

APPENDIX 3 CASE STUDY DETAILS: KIPLIN HALL

Name:	<u>Kiplin Hall</u>
Site location:	3.2 km SE of Bolton-on-Swale (Richmondshire district)
Elevation:	c 35 mAOD
Natural area:	Vales of York and Mowbray

Abiotic characteristics

This site has been quarried for fluvial aggregate deposits and is located amongst relatively low-lying farmland in the northern Vale of Mowbray, close to the River Swale. The site comprises one of several sand and gravel units downstream of Richmond (including Scorton). Restoration of the completed sections of the workings has been partially completed by Lafarge including two open waterbodies. As part of this a fishing lake has been created to complement the landscape setting in the vicinity of Kiplin Hall according to the wishes of the owners (**Figures KIP1 and KIP2**).

Geology

The geology at the site comprises Boulder Clay overlying terrace and glacial sands and gravels underlain by clay. The Triassic Sandstone, a Major Aquifer, underlies the site but limited groundwater interaction is anticipated with the superficial deposits due to the intervening clay.

Hydrology

The two waterbodies are primarily groundwater-supported. It was decided against a direct connection with the adjacent brook due to turbidity problems. Indirect connection may exist via intervening permeable gravel/cobble material which may help to regulate water levels in the upper lake. Fluctuations in lake levels are observed in response to nearby periodic quarry dewatering.

The upper lake is used as a fishing lake and differences in clarity, flora and fauna were observed from the lower lake which appeared significantly less eutrophic. Also banks were steeper and standing vegetation higher around the lower lake, discouraging geese. Adjacent to the southern lake a small ecologically-rich pond was observed to form in a hollow, fed by surface run-off and by seepage from the adjacent lake. The lower lake contains an overflow channel to prevent overtopping of the bunds.

Water quality

The following water chemistry data were obtained (sampled 29/11/2006):

Variable/ Location	pH	Electrical conductivity $\mu\text{S}/\text{cm}^{-1}$	Ortho- phosphate mg/l P	Nitrate mg/l N	Sulphate mg/l	Magnesium mg/l	Calcium mg/l	Alkalinity mg/l CaCO_3
Fishing lake	8.01	416	<0.1	2.43	50.2	18.3	54.5	133
South lake	8.09	477	<0.1	<0.4	85.4	23.7	60.0	162
Seepage pond	7.67	795	<0.1	<0.4	102	28.9	154	332

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Kiplin Beck	8.03	611	0.172	12.8	53.2	21.1	103	203

Table A3.1: Water chemistry data at Kiplin Hall

Kiplin Beck is evidently eutrophic but the adjacent lakes appear to be predominantly groundwater-fed. The sample data suggests mesotrophic but mineral-rich, hard water conditions.

Historical and landscape context

The Kiplin Hall site is one of several aggregate quarries on the banks of the Swale south of Richmond. It is 3 km. south-east of Bolton-on-Swale Lakes SSSI, a complex of former gravel pits designated primarily for their bird interest.

The partially-completed restoration includes a trout-fishing lake incorporated within the Kiplin Hall parkland, and a lower lake which is more isolated. The lakes are primarily groundwater-fed with some lateral input from the eutrophicated Kiplin Beck, which drains an agricultural catchment.

There no historical evidence of pre-existing wetland on this site.

Ownership and management arrangements

The Kiplin Hall quarries were operated by Lafarge Aggregates Ltd but ownership reverts to the Kiplin Hall estate. There appears to be no formal after-use or site management plan.

Biodiversity interest

The Kiplin Hall lakes are relatively undisturbed with no formal public access except for use of the upper lake by an angling club. Consequently, the lakes are attractive to waterfowl, especially diving ducks and at times support the largest congregations of Goldeneye in the Swale and Ure Washlands. Bird counts have been undertaken under the auspices of the Swale and Ure Washlands Project but data are not presently available.

The upper lake shows signs of changing trophic status in zones across the lake bed: some parts have turbid water dominated by algal growth but there are also areas of clear water with charophyte (stonewort) beds. The lower lake, not stocked with fish, has a mesotrophic character with species-rich aquatic vegetation including charophytes, various pondweeds and marestail (*Hippuris vulgaris*).

A small 'accidental' feature of this site is a pond formed inland of the lower lake bund and evidently fed by percolation of lake water through the retaining bund. This is richly-vegetated and was found to support a diverse invertebrate community.

The site supports the following habitats identified as priorities for conservation in the UK and local (Richmondshire) BAPs:

Feature	UKBAP Priority	Richmondshire BAP Priority
Mesotrophic lakes (?)	•	
Standing waters		•

Table A3.2: Habitats supported

Potential for wetland restoration

This is a partially-completed restoration which has not been focused on habitat creation. The lower lake appears to have mesotrophic conditions and could become a valuable habitat for plants and invertebrates if it can be isolated from inputs of nutrient-enriched surface water. Stocking with coarse fish would be detrimental. Further survey is required to establish the ecological interest of the lakes.