

## Foston River Witham and Foston Beck Water Quality January 2016



Historically the River Witham has had good water quality, despite being situated in an intensively farmed landscape. The River was rated as grade A for chemical composition with high dissolved oxygen and low ammonia in 2009 when the last routine Environment Agency tests were undertaken (precipitated by government cut-backs in environmental spending). The Council has therefore had to pay to continue conducting checks on water quality, which take on a new urgency given new intensive animal agriculture developments in the parish. An assay of water quality was undertaken at three localities around the parish on 4<sup>th</sup> January 2016. Samples of water were taken from 1) the River Witham 20 m upstream of the Foston Beck, 2) on the River Witham downstream at the Ford and 3) in the Foston beck approximately 50 m before it enters the River Witham. Four tests were performed 1) dissolved oxygen; referring to the level of free, non-compound oxygen present in water, dissolved oxygen levels that are too high or too low can harm aquatic life and affect water quality 2) ammoniacal nitrogen ( $\text{NH}_3\text{-N}$ ), a measure of the amount of ammonia, a toxic pollutant often found in waste products, such as sewage and liquid manure 3) Nitrates as N - nitrate is may be naturally present in groundwater at relatively low concentrations, but in areas of intense farming the nitrate-nitrogen concentration may be elevated and cause deleterious impacts on river health 3) phosphorus is a common constituent of agricultural fertilizers, manure, and organic wastes in sewage and although an essential element for plant life an excess can cause eutrophication of water bodies.

The results of these assays are presented in Table 1. Sampling was undertaken after several days of heavy rain and high water levels. Ammoniacal Nitrogen levels were low and consistent between all three sites. Whilst nitrates were highest in the Beck and higher downstream than upstream suggesting that there is significant

run-off of nitrates from surrounding fields, presumably from fertilizer. Phosphates showed the opposite pattern however. Dissolved oxygen concentrations were lowest in the Beck and this may be reflected in lower oxygen concentrations downstream in the river. Water quality is significantly poorer in the Beck than in the River which is to be expected given lower turbation and should be monitored to see if regional land-use changes affect river chemistry.

Table 1.

<b>Laboratory Number</b>		<b>15039209</b>	<b>15039210</b>	<b>15039211</b>
<b>Sample Ref.</b>		<b>Witham #1 O2</b>	<b>Witham #2 O2</b>	<b>Beck #1 O2</b>
<b>Sample Date/Time</b>		<b>4/1/2016 9:50</b>	<b>4/1/2016 10:50</b>	<b>4/1/2016 10:20</b>
<b>Sample Matrix</b>		<b>Surface Water</b>	<b>Surface Water</b>	<b>Surface Water</b>
Ammoniacal Nitrogen as N (LL)	mg/l	0.07	<0.06	<0.06
Nitrate as N	mg/l	9.4	11	15.1
Phosphates , Total as P	mg/l	0.37	0.3	0.18
Dissolved Oxygen, Fixed	mg/l	10.4	10.1	8.4