

Removing the SCAR

If you walk out of Hetton le Hole on the south side and turn onto the footpath to Easington you skirt a small lake on your right and find yourself walking through a smooth green landscape which stretches into the distance, rising and falling gently, evenly covered in fresh young grass. Not so long ago this was the site of the Elemore colliery spoil heap, a seventy five foot high hog's back type formation which has dominated the local landscape for nearly 30 years since the mine was closed down in 1960. Over the years the spoil had become covered in scrubby grass and shrubs giving the broken land some dignity as nature slowly took it over again, but it has had the bleak look of wasteland for so long now that its regeneration is likely to be welcome.

The transformation is due to ambitious plans by Sunderland City Council to reclaim such land left derelict by the activities of the mineral extraction industries and give it a new lease of life by officially restoring it to public use, although at Elemore local people and dog-owners have used the network of footpaths heavily for years. The City bought the land from British Coal in 1987 and since then, while the initial job of clearing the colliery buildings was going ahead, has put together various studies and policy documents analysing the potential

of the site. The intention was, broadly speaking, to provide "opportunities for countryside recreation facilities... within a woodland setting".

A golfing facility was always a popular option for the site which covers 55 hectares. As has been well publicised, golf has seen a dramatic increase in the numbers of people playing the game or wanting to take it up in the last five or ten years. As its image has gradually changed, its appeal has broadened considerably so that it is no longer the exclusive preserve of the higher income groups and we are seeing more women and juniors playing than ever before.

These are factors that have put

great strain on the recreational facilities of local authorities such as those within Tyne and Wear where the demand-to-supply ratio is more overbalanced than in surrounding areas. A local paper, The Evening Chronicle, published a survey showing most private golf clubs to have waiting lists that are either closed or between two and ten years long with subscription fees that cash in on the popularity of the sport. The article tells of the serious wear and tear on the overburdened municipal courses which see golfers queueing from the small hours at the week-ends just to get a starting time. Moreover, research done by the Northern Council for Sport and Recreation showed that the priority

area for new golf courses in the North East was Tyne and Wear, and Sunderland in particular which, to bridge the gap, was calculated to need eight new (9-hole) courses and additional year-round practice facilities.

There were other factors which made the choice of a golf course for the site the right one. The option of turning the land over to agriculture was inappropriate given the government's policies of taking agricultural land out of productive use. So-called "hard uses", further industrial or residential development, had been ruled out in line with a general increase in awareness of the value of urban fringe land. But as the site fell within the boundary of the pro-

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October 1990, pre-construction: a view looking north over Hetton from top of shale heap. Part of the heap is still visible on the left. Below: work in progress showing red and black shales in heap and stored topsoil pile in background

posed Great North Forest the perfect choice was to combine a new area of woodland with a variety of recreational activities, golf being one of the main amenities to be provided for.

The Great North Forest is one of the country's leading environmental initiatives, a partnership of several bodies and organisations including The Countryside Commission and Forestry Commission, Sunderland City Council and other local borough and district councils. Now two years old, the venture has already achieved the planting of the first 100 hectares of trees and wild flowers and has managed to raise awareness of the project by actively involving schools and community groups in their substantial events programme. Being committed to this project, and with the cost of tree planting adequately covered by Forestry Commission grants and the Government's Derelict Land Grant, the council has allowed for 13 of the Elemore site's 55 hectares to be planted with trees. Integrated with the planting will be a network of footpaths and bridleways providing important links with already established long distance walks.

This combination of benefits in providing a golf course on the site – the improvement of the environment alongside the provision of much needed mixed recreational facilities – was reinforced by the financial facts of undertaking the work: Central Government provides a 100% grant for reclamation works; tree-planting grants were assured; they have applied for a grant from the Sports Council for developing the golf course. Once in play as a municipal course the council stands to make good profit on the use of the amenity. They also had the option of selling it off to a private developer, although this defeated the object of providing a golf course for the community and has been rejected.

A year ago last January, work started on the major job of regrading the spoil heap to create a new landscape.

One pressing reason for getting the works underway as soon as possible was that with each bout of



heavy rain some of the houses on the south side of Hetton bordering the site were flooded due to the great amounts of run-off from the spoil heap. The flooding is an indication of just one of the particular problems very specific to the reclamation of colliery sites, namely the nature of the material, coal shale. It is a very dense material, impermeable and subject to compaction and therefore has a low water holding capacity. During the large scale reclamation works, heavy machinery can exert over 70lbs of pressure per square inch causing a surface density higher than that of an asphalt road. On top of this, the compaction limit beyond which grass roots will not grow is easily reached under the wheels of a box scraper.

So the design of the new landform, onto which a golf course layout would be drawn, tried to take account of this characteristic and directed water by the use of careful featuring and mounding away from south Hetton and into a balancing lake which would act as an irrigation source and a strategic feature of play.

The shifting and reshaping of the spoil has been no mean feat. Since the work started in January 1991, 500,000m of material have been moved by the experienced local contractors Andrew Golightly Ltd of Shildon, County Durham. The main colliery spoil heap to be regraded consisted of fragmented burnt, par-

tially burnt and unburnt red and grey shales. Some areas of combustion were in excess of 100°C making handling rather difficult. The bulk of the material was shifted by Caterpillar D8's with box scrapers and Caterpillar 837 box scrapers weighing over 50 tonnes each but with the high temperatures in parts of the shale heap the machines had to keep moving to avoid their tyres melting. Golightly's can console themselves that they avoided this expensive loss and that none of their machines were swallowed up altogether, as it has been known for burning shales to disintegrate and completely engulf a machine working on them!

'A year ago last January work started on the major job of regrading the spoil heap to create a new landscape'

Another problem was caused by large amounts of dust created by the movement of materials during spells of dry weather which upset local residents in the housing estates adjoining the site. To counteract this as far as possible water bowlers were used but it was difficult to eliminate the annoyance altogether.

At the planning stage, careful consideration was also given to the areas chosen for spreading the burning materials and the position of the balancing pond as part of the site as an area of nature conservation interest. The Nature Conservancy Council identified three areas adjoining a small stream on the western side of the heap which are particularly noted for acid grassland with gorse and hawthorn scrub which repre-

sent the best and largest example of a rare habitat within the County of Tyne and Wear and this area has been carefully incorporated into the golf course design.

Such were the main physical problems encountered but the chemical problems related mainly to the establishment of vegetation on the site. The most important factors limiting plant growth in most types of colliery spoil are acidity, salinity and deficiency of nitrogen and phosphorus.

Acidity is more acute in the black shales, whereas red burnt shale is only acidic for short periods and is considered more fertile. It was therefore ensured that the red spoil was spread to create the upper layers of the landforms with the less fertile black spoil buried underneath. This acidity actually worsens with weathering so that, whereas fresh colliery wastes tend to be neutral or alkaline, on exposure to air and water acid production takes place and, over the years, the pH of the spoil falls.

Acid conditions down to pH 4.0 are not directly harmful to plants, but they can interfere with the uptake of phosphate and calcium causing infertility problems. Below pH 4.0, as was the case at Elemore, the acidity is directly harmful to plant roots and may result in aluminium and manganese toxicities. Alongside this action, as iron and aluminium become soluble, they 'fix' phosphorous making it inaccessible to plant roots. The presence of metal salts tends to increase osmotic pressure sufficiently to make it difficult for root hairs to obtain water.

To counteract the acidity and compaction, the landforms first underwent the process of 'deep rip-

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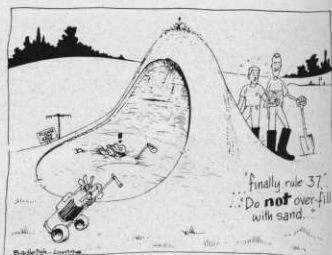
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More than

A good bunker is not a simple hole in the ground. If a bunker is to perform well in play, careful pre-planning and construction is essential: covering location; orientation; size; style; angle of face, cross sectional profile and provision for free drainage. However, before getting into any technical detail in planning, everyone has to ask a simple question - is any new bunker necessary or valid? Bunkers are expensive to build (a contract price in 1992 is likely to be £750 to £1000 each, plus sand), are time-consuming to maintain and are not vital to every golf course or every hole on a golf course. There are still a few good courses with no bunkers at all!

If though, after deep and careful thought, the decision is made to proceed to the next step, then consideration has to be made of exact location, orientation, size and style. Of the first three items much will depend upon how it is intended to control the strategy of play, and which group of players the bunker is intended to penalise.

There are management considerations to be accounted for too, especially how the new bunker will affect



flow of play through the green. Many a new bunker has been spoiled by a track of bare ground around, due to funnelling of play. Orientation will also have an influence on whether or not grass can be grown on the face of the bunker. This is often difficult if the face is steep and exposed to a southerly aspect.

Turning to style, there are lots of different ways in which to build a bunker, but methods tend to tie in with the special management problems of different types of golf course. At the seaside, bunkers tend to be deep and fairly narrow to help keep the sand in, though hopefully not so deep that the water table is exposed for long periods each winter.

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ping' - which is the action of cutting drainage channels diagonally across contours - followed by the application of a 250mm layer of ground dolomitic limestone. The ripping process relieves compaction and aids the incorporation of the neutralising limestone. Deep incorporation also increases the permeability of the soil. On top of the limestone was spread a sealing layer of clay subsoil stripped from surrounding areas of low grade agricultural land and finally the topsoil layer was spread. The phosphate and nitrogen deficiency was treated at this stage by applying a fertilizer treatment and this was followed by a final application of powdered lime to counter the possible build up of acidity in the topsoil layer. By these methods the burning is gradually extinguished, the acidity is reduced enough for plant growth to begin and the site is ready for its 'fallow year' during which the vegetation and the new landforms will have the chance to establish themselves and take on a new permanence. That year begins about now as the contractor finishes off the painstaking job of stone picking.

Local people seem happy with their new pathways and the new surroundings. They are perhaps less happy with the fact that the steep sides of the lake prevent their dogs

from climbing out once they have gleefully leapt in after a stick! They have put up with a great deal but even at this early stage you can see it has been worth it. The City Council certainly thinks so now that the preparations for the golf course are getting underway. They have been very happy with the contractor and especially pleased to see that Golightly was prepared to undertake featuring and mounding work that would normally be part of the golf course construction. His willingness to do this extra shaping has saved Sunderland City Council a considerable amount of time and effort as an important part of the formation work for greens and tees has already been done. The Leisure Services Department will take over the remaining work of drainage and irrigation installation and final shaping in April 1993. They will be working under the supervision of Jonathan Gaunt, the golf course architect who has designed the course, a challenging 6,250 yard 18 hole pay-as-you-play.

There is still some way to go before work finally finishes and play begins in summer 1994 but the local community can already be well satisfied with the results of this reclamation scheme which would seem to amply justify others taking place or planned for the future.

● The author, Maja Mihajlovic, is a freelance journalist with a special interest in golf course architecture.