



Advisory Visit

River Sence, Sheepy Magna, Leicestershire

November, 2012



1.0 Introduction

This report is the output of a site visit undertaken by Tim Jacklin of the Wild Trout Trust to the River Sence, Elms Farm, Sheepy Magna, Leicestershire on 5th November, 2012. Comments in this report are based on observations on the day of the site visit and discussions with Neville Walker and Peter Calcott (landowner).

Normal convention is applied throughout the report with respect to bank identification, i.e. the banks are designated left hand bank (LHB) or right hand bank (RHB) whilst looking downstream.

2.0 Catchment / Fishery Overview

The River Sence is in north-west Leicestershire within the Trent catchment; it is a tributary of the River Anker, which subsequently joins the Tame and then Trent. Lying within the Trent Valley and Rises Natural Area, the Sence is a lowland river, based on geology of Triassic mudstones overlain by superficial alluvial and river terrace deposits (sand, gravel, clay and silts).

The rivers visited were on Elms Farm (Peter Calcott) and comprised the Sence between national grid references SK3283801432 (upstream) and SP3253499899 (downstream) and the Sibson (or Stoke Golding) Brook between SK3351000864 (upstream) and SK3322300346 (downstream)(Figure 1). Mr Calcott owns a mix of double and single bank on the Sence (approximately 2.2 km) and single right bank on the Sibson Brook (approximately 1.05 km).

The river is not leased by an angling club but is lightly fished for coarse fish on an informal basis; anglers have been reporting captures of brown trout recently. Mr Calcott is about to enter a Higher Level Stewardship (HLS) agreement and this visit was requested to identify river habitat improvements that might be incorporated. Land use on the farm is currently a mixture of arable, livestock (cattle and sheep) grazing and fodder crops.

There are no statutory conservation designations covering the area. Snipe and grey partridge were observed during the visit and the river is known to contain the fish species spined loach (*Cobitis taenia*) which is of conservation interest (limited distribution in eastern England).

Under the Water Framework Directive, this section of the Sence is currently designated as *moderate*, with a target of reaching *good ecological status* by 2027. Fish and invertebrate populations are described as good, but phytoplankton (algae) is described as moderate because of high levels of phosphate. The Sibson (or Stoke Golding) Brook is also moderate status for the same reason (Appendix 1).

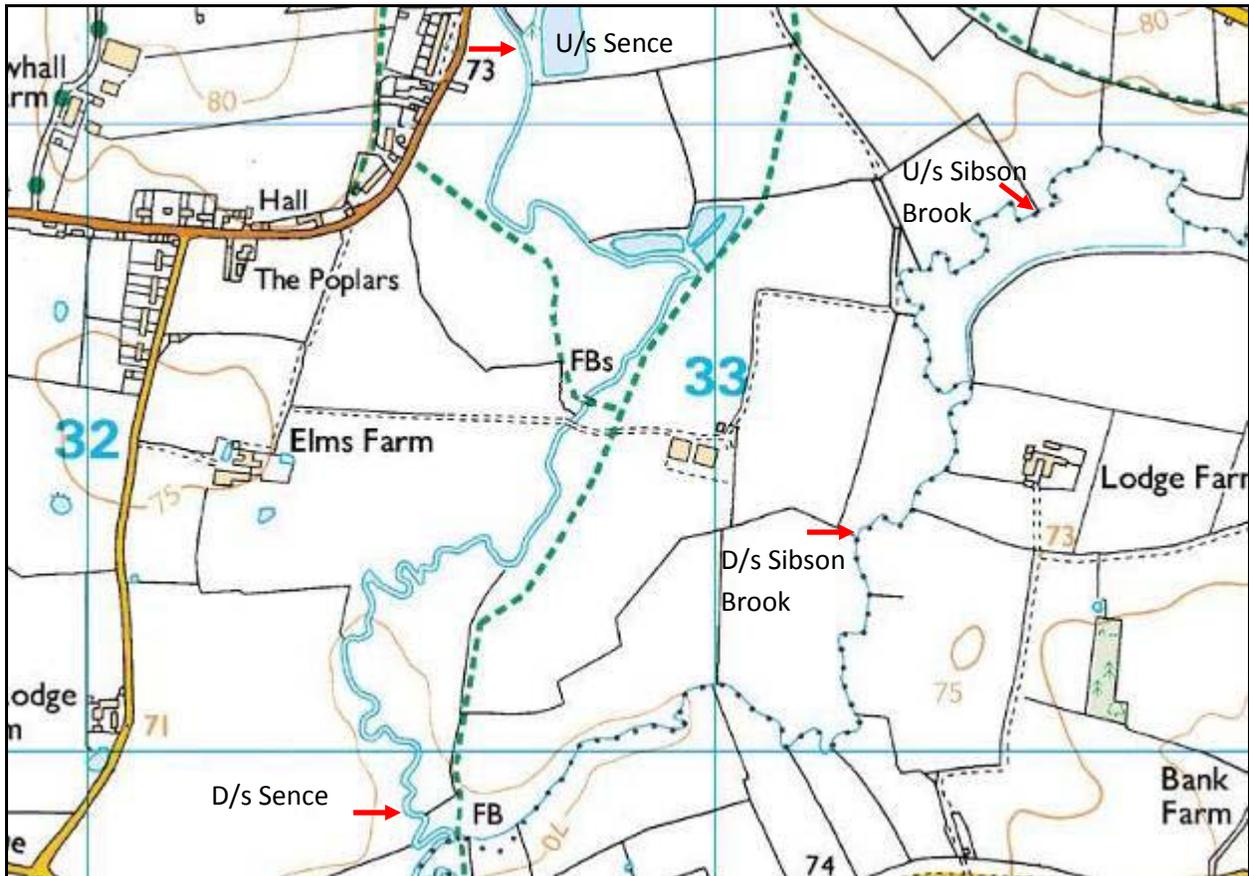


Figure 1 Location map showing approximate boundaries

3.0 Habitat Assessment

River Sence (downstream section – lower boundary to farm track bridge)

The river here has a meandering plan-form, indicating that the course of the river has not been altered or straightened. The meandering course is the basis of good in-stream habitat because it forms pools (deep water on bends) and riffles (shallow, gravelly sections between bends) (Figure 2).

Pools provide adult fish with resting and feeding areas, whilst riffles are important areas for spawning and juvenile fish.

It appears however that the bed of the river has, at some point in the past, been lowered (by dredging), probably for land drainage purposes. This produces poorer in-stream habitat because:

- Gravel (which is important for fish spawning and invertebrate habitat) is removed from the river bed. On lowland rivers like these, such gravel may date back to the end of the last ice age, being deposited when river flows were much greater than now. The lower flow and energy of the present rivers means gravel is not replaced by natural river processes.
- The cross-section of the channel is altered from the varied profiles of a natural river (e.g. sections A-B and C-D in Figure 2), to a uniform, trapezoid-shaped section (Figure 3). In a meandering channel like this section of the Sence, natural cross-sections can re-establish, particularly with some assistance in the form of bank re-profiling (Photo X).
- The river is disconnected from its floodplain. The lowered river bed means the channel can accommodate a greater flow before it overtops (bankfull flow). Greater bankfull flows have more energy and can lead to increased rates of bank and bed erosion and washout of juvenile fish.

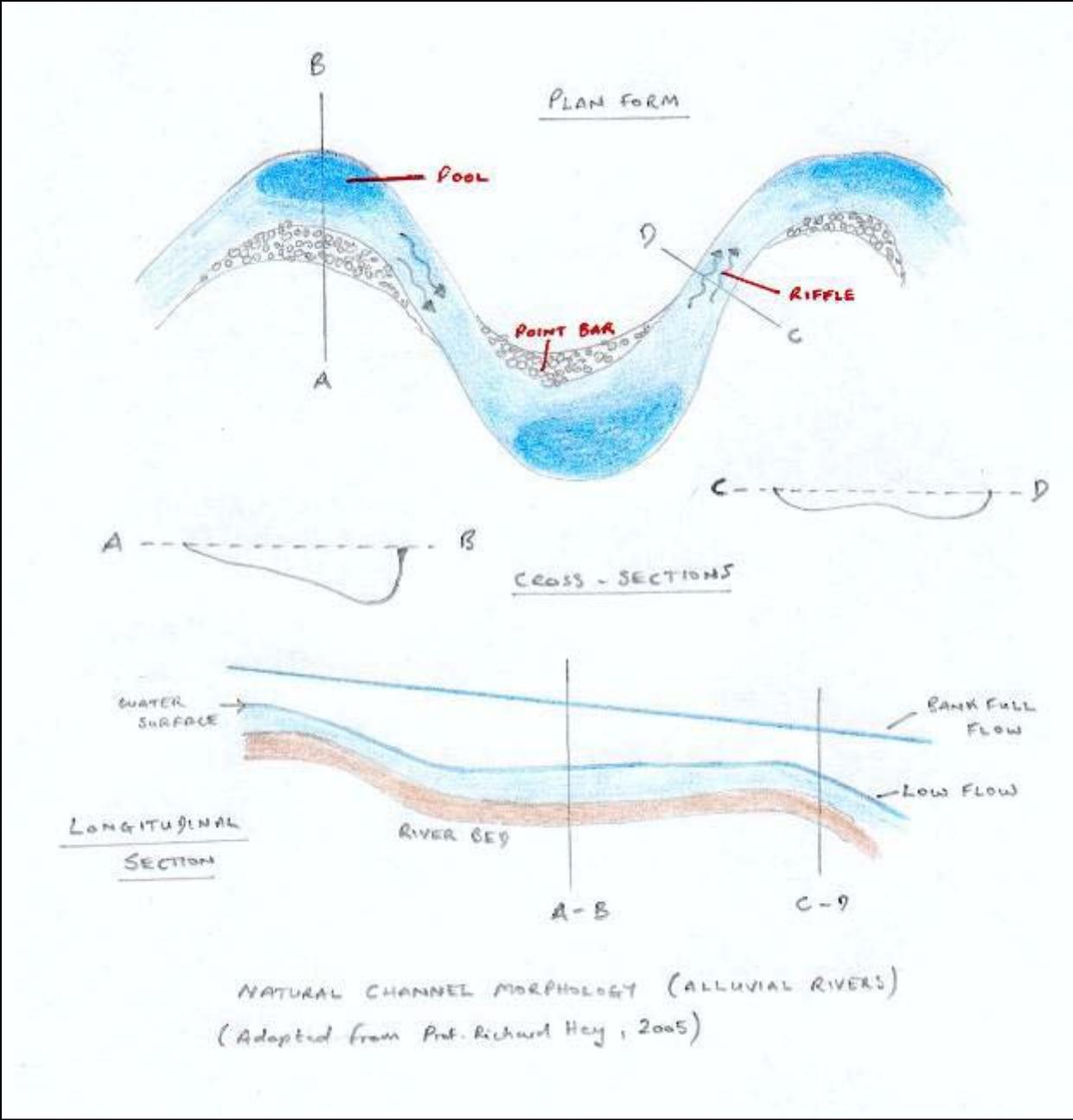


Figure 2 Natural channel form in alluvial rivers

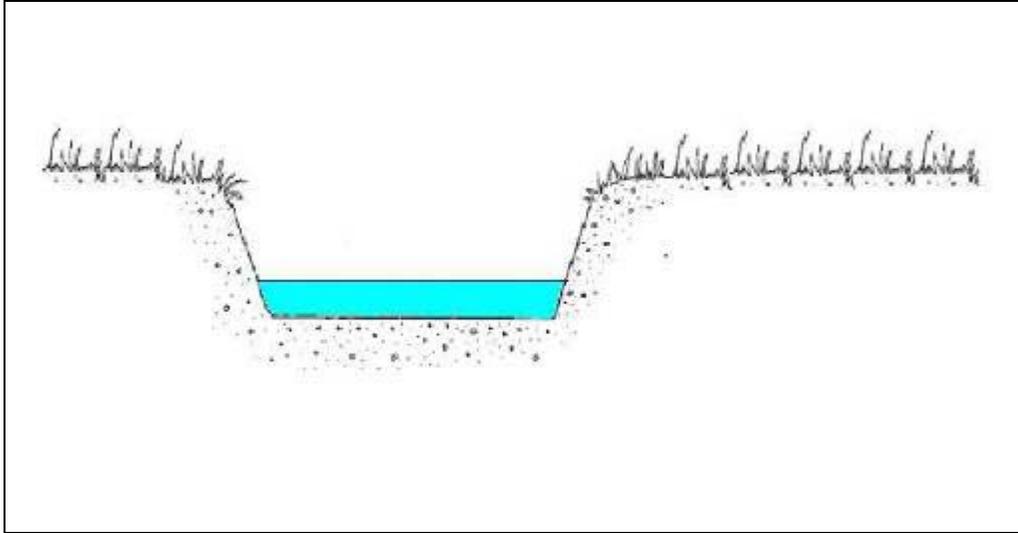


Figure 3 Trapezoidal cross-section of a dredged river channel – lacking variation in depth and habitat

The fields downstream of the farm track are grazed and at the time of the visit were heavily trampled by cattle (Photo 1). Livestock has unrestricted access to the river bank and marginal emergent vegetation is grazed down; the poaching effect of the cattle is also causing the river channel to widen (Photo 2), which is undesirable. These fields are to become permanent grassland under the HLS agreement and overall grazing levels reduced; in addition, it is recommended that a wide margin and headlands alongside the river are further protected from grazing in a similar manner to the downstream part of this section (see below). Alternative drinking provision for livestock is desirable to avoid the situation in Photo 1.

The river is very open here with few bankside trees. The lack of shade can lead to high water temperatures during hot weather; this does not favour trout which is a cool-water species with a maximum temperature tolerance in the low twenties degrees Celsius. Lack of shade also favours the growth of aquatic vegetation, including the less desirable common club-rush (*Scirpus lacustris*). This species has a tendency to form stands in slow-flowing, muddy-bedded areas leading to impoundment, fine-sediment accumulation and further colonisation (Photo 3). Modification of the river channel, such as widening and bed lowering as has occurred here, creates conditions which favour this species. Establishing native trees alongside the river to increase shade will help to reduce in-stream vegetation growth; fenced margins and headlands may create the opportunity to establish some trees.

Accumulations of debris have been removed from the river recently (Photo 4). These had gathered at points where the channel is choked by beds of club-rush, leading to more impoundment and club-rush colonisation. In terms of river habitat, it is normally best practice to leave accumulations of woody debris in place because they provide refuge and feeding opportunities for fish and can help to modify the nature of the river bed and channel in beneficial ways. However, in this case the vicious circle of club-rush colonisation and channel blockage does require some intervention. Re-location of the woody debris and management techniques for club-rush are covered in the Recommendations section.

Towards the downstream end of this section, grazing pressure is lighter and some headlands between meanders have been electric-fenced, creating rougher vegetation (Photo 5). This is of great benefit to the river because the margins have colonised with vegetation and the river channel has narrowed; the shaggy, over-hanging vegetation and bushes also provide excellent cover for fish (Photo 6). This management also seems to benefit birds as several snipe and wild grey partridge were seen in this area.

Trees are more common on the river bank here, the majority being crack willow (*Salix fragilis*); many of these have been previously pollarded and most are now reaching the stage where this is again necessary (Photo 7). Some limbs have cracked and fallen into the river, creating good habitat in some areas (Photo 8). However, the tendency for crack willow to take root and grow vigorously means frequent management is required to prevent channel blockage. Establishing different native tree species along the river (in all sections) is highly desirable; this would provide a diversity of habitat and a future supply of woody debris in the river that would require less frequent maintenance. Desirable species include alder, sallows, hazel, blackthorn, hawthorn, oak and ash (subject to current concerns over ash die-back).



Photo 1 Bank poaching at livestock drinking point, downstream of farm track



Photo 2 The channel-widening effect of grazing, where banks are trampled in and eroded and marginal emergent vegetation is grazed off.



Photo 3 Stands of common club-rush in mid-channel



Photo 4 Woody debris recently removed from the river channel where it tends to accumulate against beds of club-rush (above).



Photo 5 Fenced margins and headlands on the lower section provide much better habitat alongside the river. Note the narrower channel compared to Photos 1 and 2.



Photo 6 Over-hanging bushes and shaggy marginal vegetation – superb riparian habitat.



Photo 7 Crack willows reaching the stage where pollarding is required.



Photo 8 The cover and flow diversity provided by these trailing branches and trunks is excellent, but being crack willow this will take root and grow. Rather than removal all in one go, cutting back a small proportion each year and leaving some low and submerged branches over half the channel width is recommended.

River Sence (upstream of farm track to Sheepy Magna village)

In contrast to the previous section, this reach of river appears artificially straight with few meanders. Inspection of historic maps (www.old-maps.co.uk) shows that the river was in its present course in the 1880s. The river channel is over-wide, particularly on the upstream part, probably as a result of works to alleviate flooding in the village. At the time of the visit, the channel was heavily encroached with emergent vegetation and it seems no channel maintenance has been carried out recently (Photos 9, 10).

The straight, over-wide channel is generally poor habitat for fish. It would benefit from the creation of a two-stage channel comprising a low-flow channel (with a natural base-width) between low berms within the wider flood conveyance channel. Given the proximity to the village, such work would need to be carefully planned and modelled, but should be achievable without increasing flood risk. It may be possible to improve the flood risk situation given propensity for the existing channel to become silted and choked with vegetation.

Land use on this section was arable at the time of the visit (Mr Calcott owns the LB only on this section). Introducing field margins and if possible some tree planting would be desirable.

At the downstream end of this section a wildlife pond has been created on the left bank. The spoil from this forms a higher bank alongside the river here, and there are more trees present (Photos 11, 12).



Photo 9 Upstream reach towards Sheepy Magna village – over-wide channel choked with emergent vegetation



Photo 10 As above



Photo 11 Wildlife pond



Photo 12 River alongside pond, with raised left bank (right of picture) and better riparian habitat including bushes, trees and coarse vegetation.

Sibson Brook

The Sibson Brook has a meandering plan-form but its in-stream habitat has been adversely affected by past land drainage works (bed lowering), with the same impacts as described above (Photo 13). Mr Calcott owns the right bank here.

Riparian habitat is generally good, with a shaggy margin and overhanging bushes and trees present. Club-rush stands are present in the more open sections but are absent where the channel is shaded (Photo 14).

Crack willows are common, particularly along the lower field. Most of these would benefit from pollarding and it is recommended that this is done on a rotational basis, with a proportion done each year of the HLS agreement. Trailing and submerged branches should be retained where possible (Photo 15).



Photo 13



Photo 14



Photo 15 Retain overhanging and submerged branches wherever possible

4.0 Recommendations

Tree management

- Coppice crack willows on a rotational basis, doing a proportion during each year of the HLS agreement.
- Retain trailing and submerged branches, pruning the minimum required to prevent channel blockage.
- Establish a greater diversity of native trees alongside the river, using HLS options if possible.

Riparian habitat management

- Establish grassland and low-input meadows alongside the river wherever possible.
- Protect the river margins from grazing, managing them in a similar way to the lower (downstream) section of the Sence. Provide alternative livestock watering facilities if required.

River channel management

- Re-profile the banks on inside of bends to provide a more natural channel cross-section (Photos 16, 17)
- Narrow the channel in cattle poached areas by pegging woody debris in the margins, dig out mid-river club-rush beds and place on top (Photo 17).
- Raise river bed levels in selected areas (straighter sections between pools) by introduction of gravel. It may be possible to do this in areas where club rush beds are present by digging out the vegetation, then raising the bed level with introduced gravel.



Photo 16 Re-profile banks on the inside of bends to a shallow angle (yellow line). Backfill with woody brash pegged-in behind marginal vegetation on outside of bend and protect from grazing. Spoil from re-profiling could be placed on top of woody debris.

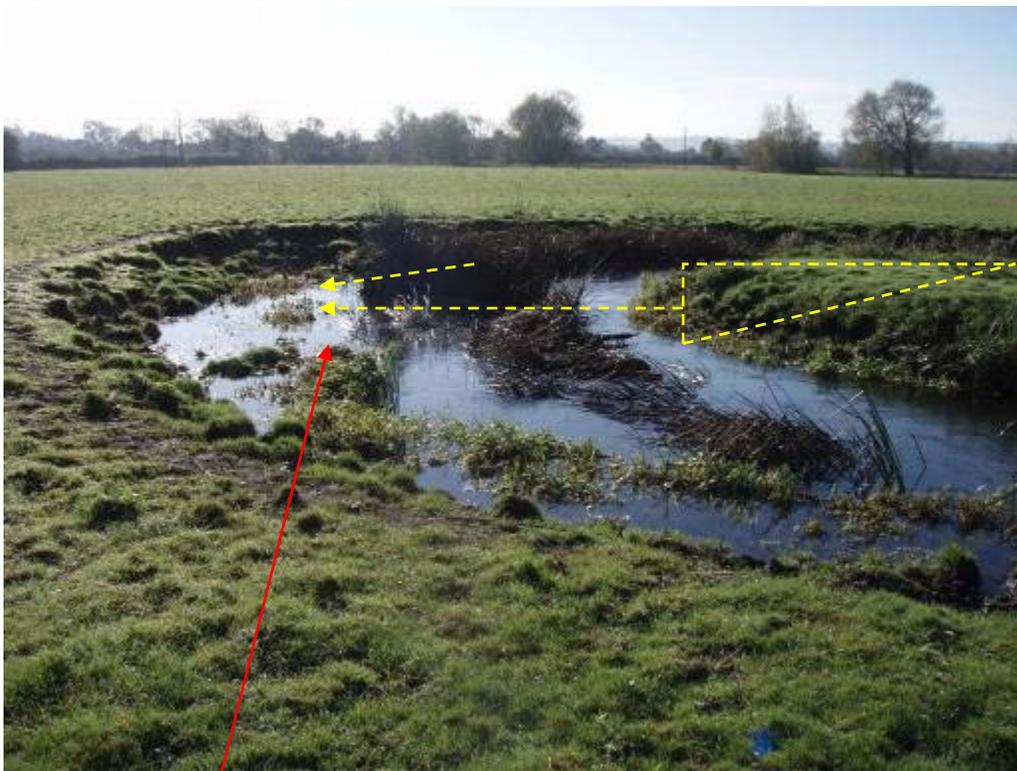


Photo 17 Create brushwood mattress on outside of bend. Place spoil from inside of bend re-profiling and club-rush beds on top. Protect from grazing.

- Club-rush management

The above recommendations on managing the river channel should give considerable scope for tackling beds of club rush that are tending to create channel blockage. The key to sustainable management is to create the flow conditions that do not favour this species, i.e. a narrower channel with faster flows, or raising the bed level with gravel. Reducing grazing pressure and allowing the channel to narrow naturally will go a long way towards this.

Physical removal of the club rush beds in isolation is not recommended, because the channel conditions will remain the same and it will tend to grow back. Similarly, the use of herbicide (e.g. glyphosate, requiring Environment Agency consent) may get rid of club-rush in the short term, but does not change the physical conditions that favour its return.

Please note: It is a legal requirement that all the works to the river require written Environment Agency (EA) consent prior to undertaking any works, either in-channel or within 8 metres of the bank.

5.0 Making it Happen

The WTT can provide further assistance to help implement the above recommendations. This includes help in preparing a project proposal with more detailed information on design, costs and information required for obtaining consents to carry out the works. If required, a practical visit can be arranged to demonstrate habitat improvement techniques. Demand for these services is currently high but WTT is able to provide further advice and information as required. Please contact tjacklin@wildtrout.org for more information. Further advice on fund-raising can be found at <http://www.wildtrout.org/content/project-funding>

6.0 Acknowledgement

The Wild Trout Trust would like to thank the Environment Agency for the support which made this visit possible.

7.0 Disclaimer

This report is produced for guidance only and should not be used as a substitute for full professional advice. Accordingly, no liability or responsibility for any loss or damage can be accepted by the Wild Trout

Trust as a result of any other person, company or organisation acting, or refraining from acting, upon comments made in this report.

Appendix 1 – Water Framework Directive classifications for the river reaches in this report

Waterbody ID	GB104028046660	
Waterbody Name	R Sence from Carlton Brook to Stoke Golding Brook	
Management Catchment	Tame Anker and Mease	
River Basin District	Humber	
Typology Description	Low, Medium, Calcareous	
Hydromorphological Status	Not Designated A/HMWB	
Current Ecological Quality	Moderate Status	
Current Chemical Quality	Does Not Require Assessment	
2015 Predicted Ecological Quality	Moderate Status	
2015 Predicted Chemical Quality	Does Not Require Assessment	
Overall Risk	At Risk	
Protected Area	Yes	
Number of Measures Listed (waterbody level only)	-	

Waterbody ID	GB104028046640	
Waterbody Name	Stoke Golding Brook from Source to R Sence	
Management Catchment	Tame Anker and Mease	
River Basin District	Humber	
Typology Description	Low, Small, Calcareous	
Hydromorphological Status	Not Designated A/HMWB	
Current Ecological Quality	Moderate Status	
Current Chemical Quality	Does Not Require Assessment	
2015 Predicted Ecological Quality	Moderate Status	
2015 Predicted Chemical Quality	Does Not Require Assessment	
Overall Risk	At Risk	
Protected Area	Yes	
Number of Measures Listed (waterbody level only)	-	