

# Bybrook Barn Garden Centre v Kent County Council

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## Abstract

*On 12<sup>th</sup> August 1996 a storm occurred which resulted in the flooding of Bybrook Barn Garden Centre, a Doctor's Surgery and part of the M20 motorway. This was the latest in a long history of flooding incidents and it prompted a case being brought against the highway authority, Kent County Council. The flood was caused by the inadequate capacity of a culvert under a highway. The culvert had been adequate when constructed in the 1930s but had become inadequate over time as a result of increased development upstream. The claim succeeded before the Court of Appeal in 2000. It was held that KCC had failed in its duty in that it had failed to take reasonable steps to enlarge the culvert once it was aware of the flood risk. The decision represents an extension of the law of nuisance. Liability had not been imposed in these circumstances before.*

## Key Words

Ashford, Bybrook Barn, Flooding, Kent County Council, Liability, Nuisance.

## Introduction

The decision in Bybrook Barn Garden Centre v Kent County Council<sup>(1)</sup> is an important decision on the law of nuisance and is now widely referred to in technical circles. This paper sets out the details of the technical aspects of the case and also the legal aspects.

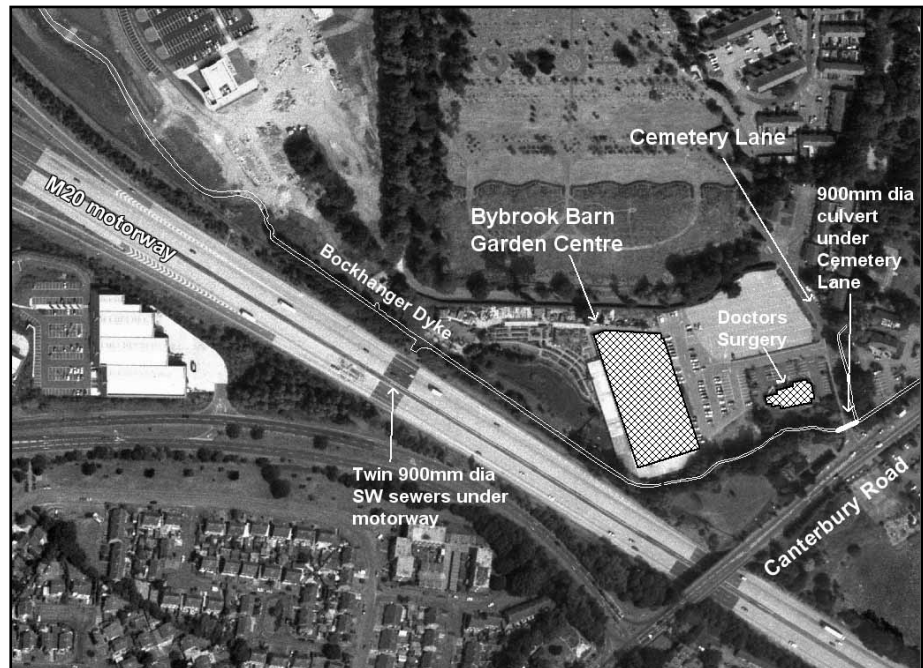
On 12<sup>th</sup> August 1996 a storm occurred at Ashford, Kent which resulted in the flooding of Bybrook Barn Garden Centre, a Doctor's Surgery and part of the M20 motorway. The damage caused by the flooding amounted to over £100,000. Bybrook Barn Garden Centre is typical of many modern day garden centres which with multiple franchises and tenants now sell a wide variety of goods from reproduction furniture to greeting cards and from toys to handbags in addition to the normal plants, flowers and garden items.

The return period of the storm was estimated by the Environment Agency as between 1 in 100 years and 1 in 200 years.

This flooding incident was the latest in a long series of flooding incidents and it prompted a case being brought against Kent County Council for nuisance. The case was heard in the High Court in 1999. The claim was dismissed but leave was granted for appeal. The case was heard in the Court of Appeal in December 2000 when the appeal was upheld. The case was then taken to the House of Lords in 2001 when the petition for leave to appeal was dismissed.

## Technical Aspects

The river Great Stour flows through Ashford in a north easterly direction. A small tributary is named 'Bockhanger Dyke' and a short distance upstream of the confluence, the stream is crossed by the main Ashford to Canterbury road (named Canterbury Road) and then a much smaller road named 'Cemetery Lane'. Where Canterbury Road crosses the stream there is a 1100mm high x 3000mm wide box culvert but upstream at the point where Cemetery Lane crosses the stream there was at the time of the



flooding only a single 900mm dia culvert<sup>†</sup>. The culvert was set slightly lower than the bed level of the watercourse upstream and downstream and as a consequence there was sediment lying throughout the length of the culvert which reduced its capacity. Figure 1 shows the location of Bybrook Barn Garden Centre and the relative locations of the M20 motorway, Bockhanger Dyke and the culvert under Cemetery Lane.

Figure 1 - Aerial Photograph of Bybrook Barn Garden Centre and surrounding area

The catchment upstream of this point is illustrated in Figure 2 which also shows the extent of the urban areas. A particularly notable feature of the catchment is the M20 motorway which traverses the catchment from north-west to south-east.

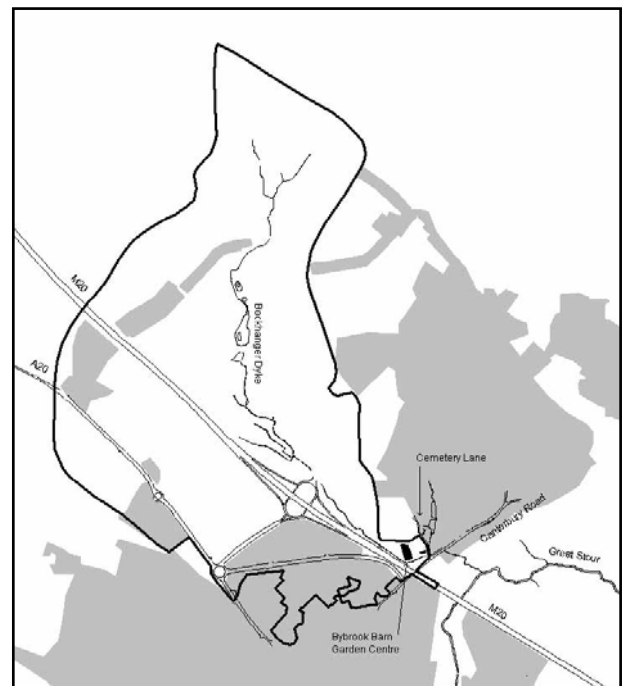


Figure 2 - Catchment Plan

The culvert was probably constructed in the 1930s by Ashford District Council as highway authority so as to convey Cemetery Lane over the stream. By the 1990s it had become the responsibility of Kent County Council as the highway authority.

When the culvert under Cemetery Lane was originally constructed in the 1930's the catchment was almost entirely rural with agricultural uses predominating but with extensive areas of woodland. There were some areas of ribbon development along the two roads across the catchment. Over succeeding periods the catchment has changed character significantly though major parts remain in agricultural use or remain wooded. In the 1960's and 1970's some of the catchment was developed for housing. Later the M20 motorway was constructed and now bisects the catchment, hotel and retail developments with extensive car parking were constructed and then in the early 1990's much of

<sup>†</sup> The 900mm dia culvert has subsequently been replaced with a larger box culvert.

the central part of the catchment became a Science and Business Park though at the time of the flooding incident only small parts of the Science Park had been constructed. A large golf course is also located within the catchment.

The differences in the land uses in the catchment are shown in Table 1 and the land uses in 1996 are shown in Figure 3.

Land Use	1930	1996
Agriculture	75%	37%
Woodland	20%	12%
Golf Course		8%
Residential	5%	15%
Retail / Hotel		2%
Science and Business Park / Offices		3%
Future Science Park (in agriculture in 1996)		11%
Motorway and junctions		12%
Total	100%	100%

Table 1 - Land Use Changes

It can be seen from these figures that the catchment was still predominantly rural in 1996 though the catchment will continue being more and more urbanised as Ashford continues to expand.

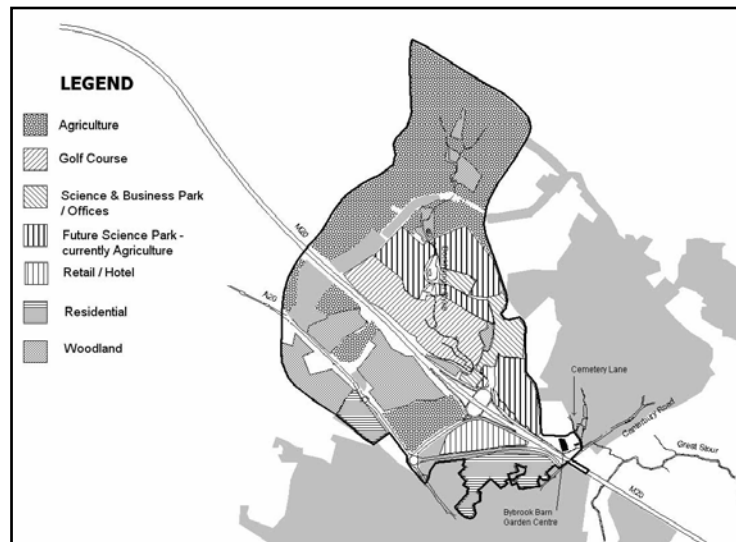


Figure 3 - Land Use Plan

The soil in the catchment is predominantly a very fine grained silty/sandy material with a relatively thin layer of topsoil. The fine grained soil allows some percolation of rainwater but at quite a low rate.

Bockhanger Dyke starts as a small watercourse in the north of the catchment at an elevation of about 92m and flows southwards through some agricultural

land as a simple shallow channel becoming wider and more pronounced. When the watercourse reaches the Science Park the channel is about 3m wide. In the Science Park an ornamental lake has been formed on the line of the watercourse with adjacent off-line balancing ponds providing attenuation of runoff from the Science Park. Downstream of the ornamental lake there is a larger on-line balancing pond. The watercourse then flows through the golf course where there are a succession of short culverted sections, longer maintained open channel sections and some small lakes. The watercourse has by this point lost most of its height and the next reaches through another part of the Science Park are considerably flatter. The channel through this section is about 2.5m deep and about 4m across and the watercourse



Figure 4 - Photograph of Culvert (1996)

remains like this until it reaches the Garden Centre where twin 900mm surface water sewers serving the residential, hotel and retail areas to the south discharge into the watercourse. These surface water sewers were probably constructed in the 1960's. The surface water sewer to not have any attenuation features which is in contrast to the Science Park where there are significant facilities to attenuate the flows. The M20 motorway also discharges at this point and again there is no attenuation of the runoff from the motorway.

The watercourse flows around the perimeter of the Garden Centre in an open trapezoidal channel about 1m to 1.5m deep with a bed width varying from 2m down to about 1m in places. The elevation of banks and the general ground level is about 37m OD. The floor level of the Garden Centre is 37.10m OD and the floor level of the nearby Doctors Surgery is 37.12m OD. The watercourse then flows through the 900mm dia culvert under Cemetery Lane (see Figure 4) into another section of open channel where an 800mm dia surface water sewer serving post war housing also discharges. The watercourse then passes through a box culvert under Canterbury Road and then flows along an open channel for about another 200m where it discharges into the Great Stour. There are some backwater effects from the Great Stour but they were not a significant factor in the flooding incident.

On 30<sup>th</sup> December 1993 the Garden Centre was flooded following heavy rainfall. At that time the Doctors Surgery had not been constructed. After this incident the owners of the Garden Centre wrote to Kent County Council regarding the inadequacy of the culvert under Cemetery Lane to convey the flows in the watercourse. Kent County Council took the view at that time that the inadequacy of the culvert was not their problem and nothing was done to replace or enlarge the culvert.

On 12<sup>th</sup> August 1996 a storm occurred over Ashford with about 75mm of rain falling over a period of about 2 hours. This storm was estimated by the Environment Agency as having a return period of between 1 in 100 years and 1 in 200 years. This storm caused flooding of the Garden Centre to a depth of about 200mm and the Doctors Surgery to a depth of about 50mm. The maximum water level was largely governed by the level of Cemetery Lane allowing water to escape by overland flow across the road and discharging into the watercourse downstream. This flooding and the overland flow across Cemetery Lane was captured on video. This video was played in the court and it clearly showed the flooding mechanism. The flooding extended onto the M20 motorway and the hard shoulder and one lane of the motorway was closed for a time. Figure 5 illustrates the extent of the flooding which occurred.

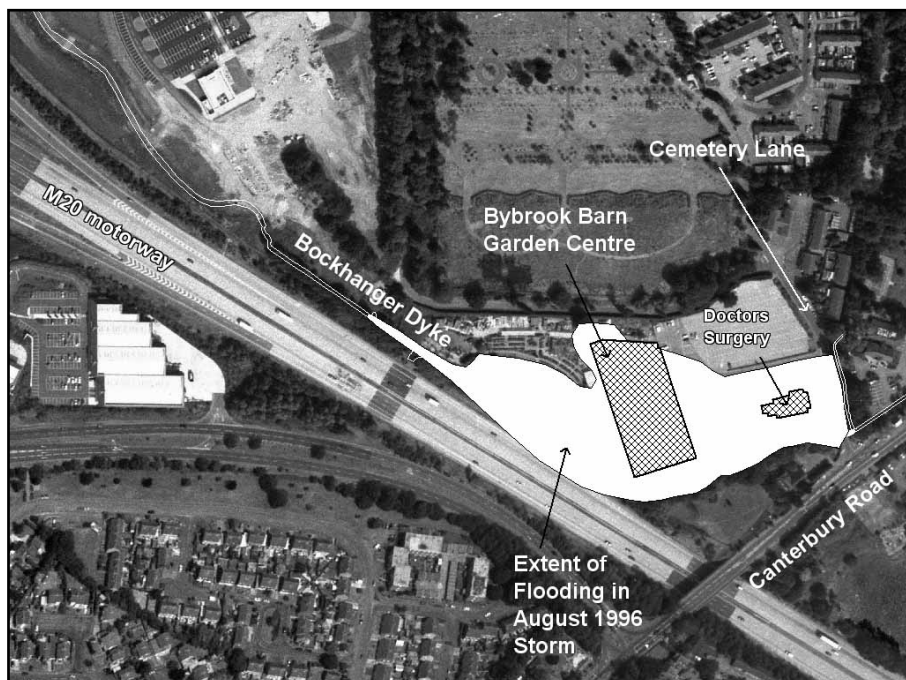


Figure 5 - Aerial Photograph showing extent of flooding

It was initially thought that the culvert might have become blocked but when the flood water receded it became obvious that there was no blockage but that the flooding had been caused by the inadequacy of the culvert.

Richard Allitt Associates Ltd were appointed to undertake a hydrological study, to assess the effects of the Cemetery Lane culvert on flows in the watercourse and to act as an 'Expert Witness' in any subsequent court case.

Important points to be considered were whether there would have been flooding of the Garden

Centre if the culvert had not been there (ie if the watercourse had remained as an open channel) and what extent of flooding there might have been if the culvert had been large enough to convey a 1 in 30 year flow. Because of the need to establish these points it was decided that it would be best to model the

watercourse. The decision of which modelling program to use was complicated by the nature of the catchment with extensive rural areas but also with large areas of dense development with substantial areas with impervious surfaces. The existence of numerous flow attenuation features along the line of the watercourse through the Science Park and Golf Course meant that the modelling program needed to also adequately simulate the performance of these. After evaluating several software programs it was decided to use the 'Hydroworks'<sup>(2)</sup> modelling program, principally because of the dense urban areas with surface water sewers for which the Hydroworks program was ideally suited. The rural parts of the catchment were modelled using the module within the Hydroworks program which utilises the United States 'Soil Conservation Service' (SCS) method<sup>(3)</sup> with a series of Curve Numbers used to provide the necessary characteristics and to differentiate between the different land uses in the catchment. The SCS method is also easily auditable which is an important aspect when expert evidence needs to be agreed beforehand between the relevant 'Experts'.

A survey along the watercourse was undertaken by a local survey company and in addition to the survey measurement a photograph was also taken at each surveyed cross section. Detailed measurements were made of all culverts along the route of the watercourse and all flow control devices (weirs, sluice gates etc) were surveyed in detail. Details of the surface water sewers in the catchment were obtained from Southern Water.

From this information the Hydroworks model was built and tested. It was not possible to undertake any model verification against flow records as there are no permanent flow measurement gauges on the Bockhanger Dyke and no suitable locations could be found to install a temporary flow or depth measurement gauge. However, the Environment Agency were able to supply rainfall records for the 12<sup>th</sup> August 1996 storm from a tipping bucket raingauge located at Sellindge (about 10km away from the catchment). The total rainfall recorded at Sellindge was 62.6mm whilst at two nearer daily raingauges the total were slightly higher at 77.5mm and 73.6mm. It was decided that the Sellindge data could be factored up to give the same total rainfall and it could then be used in the Hydroworks model to simulate the hydraulic regime on 12<sup>th</sup> August.

In addition the Met Office were able to supply rainfall data for 12<sup>th</sup> August 1996 from their weather radar site at Chenies with rainfall intensities at 5 minute intervals. This was in a format which could be directly read by the Hydroworks program. It was found that the data from the weather radar gave a slightly shorter rainfall period but with higher intensities giving the same overall depth of rainfall.

Model simulations carried out with both sets of rainfall data showed that the simulated flooding correlated well with the recorded flooding levels and volumes. This was considered adequate to satisfactorily validate the model so that it could be used with synthetic design storms to assess the return periods when flooding would occur.

Model simulations were undertaken with the Cemetery Lane culvert still included in the model for 1, 5, 10, 30, 50 and 100 year summer and winter storms with durations of 60, 120, 240 and 480 minutes. For the summer profile storms a 'dry' catchment was assumed whilst for the winter profile storms an 'average' catchment wetness was assumed. Simulations were also carried out for the same storms but for these the Cemetery Lane culvert was removed and replaced in the model with an open trapezoidal channel matching the upstream channel shape. A comparison of the simulation results showed the effects of the culvert when compared to the open watercourse. It was found that the restriction caused by the culvert elevated the upstream water level (alongside the garden centre) by up to 600mm in a 1 in 1 year storm and by over 1100mm in a 1 in 30 year storm. It was clear from this that the culvert severely restricted flows in the watercourse.

The next simulations were undertaken with the model containing an open watercourse instead of the Cemetery Lane culvert and using the recorded rainfall data from the 12<sup>th</sup> August 1996. The results of this simulation showed that if the culvert had not been in existence there would still have been some flooding at the Garden Centre but it would have remained at a level below the threshold of the building and there would have been no internal flooding. There would have been some shallow flooding in the car park and external areas.

The next series of simulations were with a box culvert sized to convey a 1 in 30 year flow in the place of the Cemetery Lane culvert. The simulations for the 12<sup>th</sup> August storm showed that with this larger box culvert there would also have been some flooding but again it would have been confined to the car park and would not have entered any of the buildings.

For the condition with the (900mm dia) Cemetery Lane culvert still in position the risk of internal flooding at the garden centre was assessed. It was found that in summer with a dry catchment the risk was between 1 in 10 years and 1 in 30 years but with winter rainfall and average catchment wetness the risk increased to between 1 in 5 years and 1 in 10 years.

The above information and results were compiled into a formal Hydrological Study Report which formed that main part of the evidence given by Richard Allitt at the court hearing in the High Court. The legal aspects of the case are discussed in more detail in the following section of this paper.

On 8<sup>th</sup> August 2000 there was another storm at Ashford which caused flooding of the car park, external areas and one corner of the main building at Bybrook Barn Garden Centre. The instructing solicitors for the case (this time to the Appeal Court) requested an assessment to be made of this storm. The two nearest daily raingauges recorded 25.7mm and 31.0mm of rain. Data from the weather radar installation at Chenies revealed that there had been 31mm of rain over about 5½ hours. The return period of this storm was calculated using the Flood Estimation Handbook<sup>(4)</sup> as being 1 in 4.1 years. This weather radar data was used to compile a rainfall data file for use in the Hydroworks model. The model simulations showed flooding coming to within 120mm of the building floor level but no internal flooding was simulated. There were a number of possible reasons for the model not predicting the flooding accurately. The principle one being that the ongoing development of the Science and Business Park upstream had significantly increased the impermeable areas (between 1996 and 2000) compared with the allowances in the model.

This storm on 8<sup>th</sup> August 2000 revealed that the previous assessments of flooding risks of between 1 in 10 year and 1 in 30 year for summer conditions was likely to be inaccurate with a more realistic assessment of between 1 in 4 years (25%) and 1 in 10 years (10%). In winter conditions it is possible that flooding could occur with storms as low as 1 in 2 year return period.

This extra information and the analysis of the 8<sup>th</sup> August 2000 storm was compiled into a Supplementary Report which was used when the case was heard at the Court of Appeal.

## **Legal Aspects**

This is an important decision on the law of nuisance. Nuisance covers many different factual scenarios but the essence of a nuisance is a condition or an activity which unduly interferes with the use or enjoyment of land. Thus, it is a nuisance to allow your trees to overhang your neighbour's land, or to dig a hole on your land, thereby undermining your neighbour's foundations. It is a nuisance to cause noxious smells or excessive noise to emanate from your land so interfering with your neighbour's enjoyment of his land.

It is a nuisance to allow your culvert to become blocked thereby causing land upstream to be flooded.<sup>(5)</sup> It is also a nuisance to interfere with a natural watercourse with the consequence that you neighbour's land is flooded.<sup>(6)</sup> It was this principle which ultimately underpinned liability in the *Bybrook Barn* case. However the difficulty for the Claimants was that when the culvert had first been constructed it had not given rise to a flood risk. It was then perfectly adequate to convey the flows in the stream. Its capacity only became inadequate over time because over development upstream. The Defendant highway authority argued that it had not caused the increased flows in the stream and if the culvert was not a nuisance when first constructed it could not become a nuisance later.

In *Leakey v National Trust* [1980] 1 QB 485 it was held that an occupier of land owed a general duty of care to a neighbouring occupier in relation to a hazard on his land whether that hazard was natural or man-made. It was held that the occupier had to take reasonable steps to remove or reduce the hazard. As to what constituted reasonable steps, this depended on the circumstances of the case. Thus the following example was given:

“Take by way of example... the landowner through whose land a stream flows. In rainy weather it is known the stream may flood and the flood may spread to the land of the neighbours. If the risk is one which can readily be overcome or lessened – for example by reasonable steps on the part of the landowner to keep the stream free from blockage... he will be in breach of duty if he does nothing or does too little. But if the only remedy is substantial and expensive work,

then it might well be that the landowner would have discharged his duty by saying to his neighbours who also know of the risk and who have asked him to do something about it 'You have my permission to come on to my land and to do agreed works at your expense' ... the question of reasonableness of what had been done or offered would fall to be decided on a broad basis, in which, on some occasions, there might be included an element of obvious discrepancy of financial resources."

So in *Leakey* the Court of Appeal was emphasising that the question of liability in this sort of case is determined by an application of the test of reasonableness as between neighbours. It was also made clear that a poor landowner would not be expected to do as much as a prosperous landowner. It was this test which was applied in *Bybrook Barn*.

The Claimants argued that, acting reasonably, and bearing in mind that the Defendant had long known of the flood risk, the highway authority should have enlarged the culvert before the 1996 flood. The expert modelling evidence established that if enlarged culvert had been in place at the time of the 1996 flood, the culvert would have prevented internal flooding of the Claimants' premises. It would also have been sufficient (broadly speaking) to protect the premises against a 1 in 30 year rainfall event.

At the trial in 1999 the main witness for Kent County Council was found by the judge to have been less than candid. It appears that Kent County Council was fully aware of the risk of flooding but had decided that it had no responsibility to do anything about it. The Council considered that it was responsible only for the structural integrity of the culvert and not for its hydraulic capacity. It argued that if it was to be expected to rebuild this culvert then it was also responsible for many thousands of bridges and culverts which might require similar work. The Council argued that it had limited resources and a backlog of essential maintenance work. The cost of an enlarged culvert was estimated to be between £81,000 and £145,000. Since the Council argued that it had no liability to take any steps at all, once this argument was rejected, it followed that the Council could not argue that it had taken reasonable steps in the circumstances, as it was required to do, following the test in *Leakey*.

The Court of Appeal was not much impressed with arguments about lack of resources. Lord Justice Waller held:

*"The factors which in my view point in favour of liability are the following. The Defendants' predecessors must have chosen to construct a culvert to put the natural stream under the highway...[This] places on them a high obligation to see that the natural stream can continue to flow under the highway...The highway authority has the means of preventing the flooding by enlarging the culvert at some cost but basically without great difficulty..."*

Thus it was held that if the Council had discharged its duty to act reasonably, it would have rebuilt the culvert so as to afford the Claimant reasonable flood protection. The Claimant was awarded damages reflecting the losses sustained in the flood and the County Council was ordered to rebuild the culvert. The House of Lords rejected the Council's petition for a further appeal.

There is a mechanism available under the Land Drainage Act 1991 whereby the local drainage board or local authority can serve a notice on the owner of a structure in a watercourse if the flow is impeded. The notice can require that works should be done and the party undertaking the works can seek contributions from the parties benefiting from the works. In *Bybrook Barn* the parties did not seek to avail themselves of this system. Had the Council chosen to use this statutory method, then it might have been harder for the Court to conclude that the Council had acted unreasonably.

From a legal point of view, this case has had a significant impact. It has extended the law of nuisance in the sense that it is now clear that a structure in a watercourse which becomes an obstruction over time may now be regarded as a nuisance even if it was not a nuisance when first constructed. It has thus made it easier to recover damages for flooding in some circumstances. This will be of interest to property damage insurers. The total insurance bill for flood and storm damage in Autumn 2000 was about £1.3 billion.

The decision will of course have a significant impact on highway authorities. The case will certainly change the nature of inspections which highway authorities carry out. The standard principal inspections of highway structures will have to consider their hydraulic capacity as well as their structural integrity. They may have to replace or enlarge culverts or bridges which restrict the flow in a watercourse.

Highway authorities would be well advised to use the planning system to require the reconstruction of bridges and culverts where new developments are likely to increase the runoff into a watercourse.

But this decision does not simply affect highway authorities but all public or private owners of structures in watercourses. Wherever the owner of the structure in the river or stream becomes aware (or ought to be aware) that it poses a flood risk to neighbouring land, then the owner of the structure will come under a duty to take reasonable steps to abate the risk.

Wherever a landowner proposes to build a culvert or bridge across a watercourse he would be well advised to design it against not just for current flows but such flows as may reasonably be foreseen as a result of increased development.

In this sort of case it is important to note that it is not necessarily a defence to say that the rainfall was exceptionally heavy. Too often a Defendant will seek to argue (as the Council did in *Bybrook Barn*) that the flood was an 'Act of God'. If a flood risk arises as a result of a structure in a watercourse and the owner of the structure is aware of the risk and ought to have taken steps to abate it, then the fact that a subsequent flood occurred in circumstances where the rainfall was exceptionally heavy is not a defence if by the taking of reasonable steps, the flood would have been prevented.

## Conclusions

There are a number of significant outcomes from this case.

For the owners and tenants of Bybrook Barn Garden Centre and the doctors at the surgery the most significant outcome from this case was that Kent County Council were required to replace and enlarge the culvert under Cemetery Lane. This has now been done and Figure 6 shows the new culvert under the road.

When designing new culverts to carry roads, railways etc over watercourses it will be necessary to make an assessment of the reasonable expectations of future increases in flows. Common sense would suggest that this assessment should not only take account of foreseeable new developments but should also take account of global warming.

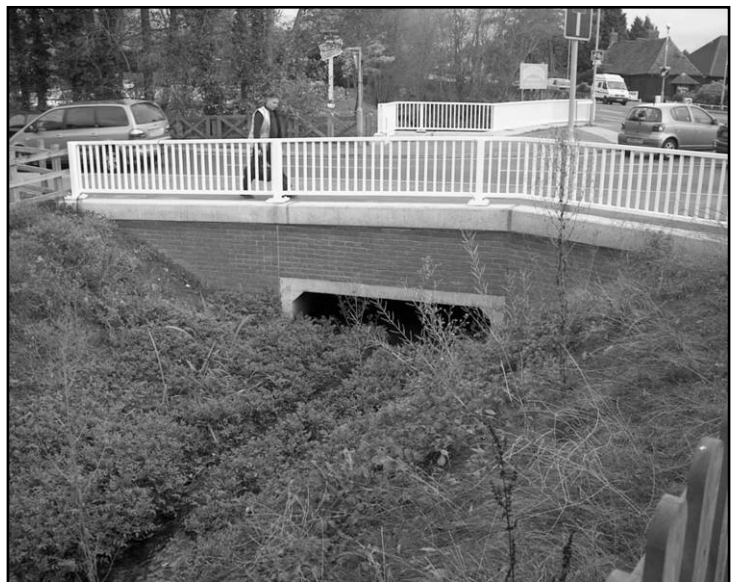


Figure 6 - Photograph of Enlarged Culvert (2003)

With wetter winters and more and more development it seems that watercourses are increasingly overburdened. Following the pattern of the last few years, further flooding may be foreseen. Where the flooding has been caused or exacerbated by the existence of a structure in a watercourse then the owner of that structure may have something to answer for if he knew or ought to have known of the flood risk and has not taken reasonable steps to abate it.

## References

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<sup>(1)</sup> [2001] BLR 55

<sup>(2)</sup> The 'Hydroworks' program was developed and marketed by Wallingford Software Ltd. The 'Hydroworks' program has now been largely superseded by the 'Infoworks' suite of programs.

<sup>(3)</sup> The SCS method using curve numbers was developed by the Soil Conservation Service in the United States Department of Agriculture.

<sup>(4)</sup> FAULKNER, D. Flood Estimation Handbook Vol 2: Rainfall Frequency Estimation. 1999

<sup>(5)</sup> Pemberton v Bright [1960] 1WLR

<sup>(6)</sup> Greenock v Caledonian Railway [1917] AC 557