

LINCOLNSHIRE CHALK
RIVERS:
A SCOPING ASSESSMENT OF
POSSIBLE ENHANCEMENT
SITES

UNDERTAKEN ON BEHALF OF THE
ENVIRONMENT AGENCY,
ANGLIAN REGION
BY VAUGHAN LEWIS, WINDRUSH AEC

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1.0 Background

As part of their commitment to Lincolnshire chalk rivers under the UK Biodiversity Action Plan, Anglian Region of the Environment Agency (EA) has retained Vaughan Lewis, Windrush AEC, to undertake a scoping report of possible habitat enhancements on these rivers. Part funding for this work was provided by English Nature (EN) under a scheme administered by the Wild Trout Trust (WTT) to promote the biodiversity of chalk rivers.

A number of Lincolnshire chalk river systems were visited on 4 and 5 September 2001. Notes were made and photographs taken of opportunities for enhancements at sites visited. In addition, details of land ownership and discussions with landowners were recorded. This report represents the output from these site visits.

Throughout the report, normal convention is followed with respect to bank identification i.e. banks are designated Left hand Bank (LHB) or Right Hand Bank (RHB) whilst looking downstream

2.0 Enhancement opportunities

Waithe Beck system

The Waithe Beck was identified by the EA as a key system for enhancement. Fisheries staff have undertaken electrofishing surveys and HABSCORE assessment at a number of sites on the river.

Sir Richard Sutton's Settled Estates:

Contact: Estate Manager, Chris Dowse, Sutton Estate Office, Stainton-Le-Vale, Market Rasen, Lincolnshire LN8 6HP Tel: 01472 398367 Fax: 01472 399142

This estate has riparian rights over a considerable length of the upper Waithe Beck and River Rase.

Much of the Estate is administered under the Countryside Stewardship Scheme, with 2 and 6 metre margins on many arable fields (map provided) and minimal fertiliser application on grassfields.

At the top of the Waithe system, the pond at the Half Moon plantation (TF 158948) was "cleaned out" some 10 years ago by the Estate. The Waithe then runs down to the larger lake at Stainton Hall (TF 163946) which is stocked with rainbow trout and used occasionally for duck flighting.

The southern arm of the Waithe Beck rises at Lud's Well (TF 175938) and joins the main Waithe at TF 185943. Immediately below this point, there are significant opportunities for excavating wide marginal shelves as part of a 2-stage river channel (**PHOTO 1**). Spoil arising from this enhancement could be incorporated into the adjacent arable fields by ploughing in after harvest. The river bed has sections of well sorted, un-imbedded gravel at this point (**PHOTO 2**).

Further downstream (TF 186941) the Kirmond Le Mire Brook joins the Waithe. There is the opportunity for the excavation of a large scrape/ephemeral pond for passage waders at the intersection of these channels (**PHOTO 3**). Again, arisings from the excavation could be incorporated in adjoining arable fields following harvest.

The length of the Waithe Beck running alongside Blackholt Wood is heavily shaded by the wood. The channel would benefit from selective rotational coppicing of riparian trees, mainly alders, in order to reduce shade. The wood is owned by Peter Kirk (no phone number provided. Chris Dowse offered to speak to him if required at a later date).

PHOTOS 4, 5 & 6 show the Waithe Beck adjacent to Priory Farm. There are a number of potential enhancements here including extensive reprofiling of the LHB in order to create marginal shelves and/or a scrape/ephemeral pond, the creation of a scrape in/adjacent to the extensive *Juncus* marsh on the RHB and the extension of the eroding bank on the RHB to encourage the nesting of kingfishers and possibly sand martins. The fields on both banks are in the Countryside Stewardship scheme. Barn owls and snipe regularly use these fields and the Estate is keen to encourage breeding of these species at this location.

There is an substantial area (0.5+ ha) of boggy land dominated by redshank *Persicaria amphibia* in the corner of the arable field on the Kirmond Le Mire Beck at TF 186935 (**PHOTOS 7&8**). There is an opportunity to create a scrape or larger area of open water here, with spoil incorporated into the surrounding arable land.

At the top of the Raise system adjacent to Little Ash Holt (TF 166915) there is a valley with approximately 15 ha of land currently outside the Countryside Stewardship Scheme that the Estate would like to enter into the scheme. Opportunities here include additional tree planting on the upper valley slopes and the extension of the existing wetland areas in the valley bottom. Foot and mouth disease has presented an opportunity to re-evaluate the Estate's farming requirements for the upper Raise valley and they are keen to formulate an integrated conservation package for the site. The local Farming and Wildlife Advisory Group officer has already visited the site and expressed interest in a collaborative scheme.

In conclusion, there are a number of opportunities for enhancement on this Estate that lend themselves to a partnership approach between EA and DEFRA via the Countryside Stewardship Scheme. The Estate is very keen to pursue such options. However, given the short window of opportunity in the cropping cycle and the need for any enhancements to be approved by a board of Trustees, it is unlikely that any work could be planned and implemented during winter 2001-2002.

D/S Swinhope Bridge (Ash Hill) TF 213957

No landowner details were obtained for this site.

The fields are ploughed right to the bank top on both banks, with both banks then heavily cut by machine. Riparian habitat is virtually non-existent. The in-stream habitat is reasonable with water crowfoot *Ranunculus spp.* and milfoil *Myriophyllum*

spp. present. There is a limited amount of clean gravel substrate. If the current land management policy remains in place, very little benefit will accrue from any in-channel enhancements. Approximately 300m further downstream (TF214959) there is a small (unconsented?) impoundment (**PHOTO 10**) that is impacting on upstream habitat quality.

Thorganby Hall

Contact: Owner Mr James Milligan-Mamby, Thorganby Mill, Thorganby Tel: 01422 398304

Mr Milligan-Mamby and his wife were keen to consider enhancements to the river corridor. Mr Milligan-Mamby was especially keen to restore the Old Mill (TF 315861 **PHOTO 11**). He has apparently discussed the possibility with the Countryside Stewardship (?) officer. If this involves no restoration of the head it would have no impact on the river. However, if there were any intention to restore the head, this would have a significantly detrimental impact on passage of fish and upstream channel morphology. Notwithstanding this, it does provide an opportunity for the EA to help with a scheme of great importance to the owner of the Estate.

Downstream of the Mill for a distance of approximately 300-400m, the Waithe Beck is heavily shaded, with extensive growth of riparian trees (small leaved lime, elm, field maple, elder, ash, blackthorn and hawthorn) forming a tunnel through which the river flows (**PHOTOS 12 & 13**). Large numbers of burrows in the bank suggest the presence of white-clawed crayfish, although none were noted during hand searching of the bed. The substrate was dominated by gravel with some heavy deposits of sand and silt further downstream as the gradient decreased. It is strongly recommended that selective rotational coppicing should be undertaken here, with the brushings used to create faggots and narrow the channel width by approximately 1-2m. These actions would improve light penetration, increase macrophyte growth, increase channel diversity and encourage sorting of the bed substrate. Larger timber from the coppicing could be used to construct one or more stick pile otter holts. There is excellent access along a woodland ride on the RHB. (**PHOTO 14**).

Approximately 100m upstream of the Old Mill, there is an old brick built bridge that has been partially occluded by the installation of a sleeper. (**PHOTO 15**). This is impounding water upstream by approximately 150mm, increasing channel width and depth, whilst encouraging the deposition of fine sediment. It is also impeding migration of fish. Unless the landowner has a specific reason for its retention, it is recommended that it be removed.

Upstream of the access road to the Hall at TF 204983 (**PHOTO 17**) Waithe Beck is again totally shaded by riparian trees, including ash, sycamore and hawthorn. The channel is overwide, with marginal or instream macrophytes and a poorly sorted, silt/fine sand dominated substrate. Again, it is recommended that selective rotational coppicing is undertaken on both banks. Access is excellent via the LHB grass field.

River Eau system

Worlaby Estate:

Contact: Farm Manager Timothy Lamyman Tel: 01507 533200. River holding runs from approximately 2 km upstream of Ruckland roadbridge to the Walmsgate Estate, approximately 2km downstream of the roadbridge.

Upstream of the road bridge adjacent to the Old Rectory at Ruckland (TF 333779 **PHOTO 18**) the River Eau is overshadowed by LHB trees including sycamore, alder, bullace and hazel. The bed is dominated by small gravel with a heavy loading of sand and silt. The RHB is heavily mown. Rotational coppicing of the LHB would be beneficial to the channel by allowing more light penetration.

Downstream of the roadbridge, the channel is very incised. There is a good gradient, with the channel substrate dominated by gravel with a high sand content. Further downstream heavy shade is cast by the riparian tree cover (**PHOTO 19**). As a consequence of this and a flatter gradient, there are sections of channel dominated by heavy deposits of silt. Bankside vegetation is dominated by ruderal species, although there are some stands of sedge *Carex spp.* in places. Once again, it is recommended that long sections of the stream should be selectively coppiced to increase light penetration. As the Estate runs a large sporting shoot, it is unlikely that access for such work would be granted to the wood until the end of the shooting season (i.e. February).

Walmsgate Estates:

*Contact: Upstream section: Owner Mr Will Haggas, Low Farm, Walmsgate, Louth, Lincolnshire. LN11 8QN Tel: 01507 480360 (Work) 01507 480724 (Home)
Downstream section: Farmer Mr Haxby, Ketsby Mill Farm, Ketsby Tel: 01507 480241*

The upstream owner, Mr Haggas was interested in the idea of habitat enhancements, especially anything to do with improvements for brown trout. However, he did suggest that the most valuable thing the EA could do would be to dredge the river removing all the silt that “is clogging up the channel”!

The River Eau downstream of the track at TF 360775 runs through a heavily wooded plantation. The gradient is good, with substrate dominated by well sorted clean gravel. Access to this site is very difficult through the dense bankside trees and shrubs. After 300m, the channel becomes less shaded with the bed becoming increasingly clay/silt dominated.

The river then runs through an area of arable land farmed by Mr Haxby. His wife appeared interested in the idea of enhancements but could not speak for her husband. The RHB field is ploughed up to the banktop with the face of the slope close cut by machine. (**PHOTO 20**). Sections of the bank are collapsing due its steep angle of repose and the lack of riparian vegetation. (**PHOTO 21**). No macrophytes were present in the channel with only filamentous algae noted. There is a well developed wooded fringe on the LHB. The key to enhancement of this section is the

establishment of well buffered margins of >6m width, probably under the Countryside Stewardship Scheme. There seems little point in attempting to improve the in-channel habitat of this river reach until the issue of adjacent land use is addressed.

The section upstream of Ketsby Mill is dominated by the impounding influence of the Mill head. There is clear evidence that the Mill was until recently used to rear trout. A large fishing lake still exists alongside the Eau at TF 368777. The RHB alongside the lake (**PHOTO 22**) is heavily wooded, whilst the LHB is maintained by cutting. Where shading is light, the marginal vegetation included brooklime, water forget-me-not and figwort. Arable cultivation again takes place right to the bank top, with only the narrow wooded strip stopping even closer cultivation. The creation of buffer strips is a high priority at this location. It would be beneficial to coppice some of the RHB trees to allow increased light penetration. In addition, suitably sized (20-60mm) flint gravel could be added to the channel at selected locations to increase structural diversity which has been in part lost due to past dredging operations.

There is some suggestion that water levels have been recently and significantly manipulated. **PHOTO 23** clearly shows extensive lengths of exposed bank, possibly due to abstraction into the fishing lake at TF 366769 (**PHOTOS 24 & 25**)

Ormsby Hall

Contact: Owner Mr Massingberd-Manby, Ormsby Hall Tel 01507 480203

Mr Massingberd-Manby owns a substantial length of the River Eau downstream of Ketsby Mill, to Swaby. He has some double bank stretches, whilst on other sections he owns only one bank. He insisted that he was not interested in any involvement in enhancement schemes, partly due to his age and partly due to the fact that he felt that having planted “170,000 trees since 1939” he had done enough for the environment.

South Thorgansby

*Contact: Adrian Harrup, Belleau Bridge Fish Farm, Belleau. Tel: 01507 480480
Chris Done, Rookery Farm, Tathwill Farms, Tathwill
Phil Gibson, Elms Farm, Swaby Tel: 01507 480266*

Land ownership in this reach is relatively fragmented. Some details were obtained from local residents, who were of the opinion that the major landowners would be interested in habitat enhancements in the river corridor. No contact has been made with any of the landowners.

The River Eau downstream of the crossing of the footpath from the church (approx. TF 399722) has breached its banks and formed a subsidiary channel on the LHB (**PHOTOS 26-29**). Cattle poaching of this subsidiary channel has been extensive, with large volumes of fine sediment entering the river. The main channel is extensively wooded. Much of the adjacent land has been/will be entered into the Countryside Stewardship Scheme. An opportunity exists to significantly enhance this section of river by:

- Fencing some 150m of the LHB of the river to prevent cattle access (it may be necessary to create a formal drinking area as part of any such scheme).
- Pollard 16 No. crack willows and coppice selectively ash, sycamore and alder in order to reduce shading of the channel.
- Use arisings from the coppicing/pollarding to narrow the channel with faggots and/or create an otter holt.
- Either create an area of marsh or wet woodland in the fenced area or repair breach to bank and reinstate all flow to the original channel of the Eau.

Upstream of this section of the river, the channel continues to be overshadowed. Selective coppicing and pollarding would be of great benefit here. The LHB is already wet with significant stands of *Juncus*. It may be possible to reprofile a short section of the LHB of the river in order to encourage periodic winter flooding of this field for the benefit of wintering/passage waders and wildfowl. There is a natural depression in the field that could be further excavated to form a shallow scrape. Any such enhancements could be incorporated into the Countryside Stewardship Scheme. **(PHOTO 30)**

Approximately 200m upstream, the tree canopy thins. The water was very coloured, possibly due to erosion or cattle trampling (there had been very little rain prior to the site visit). Heavy grazing pressure on both banks is depressing riparian vegetation growth. The channel is anastomosed, with alder dominated islands present **(PHOTO 31)**, probably as a result of grazing pressure. It is imperative that this pressure is reduced either by fencing out stock from the river bank and creating a buffer zone of >10m or by reducing stocking density under the Countryside Stewardship Scheme.

The whole reach is relatively poor in gravel substrate. It would be of benefit to construct a number of short riffles to increase substrate diversity.

River Ludd

Contact: Nick Lenty, East Lindsey DC Tel: 01507 601111

The River Ludd runs through Hubbard's Hills country park (TF 315861). The park is managed by East Lindsey DC, who are presently considering options for re-landscaping sections, including the River Ludd. Nick Lenty's name was provided as the project manager. Unfortunately, he is on annual leave and no contact has been made with him. This area possibly provides the best opportunity for the EA to use its financial resources to the maximum environmental benefit in the short time frame available.

The Ludd at its upstream end in the park has an overwide channel with poorly sorted gravel substrate. The LHB is "natural" with some growth of marginal aquatic vegetation. The RHB is subject to heavy mowing. **(PHOTO 32)** Modification of this regime and the narrowing of the channel using pre-planted coir fibre rolls, faggots or similar would improve marginal vegetation cover, whilst increasing sorting of the substrate.

Below the bridge, both banks are lined with plastic geo-mesh. This could be removed. Banks could then be reprofiled by creating a 2-stage channel with marginal

shelves using coir fibre rolls, faggots or willow spiling. Alternatively the mesh could be left in situ and masked by coir fibre rolls placed along the toe of the bank. “Snowshoe” islands constructed of woven willow could be anchored to the bed of the river in mid-channel with a view to encouraging the growth of submerged macrophytes.

In order for these plant based bioengineering techniques to succeed, shading needs to be reduced by coppicing of bankside trees.

There are a number of discharge pipes that are at present very visible in the banks. These could be modified and masked by the creation of reed beds or allowed to discharge sub-surface. There are sections of old sandbag revetment that could be replaced using any of bio-engineering techniques outlined above. Log chutes could be installed to increase heterogeneity in flow patterns.

Further downstream, the channel is impounded. There are a number of small stone weirs that could be replaced with gravel riffles. The channel could be narrowed using faggot and chalk walkways. This would create a self-cleansing channel with an area of open, still water behind the walkway. This could be developed as a wetland area, with clear benefits to amphibians, dragonflies/damselflies etc. It would also make a potentially excellent teaching area for local schools. In order to develop this area, there would be a need to reduce wildfowl numbers (culling and/or egg pricking). The existing gabion impoundment at the lower end of the ponded area could be removed to create a free-flowing channel. The options outlined in this paragraph are potentially fraught with public relations issues. They would fundamentally change the form of the river through the park and may not therefore accord with the vision of the majority of users for the park.

All of the options recommended should be discussed with East Lindsey DC, with a view to their incorporation into the wider landscaping plans for the park.

3.0 Recommended enhancements

- **Sir Richard Sutton’s Settled Estates:** Considerable scope for integrated enhancements exist in conjunction with the Countryside Steward Scheme. However, access difficulties posed by the arable cropping cycle and the need for Trustee approval mean this is not a good estate on which to attempt enhancements during winter 2001-200. The EA should however pursue it as a long term option.
- **Thorganby Hall:** The EA should consider involvement in the project to restore the Old Mill in order to protect both migratory access for fish and the river’s geomorphology. A financial contribution may ease the way to landowner agreement to undertake the recommended rotational coppicing over a long length of the beck. This would be a relatively cheap enhancement that could be undertaken at short notice with significant environmental benefit.
- **Worlaby Estate:** Opportunities exist for selective coppicing of significant lengths of river bank to increase light penetration. These should be pursued. However, the existence of a large sporting shoot on the Estate may restrict access until after the end of the shooting season.
- **Walmsgate Estate:** The close proximity of arable cultivation to much of the length of the River Eau effectively precludes any meaningful enhancement

opportunities. However, there is a possibility that selective coppicing and the introduction of imported gravel would be of benefit to the river alongside the lake upstream of Ketsby Mill.

- **South Thorgansby:** There are considerable opportunities for enhancement at this site. Much of the land is or will be in the Countryside Stewardship Scheme. Fencing of the river banks to prevent stock access and selective coppicing of riparian trees are simple operations that would deliver real ecological benefits. Seeding with gravel would improve structural diversity in the channel, whilst the creation of a flood plain scrape would encourage usage by wintering and passage waders and wildfowl.
- **Hubbard's Hills:** This represents the best opportunity for the EA to collaborate in a partnership scheme. East Lindsey DC is presently examining landscaping options for the park. The enhancements outlined in this report, including channel narrowing using faggots, coir fibre rolls or spiling, the creation of mid-channel sub-surface islands, coppicing and the major modification of the downstream ponded area of the river could all be potentially incorporated into a vision for the park's landscape.