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Mr. Paul Marsh
Northern Services Ltd.
Unit 10, Nursery Units
Mapplewell Drive, off Blacker Road
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Barnsley, S75 6BP

Dear Paul,

Woodland on Former Colliery Site – North Gawber Colliery

Further to our recent discussion, I have inspected the woodland plantings on the North Gawber Colliery Site and have the following comments to make.

I understand the trees were established on the site approximately twenty years ago (the colliery closed at the end of 1987). Very little amelioration of the site appears to have been undertaken prior to the planting of the trees. About 150 mm (6 inches) of soil has been spread directly onto the colliery waste (see photograph 1). The colliery waste is very compressed and compacted and therefore resistant to root penetration. Such soils are prone to summer drought and winter water logging. Both of these conditions restrict tree growth.

A wide variety of broadleaved trees were planted, including oak, birch, cherry, alder, hazel, rowan, hawthorn and willow. Planting failures have been high and, consequently, large areas are now understocked. Of those trees left on the site, many are struggling to grow or are dying back. Many of the alders are dying. Alders were at one time commonly planted on restoration sites as they are leguminous and add nitrogen to the soil. However, alder is a water demanding tree, being native to wet ground and land adjacent water courses. Over the years it has been found on many restoration sites that alder trees get to a certain size and then start to die back due to insufficient soil moisture. This appears to be the case at North Gawber Colliery.

Many of the other tree species also appear to be dying back in places, including rowan, hazel and hawthorn. Even birch, a pioneer species able to grow in a wide variety of conditions, is dying back in patches. Only the oak, cherry, and in most places, the birch, appear to be surviving. However, they

are widely spaced and growing very slowly compared to trees of the same species planted on colliery sites restored using more modern techniques. Photographs 2 to 8 illustrate the low stocking and die back characteristic of the majority of the North Gawber Colliery site. For comparison, two photographs (numbers 9 and 10) of Edlington Pit Wood, established on the former Yorkshire Main Colliery site, are shown. This wood was established using modern amelioration techniques in 2002. At nine years old, the trees on this site have already outgrown those ten years older at North Gawber Colliery and have a much higher survival rate.

There is a central area on the North Gawber site that has been much more successful than the majority of the site. This is probably due to better soil conditions. Apart from this central area, I feel the majority of the North Gawber Colliery will fail to produce any significant woodland other than scrub. This is due to the;

1. Poor soil conditions – The shallow soil on compacted colliery waste suffers alternatively from drought and water logging. This restricts root growth both physically and by restricting the uptake of water and nutrients. As a consequence, the remaining trees on the site will continue to die back, or at best, grow very slowly.
2. The risk of fires - The poor level of stocking means little shade is cast by the trees and they are failing to close canopy, which at twenty years old they should have done by now. Consequently, the ground is covered in summer with dry grasses and herbaceous plants and this is a fire hazard. There is evidence of three past ground fires on the site at the moment.
3. The risk of windblow – Some of the oak, cherry and birch appear to be surviving, although they are small for their age. However, they are often widely spaced due to the failure of neighbouring trees. As a consequence, they will develop large crowns and, because of the soil conditions, shallow root systems. This will make them prone to windblow, especially during summer storms when they are in leaf.

For the reasons outlined above, I feel the majority of the trees planted on the North Gawber Colliery site, apart from those in the central section, will fail to form significant woodland blocks, remaining unattractive and open unproductive scrub with limited wildlife value. In order to establish woodland that is attractive, productive and containing a wider variety of woodland habitats, it would be necessary to replace the failed plantings with new ones using modern restoration techniques. The amelioration techniques now used to restore old colliery sites have been shown to be much more successful than those used twenty years ago. Work includes;

- The ripping of the compacted colliery spoil down to at least half a metre in depth, deeper if possible. This improves drainage and rooting depth.
- The loose tipping of a variety of soil forming materials, topsoil or subsoil on top of the ripped colliery soils to a depth of between one and two metres. Once tipped, this material should not be driven over or compacted in any way but spread by an excavator bucket. There are a number of industrial by-products, such as paper crumb and

sewage sludge or cake, that have been used successfully as soil forming materials on restoration sites. Companies such as Envar Ltd can give guidance on the best materials to use and from where they can be obtained.

To conclude, I feel that the majority of the woodland blocks planted on North Gawber Colliery have failed to establish successfully and have limited potential as woodland. In order for woodland plantings to succeed on this site, extensive amelioration works are required. I hope the above information is able to assist you with your future management of the site.

Yours sincerely,

L.A. Carr

Len Carr BSc (Forestry) Hons.
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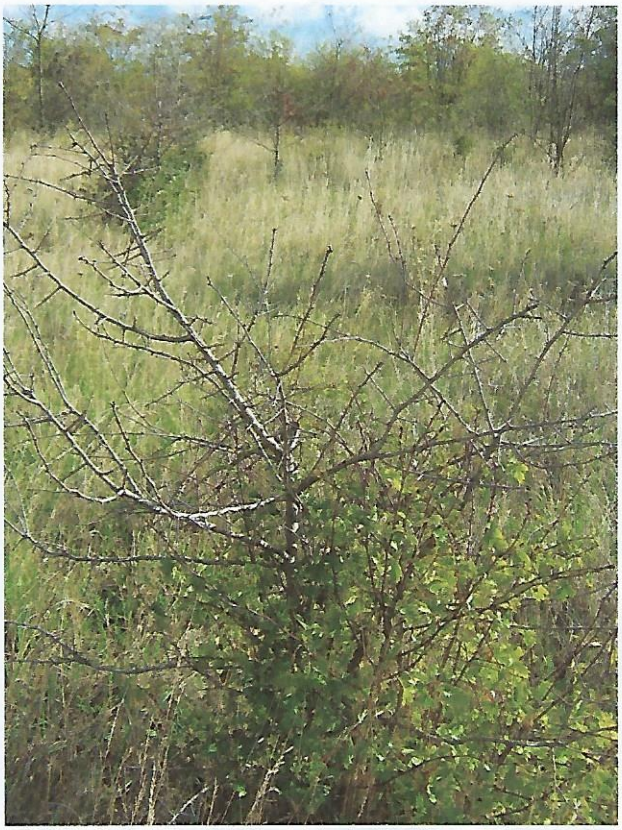
Photograph 1 – Showing depth of soil overlying the colliery waste.

Photographs 2 and 3 – Low stocking and alder die back

Photograph 4 – Low stocking and alder die back

Photograph 5 – Low stocking and hawthorn die back



Photograph 6 – Low stocking and alder die back

Photograph 7 – Alder die back

Photograph 8 – Low stocking due to planting failures. Very slow growth.

Photographs 9 and 10 – Successful establishment at Edlington Pit Wood using appropriate restoration techniques. Planted 2002.