce a lot of our maintenance as it is now.

"Hopefully we shall be finished by the summer of 2007 with another two winters of hard work."

Loch Lomond has never been afraid to experiment with new ideas and they are currently the first club on this side of the Atlantic to trial the new

American-produced Advance Air system which pumps air into greens and includes sensors to monitor moisture and soil temperature levels.

"We're putting one on the 11th, our most shaded green, and we shall see what sort of results we get but it gives us the option of drying the surface quicker by pushing air in or pulling water out of the profile. If it is successful we may look to put it into other greens."

Once the drainage programme has been completed the crew will look at tackling Loch Lomond's 75 bunkers - digging them out and installing new drainage and new sand.

"It will be like a lead weight being taken off us and we'll have time to look at so many more things on the course," said David, genuinely enthused by the prospect.

The drainage project once completed will open a whole new chapter on Loch Lomond and the work will have been worth it but you can't help thinking that such has been the extent of the work another option could have been to find a nice new sandy site, dig a huge loch and use the fill to create some mountains. It might have been easier in the long run!



This ditch shows the quality of Loch Lomond's sub-structure



The Loch Lomond soil profile



The Advance Air system prior to installation



Perfect for the Golf Course

The JCB Mini CX is ideally suited to a huge number of tasks around the golf course – landscaping, drainage, loading, excavating and much more with its optional powered attachments. At just 1,530kg it's so light you can use it in conditions that make low ground bearing pressure a must. It's incredibly easy to operate and three times faster around the course than any mini excavator.

To see the latest member of the JCB family, call: 0800 393 198 for your nearest dealer.

The JCB Mini CX – the little backhoe that can do a lot.

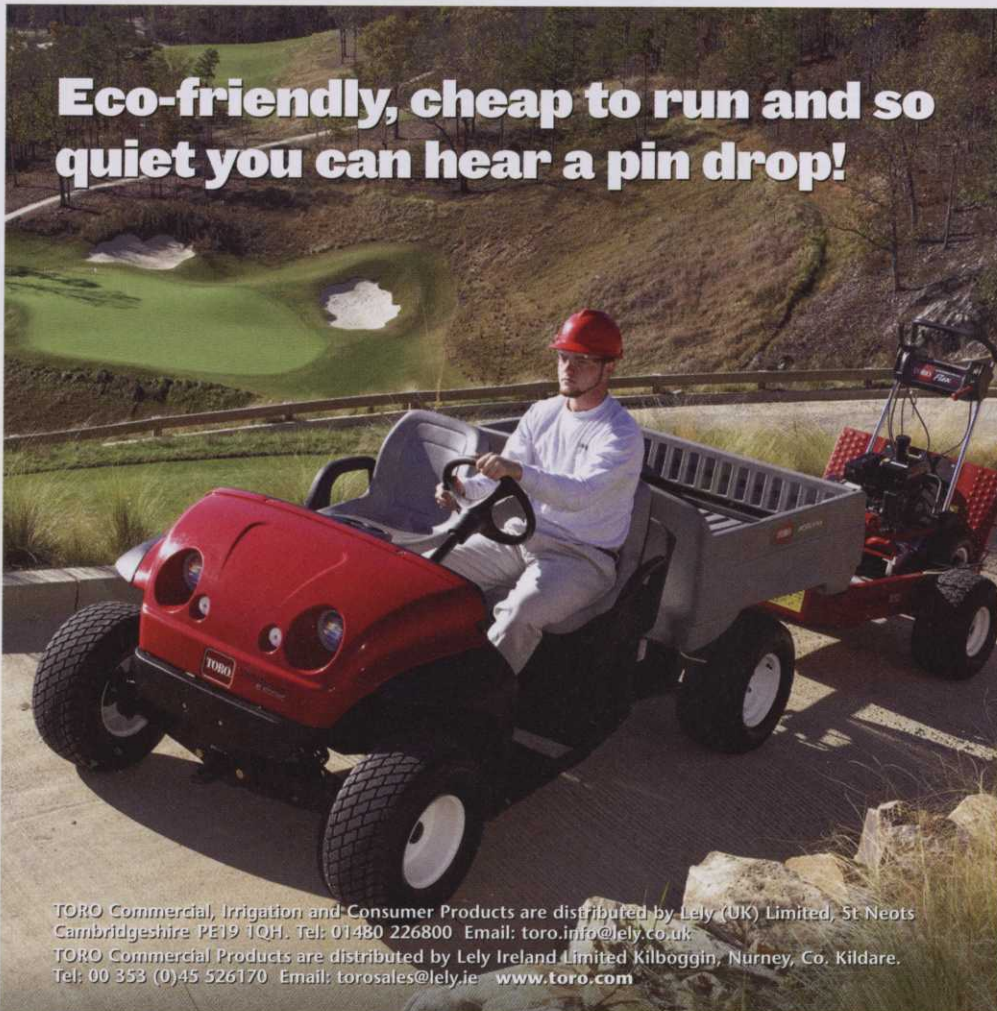


JCB Groundcare, Rocester, Staffordshire ST14 5JP www.jcb.com



GROUND CARE

Eco-friendly, cheap to run and so quiet you can hear a pin drop!



Workman e2050 electric utility vehicle

Small on noise but big on performance, Toro's Workman e2050 electric mid-duty utility vehicle can be put to work wherever it's needed.

Highly productive, its powerful 500 amp drive-train allows for superior hill climbing under all load conditions, while Toro's unique twisting suspension gives it outstanding traction by flexing to keep all four wheels on the ground in uneven terrain. Automatic braking slows it on downward slopes.

Quieter and more environmentally-friendly than petrol-powered vehicles, this electric workhorse keeps disturbance to a minimum for the driver and players out on the course.

For a free demonstration, please call 01480 226800 today.

TORO Commercial, Irrigation and Consumer Products are distributed by Lely (UK) Limited, St Neots Cambridgeshire PE19 1QH. Tel: 01480 226800 Email: toro.info@lely.co.uk
 TORO Commercial Products are distributed by Lely Ireland Limited Kilboggin, Nurney, Co. Kildare. Tel: 00 353 (0)45 526170 Email: torosales@lely.ie www.toro.com

TORO Count on it.

Retail Therapy

James de Havilland argues the case for buying a mini-excavator instead of hiring and points out what to look for when doing so.

A tracked mini-excavator may not be at the top of most golf courses equipment want lists, but few could deny that there are times when having one of these diminutive machines on site would be of use. From digging out tired bunkers through to clearing ditches, there are numerous uses to which these machines can be put. Although it may well be worth hiring in a machine as and when it is needed, having access to an 'owned' machine can make a great deal of sense.



This 1997 Kubota KX41 has a 1.5 tonne capacity. From a dealer, it will cost around £5,500 with 3,000 plus hours on the clock. This is a popular, and thus expensive, size of machine.

Tracked mini-excavators come in a range of capacities, but for the sake of example, this article we will concentrate on machines of nominal 1.5 to 5.0 tonnes capacities. As a used buy, look for a popular model. These will make a sound choice because both OEM and spurious parts are readily available. This is an important point to consider. Entry level buys may well be pretty long in the tooth, even if they are perfectly serviceable, so it is reassuring to know parts should be relatively easy to obtain at a sensible price.

As an aside, an old backhoe loader, such as the ubiquitous JCB 3CX, may have its place on some courses, but these units are heavy, not as manoeuvrable and are less productive as a pure digger than a dedicated 360 degree mini-excavator. If the sole aim is to dig holes or clean ditches, a 5.0 mini-excavator will out perform a 7.0 tonne capacity backhoe, and is much easier to work in a tight spot. They also benefit from an integral levelling blade, so will be suitable for light grading. This is a useful point when preparing tracks and floors ahead of laying concrete.

Where a backhoe loader potentially scores over a tracked excavator is in its ability to move easily between various sites. That said, a mini-excavator will scale a steep set of ramps to gain safe access to a trailer, with small units weighing within the legal maximum that can be towed behind a 4x4.

With regard to tracks, steel tracks remain popular in the North of

England and in Scotland. If low ground pressure and stability are priorities, look for a machine running on 550mm steel plates. Rubber tracks have gained popularity simply because of convenience. Steel track can damage hard surfaces such as pavements, roads and drives, whereas rubber can cross them without any problem. Rubber track has become increasingly popular, and is likely to be fitted to most mini excavators made from about 1999.

As a used buy, small 1.5 tonnes mini-excavators are the most common. This size is easy to tow on a trailer and because of this they are the most popular capacity with builders and DIY users. Larger capacity machines, however, can make a better buy, and as a rule it pays to buy at the larger end to get the best balance between potential productivity and value. In terms of purchase cost, a small 1.5 tonne machine will be an expensive buy against an equivalent 3.0 tonne unit.

As always it is possible to buy a pup, it can make sense to buy from a dealer. Hydraulic pump failures could cost £1000 to remedy with new parts, track and slew motors costing between £1000 and £2000. That said, Japanese construction kit in general is extremely well made and durable. If a machine looks well cared for, the chances are it will be sound mechanically.

Small Japanese engines are also pretty much bomb proof. Many survive terrible treatment and run sweetly over thousands of hours with little attention. If the engine sounds rough or smokes, walk away. Also check the oil and be wary of units that blow oil from the dipstick.

WHAT TO LOOK FOR

SLEW RINGS AND HYDRAULICS

Important: All hydraulic checks are best done when the unit has reached operating temperature; this will take at least 20 minutes. Cold, thick hydraulic oil can mask problems.

Before starting up the machine, take a look between the cab and undercarriage, looking for leaks from the slew ring. If buying through a dealer, ask if the area has been repaired or checked on older machines. Auction and other buys need to be treated carefully if a leak is spotted. Actual wear on the ring gear and drive pinion are unusual on all but the oldest machines, but a failed motor is possible on younger kit that has been abused.

From the cab, operate all the boom controls at once. This should slow, but not kill the engine. If the engine dies, it suggests a pressure relief valve has failed or that the engine itself is seriously down on power. If the engine does not slow, it would suggest the hydraulic pump is worn. During this test, check for black smoke under load from the engine. Check all hoses and connectors.



PINS AND BUSHES

It is reasonable to allow for a degree of wear in the boom and bucket pivots, but there is a difference between reasonable and more severe wear. The tighter the pivots, the better. Some makes and models will benefit from pin and bush pivots, and these are relatively easy to put right if wear has not been allowed to extend beyond the bush. If a pivot needs to be bored and sleeved, the job can be expensive.

TRACKS AND TRACK DRIVE MOTORS

The cost of both rubber and steel track replacement parts have fallen in recent years, but it can still be expensive to put worn track right. It is easy to spot wear in metal track; grab a plate on the track running slack along the top of the carriage and check for play.

Rubber track should be considered in much the same way as a tyre; if there is little or no tread remaining, the track is nearing the end of its life. The drive sprocket teeth should not be pointed. If new rubber track is fitted, the drive sprocket is best replaced at the same time if anything other than lightly worn.

Track motors tend not to give problems, but check the machine steers easily and tracks in a straight line. On older machines, track motors can be an issue; it will usually be more cost effective to buy a sound machine than budget to repair one with failing motors. In general, any running gear problems are pretty easy to identify.

BUCKETS

Used machines should come with at least two buckets, typically a 12 and 18 inch sizes on 3.0 tonne plus machines, but it is reasonable to also



◀ Look carefully for hydraulic leaks. These are best spotted following a running period of at least 20 minutes. Dealers will fix most leak spots prior to a sale, but check before agreeing on a deal.

▼ All pivot points are liable to wear. A degree of play is acceptable, but severe movement can be costly to put right. Again, check what will and will not be fixed before making an offer.



expect to have a ditching bucket as well. This will normally be a 30 or 48 inch item on a 3.0 or 5.0 tonne capacity machine. The latter would also have a 24 inch bucket from new.

New bucket prices vary, but a new set of four will cost around £850, with single items costing around £250. Check the condition of any supplied buckets and try and get as many bucket sizes as part of the deal as possible. Worn buckets can be refurbished.

COSMETICS

Simply look and see what is broken. Ripped seats and damaged ancillaries are to be expected on older kit, but this need not be a major issue. All dealer supplied excavators will have a roll frame as standard.



▲ Drive sprockets should not be worn to a sharp point. When fitting new rubber track, it can make sense to renew the sprocket at the same time.

◀ Wear in metal tracks is easy to spot. Turning the pins to tighten everything up will only work once, so ensure it can be done; new pins and bushes may be needed, and they are not cheap to buy or fit.



◀ Mini-excavators are not difficult to operate, so work through all the controls to make sure everything works.

▶ Japanese made diesel engines have a well deserved reputation for longevity. If the unit smokes heavily or appears down on power, it may be down to a dirty air filter. But it could also mean the engine has been abused, so check.



SUMMARY

Mini-excavators are pretty simple items of kit, although added features make later examples more sophisticated and less non-dealer mechanic friendly. When buying a used example, private buys can secure the best deals, but patient buying through a dealer makes sense for a peace of mind buy.

On non-critical items of kit, buying non-OEM parts can save money and keep an old machine viable. It can pay, however, to stick with genuine engine oil, air and fuel filters.



A Backhoe loader has the ability to move easily throughout the golf course

WHAT CAN YOU EXPECT FOR YOUR MONEY?

The same rules with any item of equipment apply to mini-excavators; better machines will cost more to buy initially but it can be worth spending extra on a sound unit that will not need any immediate repair work. At the opposite end, entry level machines will tend to command at least £3,000 to £5,000 for 1.5 to 5.0 tonne capacities; people know that a mini-excavator has a value, so it is difficult to buy a really cheap machine.

As a rough guide, dealers will typically allow up to 50% back when taking a three year old mini in part exchange, so the same machine will retail for about 60% of its original price. That said, dealers can often buy in machines at better prices, so this rule may not always apply.

Mini-excavator prices, via a dealer, will start at £5,000 to £6,000 for a tidy 1.5 tonne capacity machine. An equivalent 3.0 and 5.0 tonne model will be priced from £8,000 and £12,000 respectively. These are entry level dealer prices, but will secure a machine with a set of buckets and a full dealer pre-sale service and check. If time allows, put in a call to a dealer stating what you want and what your budget is. Patience will almost certainly be rewarded with the best deal.

MAJOR MAKES TO CONSIDER WHEN LOOKING FOR A USED BUY

Kubota: Good product, widely available used, with first class parts support.

Yanmar: Good machines with decent product support.

Takeuchi: Not bad machines, but sporadic support and import into the UK. Parts supply may be variable.

Hitachi: Good history in the UK, but larger 6 to 7 tonne machines are better than smaller models.

Pel Job: Later machines from 2000 fine, earlier models not up to Japanese build standards.

JCB: Worth considering if good support from a local dealer. Do not pay a premium for early models.

BobCat: Machines fine, but support dealer dependant. Good dealers will offer the best buys.

Kobelco: Good excavators, but dealer and importer changes may compromise parts availability and prices.

Volvo: Can command premium prices. Well made.

Please Sir, Can I have a Mower?

Ian Henderson gives some valuable advice aimed at convincing Committees to fund your machinery needs.

Time was when the thought of asking for a new mower or tractor invoked fear into the hearts of Course Managers and Head Greenkeepers throughout the land. Hours on bended knee trying to convince the Treasurer or the Chairman of Green that "You really do need a new greens machine," and that there was no point in spending another £3,000 this winter to repair the 17 year-old model which was affectionately known as the 'Torrey Canyon'.

TIMES ARE CHANGING

Thankfully things are changing for the better. The days of golf clubs only buying machines when it was no longer economically viable to repair them are diminishing as clubs become more professional and business like. With most 18 hole golf clubs turning over anything between £500k and £2 million, it is vital that nothing is left to chance and that proper manageable budgets are put in place.

It is important that Course Superintendents and Course Managers become better and more professional at presenting a package to the Board or Management Committee, which is structured with good rationale and is affordable. There is no point in turning up with a request for £175,000 worth of machinery without having looked at the pros and cons of each machine.

A structured replacement program which is tied into the reasonable life expectancy of the machinery (normally five years) can give lease rentals, which are less than the maintenance cost of keeping old machines running. There is little or no down time and moral is generally much higher.

BUILDING THE JIGSAW

The first thing we need to do is establish an accurate inventory of all the machines currently in the fleet. Again, professionalism is the key. There is no point in writing a list of machines and leaving it with the Chairman of Green.

The list needs to be complete, with serial numbers and the number of hours where relevant. It is important to know when the machine was purchased and the year of manufacture. It is also vital to know if that machine is relevant to the cutting policy which is currently in place. There are many golf clubs where the back of the workshop is full of redundant machines, which are taking up space and could be converted into cash as a trade-in against new machines.

You will need to know what your repairs and renewals have cost in the past as well. If your local machinery dealer finds out you may be in the market for £100,000 worth of mowers, you would be surprised how hard they will try to help you dispose of such equipment.

Once this list is complete, we need to check if there are any leasing payments outstanding on any of the machines. This needs to be considered as any outstanding monies will need to be deducted from the trade in value of that machine. When this exercise is complete it is time to look at the 'wish list'.

THE WISH LIST

Imagine you have just taken over as Course Manager at your golf club and there are no mowers, tractors or aeration equipment of any sort. You are starting with a clean sheet of paper and have the choice of any machine on the market. You as Course Manager need to decide which machines are best suited to your course and start to compile your wish list.

Many of the major manufacturers will offer you additional discounts to go 'wall to wall' with one make. It is vital at this stage to make the correct decisions and for the right reasons when it comes to choosing your fleet.

Your local Groundcare Dealers will normally have a comprehensive demonstration fleet that will allow you to assess each machine properly on your own course so we can then start to finalise exactly what your needs are. There are no rules cast in stone with regards machinery and some smaller courses may consider second-hand machines. These too can be included in this type of agreement.



To contact Golf Finance to discuss your requirements for Finance Lease and Operating Lease options



A Faraway Golf Club

Groundsare Fleet Schedule

Lease & Contract Hire - 5 Year

2005

Machinery Description (see spec sheet for details)	RRP (Excl Vat)	Discount Total	Discounted Price	True Trade-in Value	Balance to Finance
1 x Fairway Mower	£31,869.00	£3,186.90	£28,682.10	£0.00	£28,682.10
1 x Greens Mower	£22,594.00	£2,259.40	£20,334.60	£1,500.00	£18,834.60
1 x Utility Vehicle & Sprayer	£24,991.00	£2,499.10	£22,491.90	£1,000.00	£21,491.90
1 x Tractor	£32,140.00	£3,214.00	£28,926.00	£0.00	£28,926.00
1 x Hand Mower	£4,374.00	£437.40	£3,936.60	£0.00	£3,936.60
Totals	£115,968.00	£11,596.80	£104,371.20	£2,500.00	£101,871.20

60 Month Lease		
Lease 1+59 (Excl Maint)	Monthly Maintenance*	Total Monthly Cost (Excl VAT)
£574.79	£208.33	£783.12
£377.45	£166.67	£544.11
£430.70	£166.67	£597.36
£579.68	£125.00	£704.68
£78.89	£100.00	£178.89
£2,041.50	£866.67	£2,908.17

60 Month Contract Hire		
C/Hire 1+59 (Excl Maint)	Monthly Maintenance*	Total Monthly Cost (Excl VAT)
£518.86	£208.33	£727.19
£340.72	£166.67	£507.38
£388.79	£166.67	£555.46
£523.27	£125.00	£648.27
£71.21	£100.00	£171.21
£1,842.85	£866.67	£2,709.52

Monthly Payments

£2,041.50	£866.67	£2,908.17
-----------	---------	-----------

£1,842.85	£866.67	£2,709.52
-----------	---------	-----------

Notes:

Example Matrix

Annual Total

£24,497.99	£10,400.00	£34,897.99
------------	------------	------------

£22,114.20	£10,400.00	£32,514.20
------------	------------	------------

An example of a Fleet Schedule spreadsheet

MAKING SENSE OF TWO LISTS

At this point we need to start marrying the two lists together: What we have and what we would like. We need to do this by transferring all the information onto a set of matrices.

In this way we can assess the cost of the new machines and we will also know by then the net value of the existing inventory.

HOW DO WE FUND THE NEW MACHINES?

Most golf clubs prefer to lease machinery. It is convenient, cost effective and very flexible.

With the VAT spread over the life of the agreement, rather than being paid up front it can also help with partial reclaim.

There are two main types of lease: Finance lease or Operating lease:

- Finance lease is where the equipment is paid for in full and the club effectively own the asset value at the end of the period.
- Operating lease, or contract hire as it is sometimes known, is where the club would hire the machine over a set period and at the end the machine is returned to the supplier.

HIRE PURCHASE

The VAT on a hire purchase agreement is paid up front and the club effectively own the asset at the end of the agreed hire period. As with many proposals, it may be necessary to omit or change some items and to mix and match between manufactures to make sure your machinery fleet is the best you can possibly get for your particular course and situation.



This is the point at which you can start speaking with your Treasurer and the Board. With a structured presentation and a reasoned argument you will have a much greater chance of getting your 'wish list' than simply asking for a large chunk of club funds.

Prepare properly and get professional help with the number crunching and you may be pleasantly surprised by the reaction from the management team.

Ian Henderson is Managing Director of Golf Finance Ltd.
Tel: 01620 890200.

**Call: 01620 890200 or
email:sales@golffinance.co.uk**

Research Proves Popularity

Bronnie Allen highlights the key findings from WRAP's latest research and recaps on the recycled products that meet the quality and performance standards required for golf.



Creating markets for recycled resources

Recent research is proving that the awareness of recycled products for golf courses is growing significantly. The results also provide an interesting insight into what greenkeepers prioritise when considering recycled products. In order to gain a benchmark for the wider golfing industry into the current awareness of recycled products among greenkeepers and Course Managers, WRAP recently commissioned research with 100 BIGGA members.

The research focused on identifying which recycled products are most commonly used, how aware greenkeepers are of the range of products available, which sources of information greenkeepers use to find out about new products and what factors would influence their decision to switch to recycled products.

Results showed that more than half of those questioned (53%) were already using recycled products or materials on their courses. Recycled compost was the most commonly used product scoring 43%. This was not surprising, as golf courses have been composting their own grass cuttings for a long time.

Newer products such as recycled woodchip and recycled plastic products such as seating and bins also scored well with 42% and 17% respectively. Processed sand, derived from 100% recycled glass, is a relatively new material to the golfing industry and despite a high demand for the product, it has seen a slow response from suppliers. This will have no doubt contributed to the low 2% usage measured by the research.

However, this figure is likely to rise with several high profile suppliers now sourcing processed sand in response to customer demand. WRAP also has plans for the first ever construction of 'for play' greens and tees constructed using processed sand in rootzone material and bunkers. If successful, this project could see the launch of the first commercially available processed sand based rootzone mix.

Across the 100 interviewees, the research found that there was a very high level of awareness of the range of recycled products available. This could, in part, be attributed to the increase in information available about recycled products - 83% of those questioned said that golf magazines were their main source of information about recycled products, with advertising and existing suppliers also scoring well, 46% and 33% respectively.

However, the research also points to the fact that greenkeepers already using recycled products can help to influence the choices of their fellow colleagues, with 53% of respondents stating that they find out about



products from other greenkeepers or word of mouth. Respondents were clear about the most important criteria when considering the use of recycled products.

Quality/performance of the product was ranked as the top priority criteria with cost and environmental responsibilities in second and third place respectively.

THE PROOF IS IN THE PRACTICE

This recent research has shown very positive results in terms of current levels of awareness of recycled products. However, the findings also revealed the importance of quality and performance in influencing greenkeepers to choose recycled products over other alternatives.

In order to develop a better understanding of the performance benefits of one particular recycled product WRAP has been working closely with the STRI - Sports Turf Research Institute - on trials assessing the use of processed sand.

Initial trials have already revealed that the characteristics of processed sand make it particularly beneficial when used in certain applications such as:

- **Rootzone** - where it shows significantly improved filtration and drainage rates.
- **A fairway top dressing** - where it can help to improve firmness during the wetter months.
- **Bunker sand** - where its angular nature provides stability underfoot and reduced plugging of the ball on impact.

While these trials firmly established the performance benefits of processed sand, further work was needed to try to alleviate one particular concern relating to the slightly green colour of processed sand. Many

