### **EASTFIELD PARK NORTHAMPTON**

# **DRAINAGE ISSUES**



V G F SMITH September 2016



### **Preface**

This document has been produced for *Friends of Eastfield Park* (FoEP) and the Eastfield Park Management Committee (EPMC) by Dr V G F Smith, Chair of both groups. However, the views are those of the author and not necessarily those of *The Friends* or the Management Committee.

The Author would like to thank Mr Christopher Freeman for providing the pictures shown in Figures 5 and 6.



## EASTFIELD PARK NORTHAMPTON Drainage Issues - September, 2016

#### **Problems with Drainage**

Drainage has long been a major issue relating to Eastfield Park. In winter, much of the Park is regularly waterlogged with deep puddles of standing water, particularly around the eastern end of the lake. Even on the higher ground, maintenance vehicles have become bogged down in wet areas and required the assistance of other vehicles to remove them. Vehicles used by contractors to empty dog and litter bins are sometimes unable to access certain areas and the bins go unemptied. Grass cutting in Eastfield Park usually starts late in the season due to the wet ground conditions in spring. With the presence of so much surface water, and soggy conditions elsewhere, people tend to make greater use of certain routes through the Park, wearing away grass and rendering these pathways themselves muddy and in some cases unusable.

Figures 1 to 4 illustrate this problem in 2013 and 2016 but the issue is not only a recent one. Local residents have long been calling for better drainage of the Park and old photographs show attempts to improve drainage in the 1980s (Figs 5 & 6). It is believed that James Manfield, owner of the land in the first part of the 20<sup>th</sup> Century, deliberately created the lake in an area that was prone to flooding.



**Figure 1:** Standing water to the east of the lake – February, 2013



**Figure 3:** Muddy path in a drier area of Eastfield Park – February, 2016



**Figure 2:** Standing water to the east of the lake – February, 2016



**Figure 4:** Mallard Walk (new 'all-weather' pathway) damaged by vehicles – Feb., 2016



**Figure 5:** Copy of 1983 photograph showing recently cut drainage lines in Eastfield Park.



**Figure 6:** Copy of 1983 photograph showing recently cut drainage lines in Eastfield Park.

It is perhaps rather ironic that, while much of Eastfield Park is waterlogged in winter, in summer the lake and ponds frequently suffer from a shortage of water. The lake, usually one of the most attractive features of the Park, may have large areas of bare mud exposed thus detracting from its beauty. Two of the ponds may dry out completely while the remaining two often have very little water in them during the summer months. In fact, one pond is so silted that it is little more than a wet area even in winter. (This situation has been aggravated by the misguided attempts of some members of the public to increase the flow of water to the lake by deepening the channel from the pond.)

In 2012, acting on the responses from public consultation, the FoEP called for improved drainage to the Park. NBC's S106 Board, however, rejected the idea arguing that improved drainage would not bring sufficient public benefit for the cost involved. Originally, the FoEP disputed this finding: improved drainage would allow much better public access to the Park throughout the year and would also enable grass cutting to begin much earlier, thus avoiding the frequent complaints that Eastfield Park is neglected by grass cutters early in the season. More recently, though, some members of the FoEP have come to the opinion that drainage may not be the best option, though not for the reasons given by the S106 Board.

To understand the reasons for this change in opinion it helps to have some basic appreciation of the geology and geomorphology of the area.

#### **Geology and Geomorphology**

Eastfield Park lies in the upper part of the catchment of Walbeck Brook, a stream that drains into the northern arm of the River Nene in Kingsthorpe Hollow. This fact is often not realised because most of Walbeck Brook and its tributaries is now channelled underground. Figure 7 shows the 19<sup>th</sup> Century course of the Brook and the direction of drainage to it from Eastfield Park. Today, overflow from the Lake is carried by an underground pipeline which joins other surface water sewers that more or less follow the old drainage pattern.

The hilltop north of Eastfield Park is capped with Blisworth Limestone, overlain in some areas with glacial till. Beneath the Blisworth Limestone is the Rutland Formation consisting mainly of mudstone but with the Wellingborough Member (interbedded limestone and mudstone) running through it. Eastfield Park sits almost entirely on the Rutland Formation

mudstones with the Wellingborough Limestone Member forming a horseshoe shaped band around the Lake (Fig. 8).



The Blisworth Limestone is a principal aquifer whereas the mudstones are almost impermeable, accounting for numerous springs, flushes and seepages that occur close to the interface between these strata. There are numerous reports of springs and seepages in the area immediately to the north of Eastfield Park (in addition to mapped springs such as the one that was located in Hacket's Spinney, in what is now Parklands, in an area geologically similar and at roughly the same altitude as Eastfield Park). I believe that these sources of groundwater, coupled with the impermeable nature of much of the underlying rock, help to account for the poorly drained nature of much of Eastfield Park.



### **Catchment Management**

Managing stream and river catchments to reduce the risk of flooding downstream is not an innovative concept but has become more popular in recent years. The general aim is to reduce the flow of water directly into watercourses by holding it back and increasing the chance of it infiltrating into the ground. Rates of evapotranspiration may also be increased. Particularly in urban areas there is a need to compensate for the increased rates of runoff caused by replacing permeable ground with hard impermeable surface such as concrete and tarmac.

Eastfield Park is probably performing a valuable environmental service by holding water back, rather like a giant sponge, reducing the risk of surface water flooding in residential areas in the Walbeck basin from the Eastfield Estate down to Kingthorpe Hollow (and possibly even further down the Nene Valley). It seems likely that any improvement to the Park's drainage could increase the risk of flooding elsewhere. A soggy park in winter may be an occurrence that has to be tolerated for the benefit of those who live along the course of the Walbeck. However, the situation in the Park could be improved by the construction of all-weather footpaths as suggested by the FoEP.

Catchment management could be enhanced by providing more effective ways of holding water back within the Park. Surface water from the Manfield Grange area drains into the Park through a culvert and then through a series of four ponds before flowing through a pipe into the Lake. The capacity of the ponds for holding water could be increased, partly by dredging, but also by increasing the maximum water level by raising the outflow a few centimetres. Dredging the lake is likely to prove expensive and environmentally damaging but the maximum water level could be increased slightly. Of course, once the lake and ponds are full, the impact on flooding downstream would be reduced but the flow of water between the ponds could be slowed by creating small dams and other barriers within the connecting streams. Flow rates could also be slowed by the careful siting of reed beds within the ponds. This could also be useful in improving the quality of water flowing through the system.

Some people have called for the reedbeds in the Lake to be cut back. However, at present they provide a valuable habitat for wildlife, help to improve the quality of water draining directly into the lake and provide a barrier between the 'Play Zone' and the Lake. By increasing evapotranspiration they also contribute to lowering water levels in summer and this would be one reason for removing, or at least reducing, them. However, they also contribute to reduced flood risk downstream. The present agreed policy is to monitor the size of the beds annually and take action when considered appropriate. By agreement with the EPMC, fishermen should be allowed to cut swims through the reedbeds to increase angling opportunities. However, at present there are rarely more than two groups of anglers fishing at any one time so such action is probably unnecessary.