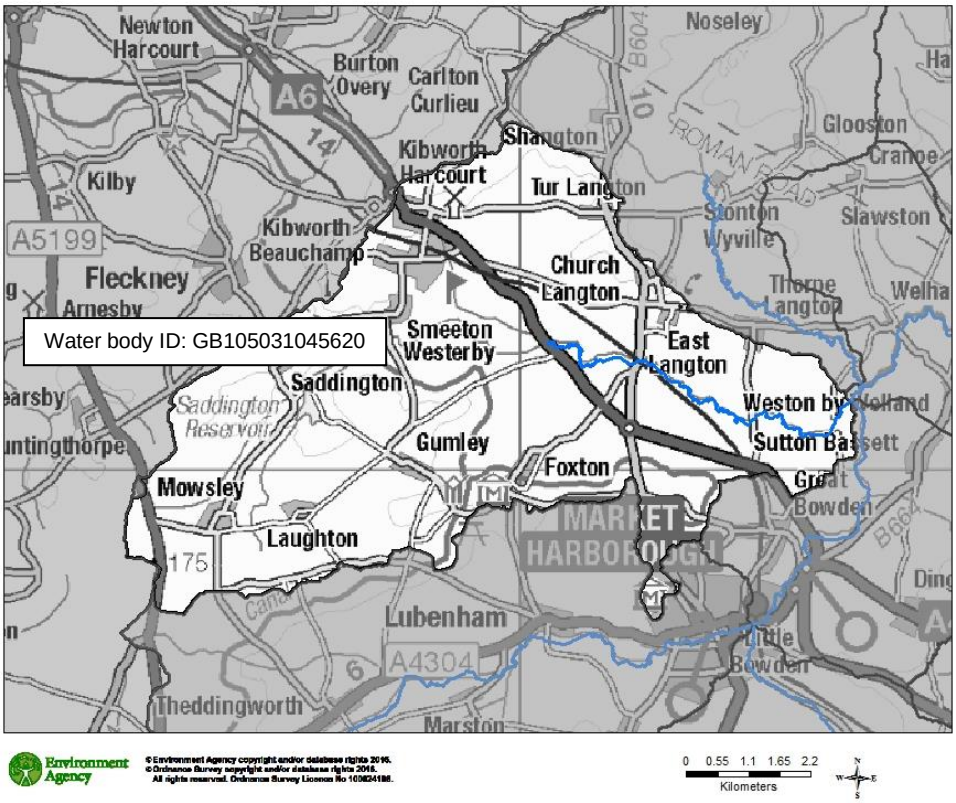
A clear solution for farmers
ENGLAND CATCHMENT SENSITIVE FARMING DELIVERY INITIATIVE

River Welland
Langton Brook



This bulletin provides a summary of the available water quality data and some of the key environmental features and issues for the Langton Brook, a tributary of the River Welland.

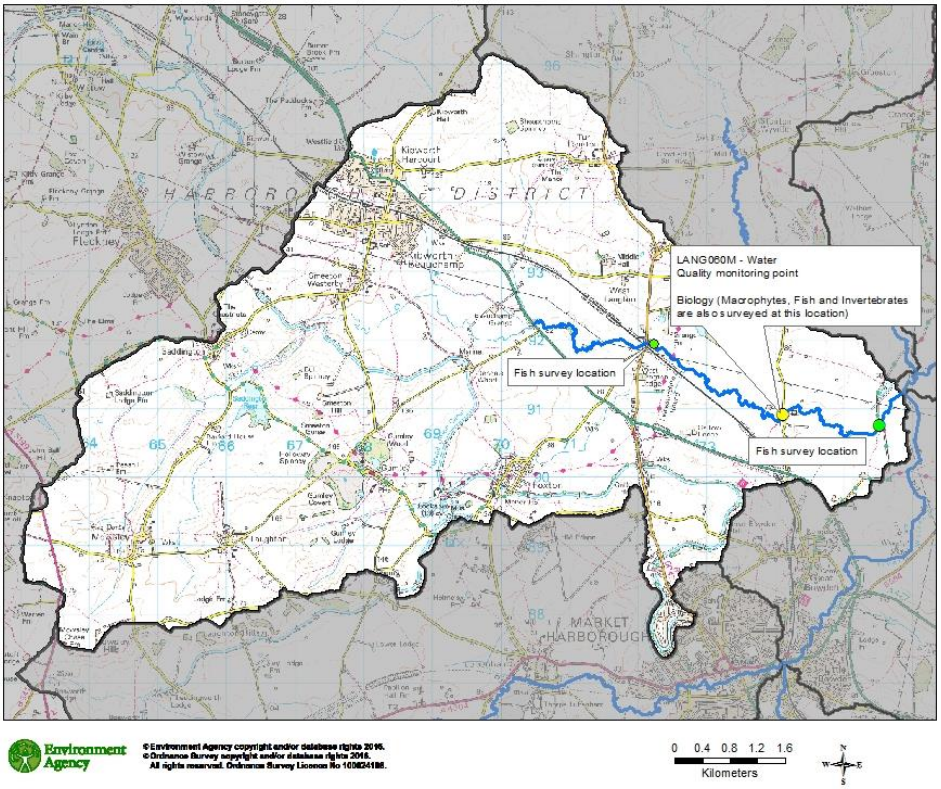
The catchment

The catchment is largely rural, with no major urban areas, although there are several smaller towns and villages. In the upper parts of the catchment the main land use is mainly improved grassland with some rough grazing. Towards the downstream end of the catchment towards the confluence with the Welland, there is more significant amount of arable land.

Current status

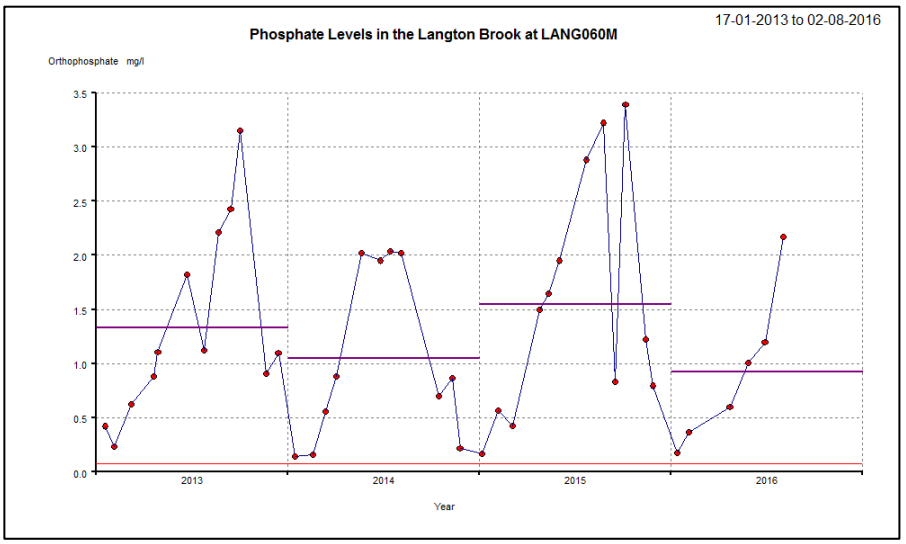
The Langton Brook is currently classified as **Moderate Ecological Status** under the Water Framework Directive (WFD). The WFD requires that all waterbodies meet Good Ecological Status/Potential by 2027, and the Welland Valley Catchment Partnership is working with the Environment Agency towards achieving this. The current moderate status is due to high levels of phosphate and ammonia, low levels of dissolved oxygen and biology elements, specifically fish and macrophytes (aquatic plants) are also classified as moderate.

The Environment Agency has a sample point on the Langton Brook where water quality is assessed, as well as several biological survey sites which are shown on the map below.



Phosphate

Phosphate is the most common failing element nationally under WFD. The target for Good Status for phosphate is calculated on a site specific basis (depending on other water body characteristics such as altitude). The site specific standard is 0.076mg/l for LANG060M, measured as an annual average. The time series plot below shows that phosphate levels are higher than this in all samples taken since 2013, and that the annual averages consistently fail to achieve the good status limit.



Phosphate pollution may originate from point sources, such as sewage treatment works (STWs) and septic tanks, or from diffuse sources. By diffuse sources we mean from a range of activities and scattered sources that individually may have little effect on the water environment, but added together when they enter a water body can have a significant effect on the water quality. The most common way phosphate gets into watercourses from agricultural sources is attached to soil particles. Reducing soil erosion and runoff is therefore a key way to reduce this nutrient input into rivers.

There is a significant sewage works discharge in this catchment, and modelling work suggests that the majority of the phosphate originates from sewage effluent (around 88%), however there is still expected to be a contribution from agricultural sources of around 12%.

Phosphate can enter the water in the following ways:

- manures or fertilisers direct from overspreading or from leaks and spills or washed off the field surface
- water and wind erosion of soil carrying phosphate attached to clay and organic matter
- there can be significant leaching of dissolved phosphate through the actual soil profile when levels reach P index 4 and above
- soil sediments and manures, containing phosphate, reaching field drains. This is increased in cracked or recently fissured soils (e.g. land drainage, deep subsoiling or mole draining)

Excessive nutrients in the watercourse damage the environment by upsetting its natural balance. It encourages more aggressive feeding plant and animal species that are more likely to take over a water body, thriving at the expense of other species. This reduces the biodiversity of the watercourse.

Sediment itself also affects the habitat of rivers by smothering riffles used by fish to spawn and changing river morphology. Managing and reducing sediment runoff can help to prevent damage to the environment and maximise the levels of phosphates retained in soil for crop growth.

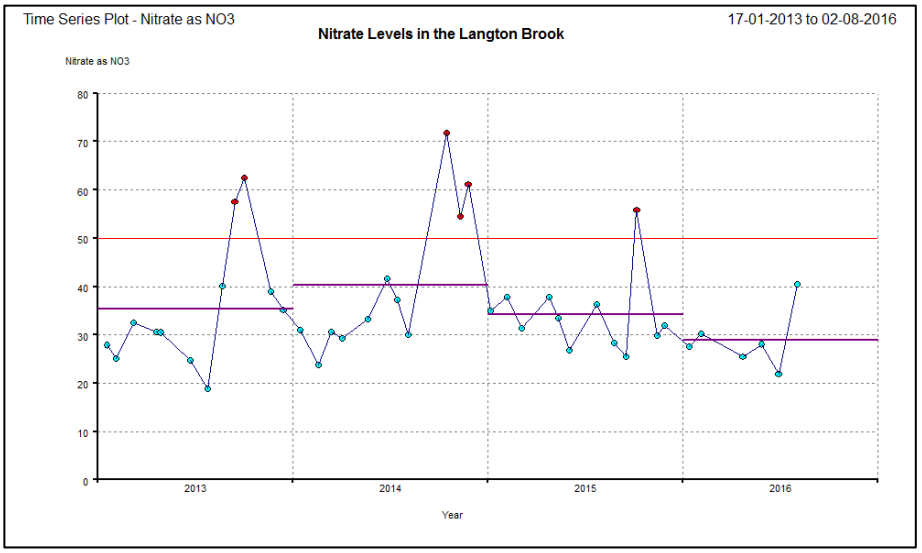
Nitrates

This catchment, along with much of England, is in a Nitrate Vulnerable Zone (NVZ). Assessments have shown that this catchment is at risk of nitrate pollution from agriculture.

Nitrate pollution problems can occur when too much chemical fertiliser is applied to the land. The excess runs off and can find its way into drinking water sources, rivers and lakes. European legislation states that drinking water should not contain more than 50 milligrams of nitrates per litre of water.

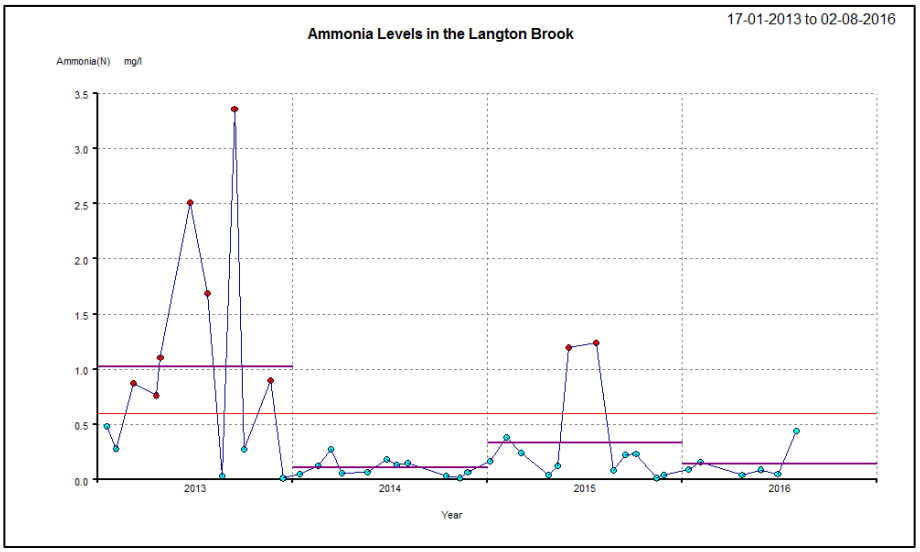
In rivers, streams, ponds and lakes, too much nitrate can create a 'pea soup' effect. The water becomes clogged with fast-growing plant life like algae and weeds. This is a major problem especially in some areas of England such as East Anglia. In problem areas, some farmers voluntarily control their use of nitrogen.

Surface waters are considered to be ‘polluted’ by nitrates where levels are in excess of 50mg/l. Monitoring shows that Nitrate levels in this water body sometimes exceed this threshold.



Ammonia

High concentrations of ammonia in watercourses are toxic to aquatic organisms. Ammonia levels in the Langton Brook exceed the good status limit of 0.6mg/l.



Sewage effluent is a source of ammonia and sewage treatment works discharges are thought to be one of the main reasons for high ammonia in the Langton Brook. However, agricultural sources such as fertilisers and animal slurries can also contribute to elevated ammonia levels in watercourse and therefore good farming practises are also important if good status is to be achieved and maintained in this water body.

Pesticides

The Environment Agency has to ensure that there is no compromise of, or deterioration in, the quality of drinking water. This is managed by identifying Drinking Water Protected Areas (DrWPAs) as waterbodies from where water is abstracted for potable supply.

A DrWPA is 'at risk' if the water quality in the source is showing signs of deterioration or is of poor quality. The area of land where activities impact on the abstraction is the Safeguard Zone and is where measures are put in place, designed to protect water quality upstream of the DrWPA.

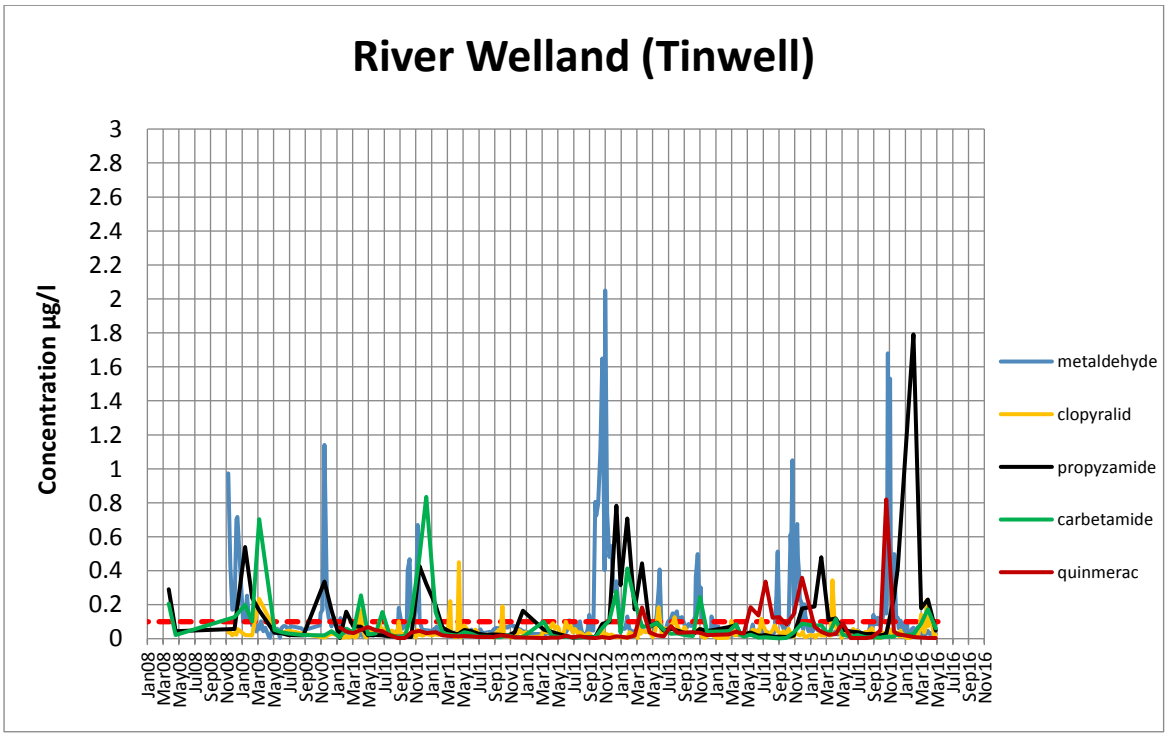
This catchment comprises part of the Safeguard Zone for the River Welland and Rutland Water DrWPAs. Water is abstracted from the River Welland at Tinwell and is transferred to Rutland Water.

The substances placing the DrWPAs of the River Welland and Rutland Water Safeguard Zones at risk are pesticides. The drinking water limit for any pesticide is 0.1µg/l. There is no monitoring in this water body for pesticides; however levels are monitored downstream on the River Welland at Tinwell. The graph below shows levels of pesticides detected at Tinwell. The highest levels detected are for metaldehyde, which is discussed in more detail below, and

peaks tend to occur in autumn. Concentrations greater than 0.1 µg/l have been detected for all 5 of the pesticides shown below. The presence of pesticides highlights the need to ensure good agricultural practices.

Research has shown that pesticides are likely to be reaching rivers through a combination of the following pathways:

- Point sources such as spills during filling the spreader/sprayer, or when moving bags or containers
- Inaccurate spreading and spraying across field margins, ditches and water courses
- Diffuse leaching via land drains
- Land run-off for example, when pesticides are applied during saturated ground conditions or when rain is imminent, and where poor soil management causes enhanced run-off



Metaldehyde

Metaldehyde is the most widely used pesticide for slug control.

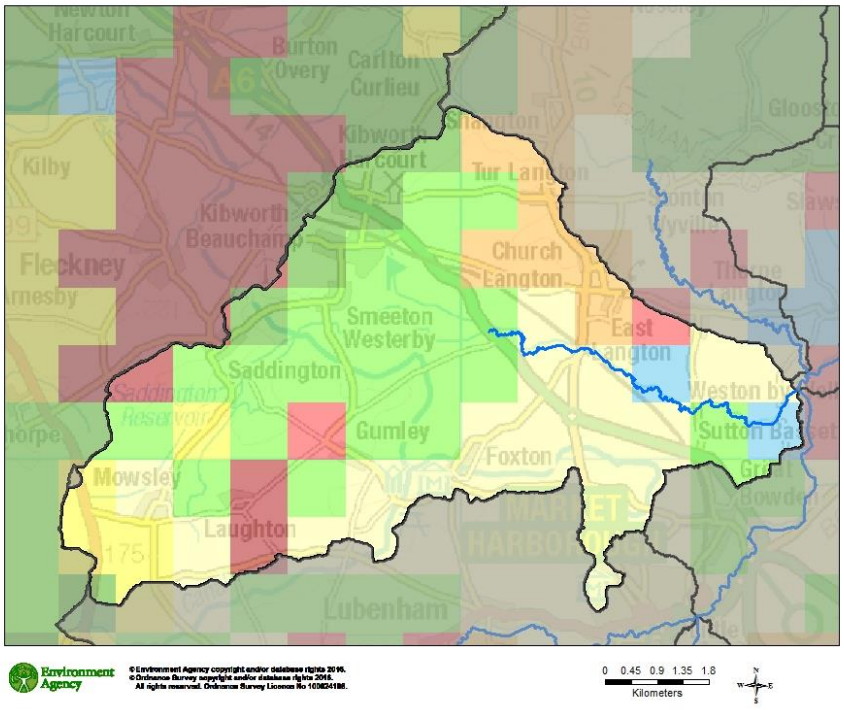
Pellets applied to crops on land can enter drains and watercourses during application or via run-off caused by heavy rain or prolonged rainfall events. A single slug pellet could contaminate 1000 litres of water to above the drinking water limit, so careful use is vital. Once in water supplies, it is extremely difficult to treat the water to remove it. There is a particular issue with metaldehyde in this area.

The Metaldehyde Stewardship Group (MSG) has launched a campaign called 'Get Pelletwise' to disseminate best practice advice to farmers and agronomists. Guidelines include leaving a 6-metre buffer around watercourses, maximum dosage rates and advise against application when heavy rain is forecast. The use of alternative products such as Ferric Phosphate and Methiocarb can also help reduce levels of metaldehyde reaching watercourses. Following these best practice guidelines not only helps to prevent contamination of watercourses but ensures efficient usage of this pesticide which minimises financial losses through loss of product.

Soils

Soil is valuable resource and soil security is vital if we are to ensure future food production.

Predominant Soil Types in the Langton Brook Catchment



Soil Type	Description	Leaching Potential
ASHLEY	Deep loam to clay	Intermediate
BECCLES 3	Seasonally wet deep loam to clay	Low
DENCHWORTH	Seasonally wet deep clay	Low
FLADBURY 1	Seasonally wet deep clay	High
HANSLOPE	Deep clay	Intermediate
OXPASTURE	Deep loam to clay	Intermediate
RAGDALE	Seasonally wet deep clay	Low
WICKHAM 2	seasonally wet silty to clayey over shale	Low

The map above shows the main soil types (1 km squares) for the catchment area, and their leaching potential. Soils with high leaching potential have little ability to attenuate pollutants, meaning they can be more readily transferred to underlying ground waters.

Ground water

The catchment area of this part of the Langton Brook partially overlies the WFD ground water body 'Welland Lower Jurassic Unit' (GB40502G304000) which is currently classified as Good Status. As with surface waters, the WFD requires that the status should not deteriorate, this includes ensuring that ground waters do not become polluted by nitrates, pesticides or other pollutants.

This water quality bulletin was produced as part of CSF. More of these local catchment water quality bulletins can be found at:
http://www.riverneneregionalpark.org/projects/catchment-sensitive-farming-csf

Catchment Sensitive Farming (CSF)

This catchment is in a CSF area under the Nene and Welland Catchment Partnership. CSF aims to reduce diffuse pollution from agriculture. This means farmers in this catchment have access to free advice, workshops and training events to assist with soil, nutrient and pesticide management, as well as priority access to funding through the CSF Capital Grant Scheme.
To find out more contact your Catchment Sensitive Farming Officer, Georgina Wallis, on
Tel: 01536 526438 / 07921 941734
Email: georgina@rnrp.org
Web: http://www.riverneneregionalpark.org/news/ncp/

To find out more about the water quality in your catchment, or to book a pollution prevention advisory visit please contact your local Environment Agency officer, Jo Gass, on
Tel: 07768 276779 / 02030253489
Email: jo.gass@environment-agency.gov.uk

Campaign for the Farmed Environment (CFE)

The priority in Northamptonshire is surface water protection. The CSS options that contribute towards this are:

- Buffer strips - to slow, filter and trap pollutants (soil, nutrients and pesticides)
- Cover crops - to reduce leaching of nutrients
- Field corners - to reduce overland flow and erosion of soil

To find out about free events or to get more information, contact your local CFE Advisor Louise Richmond on 07713 333192 or louise.richmond@cfeonline.org.uk

Metaldehyde Stewardship Group (MSG)

For more information on the MSG's campaign 'Get Pelletwise' please visit their website:
http://www.getpelletwise.co.uk/

Or for general enquiries they can also be contacted on: Tel. 0845 177 0117
In addition to best practice guidelines for farmers, the website offers advice on issues such as dose rates and machinery settings.

What's In Your Backyard? (WIYBY)

What's in Your Backyard (WIYBY) is the map service with which the Environment Agency makes much of its spatial data available to the general public. The WIYBY for farmers tool will help you get an idea of what environmental state the water bodies around and through your land are in, and whether agriculture is believed to be contributing to any water quality issues. It will also tell you what we think you can do to help reduce the impact your farm may be having on the water environment. WIYBY for farmers can be accessed via the Environment Agency website:
http://www.environment-agency.gov.uk/homeandleisure/37793.aspx

What can you do next?

If you would like to collect some of your own water quality data, arrange a free Catchment Sensitive Farming visit, or simply to discuss the issues further then please contact the Nene Catchment Partnership team at the RNRP offices (see CSF section for details).