

## Considerations for drainage solution

Is any water still coming through the pipe?

Is the present flow across the track likely to dry up again? Wettest summer for 100 years.

Chris Bonehill said that there was no problem driving through the water and that, until the turf surface was cut to make the channel, wheels would not cause too much of a problem

John Hopkins did not find crossing the wet area a problem – just the churned up area near the gate due to repeated traffic up to Gores. He would not however be able to get across now.

People have learned to go further round the board walk to avoid the wet – 2 new paths have been established depending where they were going.

An extra step or ramp could be put in to help the step down from the board walk – though steeper than the existing a ramp, at least suitable for pushchairs, would be possible as Rod suggested. An 80 year old said she didn't think anything was needed! Could also make a little bridge the other side of the track.

To protect the turf where water crosses the track 'NT type car parking protection' could perhaps be used.

Alternatives for leading water across the track could be

- a pipe as specified by EH or perhaps a bit simpler – expensive if we did not do it ourselves - and results in a problem at the lower end (by the sycamore tree where water used to drain away) because it would come out a foot or so down
- An open channel (concrete or whatever ) with grating or something across strong enough to support tractors. Easier to install and water would be nearer the surface level on the lower side. Open channels are easier to keep clear than pipes.

The water then needs to be led under the board walk and down into the moat. I understand that Judith Leigh was happy with the surface channel at least as a temporary solution but some silt is being deposited in the moat and the bank channel is eroding.

Is the solution here a lined open channel or a shallowly buried flexible pipe? - if so what diameter? 100mm ? Most such pipe is perforated - would that matter?

A pipe along the present route of the surface channel would be difficult if not impossible to rod due to bend but it may be steep enough to be self scouring.

**The conclusion to Judith Leigh's email :** (whole sent to everyone earlier)

***Therefore I suggest not pursuing attempts to clear the present system but to consider ways of by-passing it, either by a new drain making as limited impact as possible, or by providing a surface to cross the wet patch with limited drainage beneath.***

## Options for the stream in the valley above the track

Points to consider	Entirely piped	Water on surface
Cost implications	expensive	none
Natural England / HLS agreement	Do not favour as it reduces biodiversity	Aim is to increase biodiversity of MG - also there is a general policy to increase wetland areas
English Heritage	Much ground disturbance and need for supervision. A need to apply to EH/ sec state for permission	JL email seems to favour as little ground disturbance as possible. Any archaeology is preserved undisturbed
Return it to earlier state	Pipe is probably early 20 <sup>th</sup> C	Would have been stream valley in Mediaeval times and later
Flow into moat	Maximises flow into moat. Pipes liable to become blocked again in future and too long to be rodded out. Permeable pipe loses some water in dry weather	Some evapotranspiration loss and loss to stream bed but impermeable clay base /soil would limit this.No significant work required to keep water flowing.
Silting of moat	Very slow build up of silt as water should be quite clear	As vegetation filters out silt only slow build up of silt
Educational value  (education provides about 50% annual income)	none	Good alternative/ additional site to ponds for inverts and plant identification. Also for teaching value of wetlands for biodiversity and water quality. Children experience mud safely.
Wildlife value	Low biodiversity. None in pipe! Little in surface vegetation which would revert to nettles, thistles and coarse grass like surrounding banks.	Good biodiversity – variety of wetland plants: figwort, teasel, watercress, brooklime, king cups, watermint, flag iris, willow herb (too much at present). Good for aquatic invertebrates so for ducks etc and for flying insects visiting flowers and seeds for birds
Future grazing	Water source lost	Water available for stock – HLS agreement would prefer grazing after cutting which may be available in future
Appearance and Maintenance	Will revert to nettles etc – compare valley on LHS of track up to Gores. Will require regular cutting by hand to control - too steep for CB to cut	Willow herb dominates at present but parts have mixed waterplants. Banks with nettles etc need cutting. Potential for improvement