Economic growth benefits of cleaner and healthier water bodies in the North West
Contents

Executive Summary .................................................................................................................................. 2
Economic growth benefits of cleaner and healthier water bodies ................................................. 4
Economic Impact of clean water on water body stakeholder groups ............................................. 6
Industry .................................................................................................................................................. 6
Transport and shipping ....................................................................................................................... 6
Farming ................................................................................................................................................ 7
Tourism and leisure .............................................................................................................................. 8
Housing and economic regeneration .................................................................................................. 9
North West Water Bodies: Economic impact of clean water ............................................................ 10
The Economic Impact of Clean Water on the Mersey Estuary ........................................................... 11
The economic impact of clean water on the River Weaver ................................................................. 13
The economic impact of clean water on the River Irwell and Manchester Ship Canal ...................... 15
The economic impact of clean water on the Ribble Estuary ............................................................... 17
The economic impact of clean water on the Lake District National Park ......................................... 19
Executive Summary

This study looks at five water bodies in the North West and assesses what the potential economic impact of clean water in these water bodies will be. The water bodies assessed are below with their current water quality status:

<table>
<thead>
<tr>
<th>Water body</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
</tr>
<tr>
<td>The Mersey Estuary</td>
<td>Moderate</td>
</tr>
<tr>
<td>River Weaver</td>
<td>Moderate</td>
</tr>
<tr>
<td>River Irwell and Manchester Ship Canal</td>
<td>Moderate</td>
</tr>
<tr>
<td>Ribble Estuary</td>
<td>Moderate</td>
</tr>
<tr>
<td>Lake District</td>
<td>Ranges from moderate – good with a small number of poor water bodies</td>
</tr>
</tbody>
</table>

The water bodies under consideration are used by a wide range of stakeholders and range in overall quality from good to bad. Only the Mersey Estuary has seen an overall reduction in water quality since 2009, it however is one of the most heavily used water bodies.

The range of stakeholders using the North West water bodies range from industry and farming to leisure and tourism depending on the water body. The paper sets out the general overall impact on clean water for each stakeholder group or subject and provides an assessment of water quality for each water body. The main economic impact of water quality in the North West relates to a reduction in water quality as opposed to an improvement, examples include reduced tourism and consequential economic benefit from them. The economic impact of water cleaner and healthier water bodies and the applicability to each water body is set out below. The areas in which clean water has the largest economic impact are in relation to leisure and tourism and economic regeneration.
<table>
<thead>
<tr>
<th>Stakeholder group and type of impact: clean water</th>
<th>Overall economic impact</th>
<th>The Mersey Estuary</th>
<th>River Weaver</th>
<th>River Irwell and Manchester Ship Canal</th>
<th>Ribble Estuary</th>
<th>Lake District</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industry:</strong> Water is used for cooling processes for a variety of industries, prior to being used for cooling water is chemically treated. There is little evidence that there is an increased cost associated with treating poor quality water.</td>
<td>Low</td>
<td>Low</td>
<td>N/A</td>
<td>Low</td>
<td>N/A</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Transport and shipping:</strong> Shippers may also be impacted by poor quality water, such as a build up or algae or silt may impede the movement of boats. There is no data available to establish the loss to the economy from ships that are slowed due to poor quality water.</td>
<td>Low</td>
<td>Low</td>
<td>N/A</td>
<td>Low</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Farming:</strong> Water is used by farmers for crop irrigation and feeding livestock. The majority of farming in the North West is livestock farming. There is evidence that quality of water can impact of overall crop yield and animal weight. However the impact on animal weight has not been quantified for the UK and may be minimal.</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>N/A</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Tourism and leisure:</strong> The economic value of clean water for tourism is most easily quantified and relevant to a number of the North West water bodies. Tourism contributes £13billion to the North West economy. Access and use of water bodies is a key part of the tourism offer in the North West. Improvements in water quality can have an impact on overall health costs from treating those who have bathed in dirty water. There is also an impact on the overall number of visitors to an area which will have an impact on spend in the local area.</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td><strong>Housing:</strong> Overall impact of water quality can have a small impact on house prices. The value related to clean water generally is in relation to the visual appearance of the water as opposed to the physical quality of it. The largest impact on housing and water quality is in relation to economic regeneration.</td>
<td>Medium</td>
<td>Medium</td>
<td>N/A</td>
<td>Medium</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Economic regeneration:</strong> There has been some significant economic regeneration of a number of water bodies in the North West, notably the Mersey Basin. Improvement in water quality and enabling access to the water body and land alongside it has had some significant economic impacts.</td>
<td>High</td>
<td>High</td>
<td>N/A</td>
<td>High</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Economic growth benefits of cleaner and healthier water bodies

The water bodies in the North West are used by a wide range of stakeholders and provide a vital role in supporting the North West economy. The water bodies play a role in attracting tourists to the region who contribute £13 billion to the North West Economy and the Lake District plays a significant part in the tourism industry in the North West. A good quality water environment has the potential to support economic regeneration and to enhance the social and economic value of developments. The UK NEA Economics Analysis Report (2011)\(^1\) estimates the willingness to pay (WTP) for water quality varied from £45 - £168 per household per annum for improving water quality from poor to good under the EU Water Framework Directive. Defra assessed the impact of the Water Framework Directive and found that incremental improvement in water quality is unlikely to have a significant economic impact. However a decrease in water quality may seriously compromise the freshwater services provided by the water bodies\(^2\).

Measuring the economic impact of clean water bodies, generally focuses on the current value of water, hence any modelling may need to state the economic impact of reduction in water quality. The water bodies in the North West are used by a wide range of stakeholders all of whom place an economic value on the water use, the main stakeholder groups are industry, farming, tourism, transport and shipping and housing. The water abstraction licences in the North West provide an overview of how water from water bodies is used, there are over 1000 water abstraction licences are in force in the North West as shown below.

![Abstraction licences by purpose (2012) - North West](image)

**Figure 1: Water Abstraction Licences 2012 North West\(^3\)**

There is a range of literature on the value of water and costs associated with improving water bodies, the National University of Ireland, Galway has the most comprehensive database on the economic impact of water quality providing 282 economic measures of

---

\(^1\) UK NEA Economics Analysis Report: Freshwaters, Morris and Camino, 2011, p 26


\(^3\) Number of abstraction licences in force by purpose, England and Wales (2012), Defra
water quality\textsuperscript{4}. For the purposes of this research the value of water quality can be broadly split into the stakeholder groups discussed earlier that are relevant to the North West and water use.

As well as valuing the water that they use many of the stakeholder groups which use water are polluters of the water bodies. The Environment Agency estimate that the most significant issues that currently impact on the North West waters are:

- Physical modifications
- Pollution from waste water
- Pollution from rural areas
- Pollutions from towns, cities and transport
- Changes to the natural flow and level of water
- Pollution from mines
- Negative effects of non-native species\textsuperscript{5}

\textsuperscript{4} http://www.nuigalway.ie/semru/water_quality_estimates.html
\textsuperscript{5} North West River Basin District Facts and Statistics, 2013, p 10
Economic Impact of clean water on water body stakeholder groups

Industry

Many of the water ways in the North West are home to industrial businesses that use and value the water from the water bodies. These businesses use the water from the waterways in a variety of ways, both discharging treated waste into the water and drawing water from the water body via abstraction licences. There are just under 600 water abstraction licences for ‘other industrial use’ in the North West. The water drawn from the water body is generally treated prior to use, WRAP\(^6\) provide a breakdown of the industries which abstract water, the research found that the five industries which use the most water were:

1) Chemicals and chemical products  
2) Basic metals  
3) Paper and paper products  
4) Beverages  
5) Food products

For many manufacturing industries the water is generally used as part of the cooling process. The relationship between water quality and economic output of industry is in relation to the impact that industry has on water quality as opposed to the impact that water quality has on industry. There is no conclusive evidence that the quality of water has an impact on industry. As water is treated prior to use in industry there may be some marginal impact on the costs to treat the water if the water quality is very poor. Finally, there may also be a marginal cost to industry if there is a build up of diffuse pollution within the water body which will delay discharge into the water body and consequential industrial production.

Transport and shipping

The transport and shipping waterways in the North West are important for the economy. The maritime industry employs 25,000 people in the Liverpool City region\(^7\), many of which are part of the transport and shipping economy on the Mersey. As well as polluters of the water the shippers may also be impacted by poor quality water. A build up or algae or silt may impede the movement of boats. There is no data available to establish the loss to the economy from ships that are slowed due to poor quality water.

Farming

The farming sector is one of the largest users of water from water bodies in the North West. Farming uses water from water bodies for irrigation and providing livestock with water to drink. The majority of the farmland in the North West is used for permanent grazing (61%) and rough grazing (14%). Agriculture contributed 0.54% to the North West economy in 2012, and varies significantly within the region. Agricultural land in the North of England is valued at over £8,000 per hectare. The main output of agriculture in the North West is milk followed by meat. Arable farming is a small proportion of the farming sector within the North West.

Unclean water can have an impact on crop yields, especially those crops which require good quality water and valuable crops. Unclean water can also have an impact on the health of livestock and lead to additional costs in care for livestock. The Scottish Environment Agency in 2004 estimated the economic value of naturally available water for irrigation is £5128 per hectare. Data is available that maps the value of water for various crops. It however does not provide information on the value of the quality of the water. However arable farming is a small part of the North West farming sector.

The largest economic impact of clean water on farming is the health of livestock for dairy or slaughter. There is evidence from the US, Canada and Australia that water quality can impact on the weight and health of livestock and the consequential price paid for livestock. Lardner et al (2005) found that animals feeding from water pumped into water troughs rather than dug outs or directly from the water source had a larger weight gain.

A farming Payment for Ecological Services (PES) is being piloted along the river Fowey in Cornwall, this pilot asks farmers to pay for ecological services that will increase the water quality in the River Fowey. Farmers benefited from troughs for animals to feed from and fences to stop the animals going to the river. Early evidence suggests that this has had a positive effect on the livestock. The primary impact however has been on the water quality in the river, through reduced diffuse pollution from farming.

There is no firm data on the impact of poor quality water on irrigation and feed for livestock. This is further work which could be undertaken to assess the overall impact of clean water bodies on the farming sector.

---

8 http://pdf.euro.savills.co.uk/residential---other/rural-mim-apr13.pdf
10 An economic analysis of water use in the Scotland river basin district, 2004, p15
Tourism and leisure

The economic value of clean water for tourism is most easily quantified and relevant to a number of the North West water bodies. Tourism contributes £13 billion to the North West economy. Access and use of water bodies is a key part of the tourism offer in the North West. Improvements in water quality can have an impact on overall health costs from treating those who have bathed in dirty water. There is also an impact on the overall number of visitors to an area which will have an impact on spend in the local area.

**Bathing Bodies:** A range of research has been undertaken to assess the impact of clean water on bathing bodies. The value of bathing waters act as a key indicator for economic value of tourism. URS estimate that improvement in water bathing quality in the North West could increase by £340.5 million over the next five years. While it has been estimated that the impact on tourism from poor quality water from algae bloom and eutrophication may lead to a loss in the UK economy of £2.96 million - £11 million. Finally URS estimate that if the EU Water Framework Directive was not met in the Fylde Coast there would be a fall in bather numbers from 3.6 million per annum to 1.5 million. The cost to the Fylde Coast in failing the WFD GVA would fall by £8.1 million in year one.

**Angling:** Another key tourism and leisure activity in the North West is angling, water quality has an impact on angling and anglers willingness to pay to fish. Brown et al (2012) note that four million people a year participate in angling and it contribute £3 billion to the economy. Johnstone and Markandya (2006) estimated that anglers value each angling trip at £24. While there is some evidence that a value is attached to angling for higher value fish stock such as Salmon. Amec in behalf of the Environment Agency estimate that an improvement in water quality may have an economic impact for landowners who may be able to release land for fishing rights, or increase the price that they charge for existing rights.

**Sailing and boating:** Water bodies provide a benefit for sailing and boating, which add local economic value, water quality can impact on decisions on whether to use the water body for sailing or boating. Adamowicz, W. L., G.D. Garrod, and K.G. Willis (1995) place a value of £6.66 per user, per year on the use of canals for boating.

**Water sports:** Water bodies are also valued by kayakers and other water sports, Stephen Hynes, Nick Hanley and Eoghan Garvey (2007) estimate that a 25% improvement in water bodies in a site in Ireland had a value of 0.52 Euro per trip. Surfers Against Sewage have estimated the overall impact that surfing has had on the economy. They argue that clean sea has had an impact on surfing participation overall impact on the economy. Although surfing is not a major water sport on the North West water bodies in question, this study demonstrates the importance of some niche water sports in contributing to the wider economy and is a good practice example of assessing economic impact.

---

12 URS WFD and bathing waters
13 http://pubs.acs.org/doi/pdf/10.1021/es020793k
14 URS WFD – Fylde Coast
15 http://resources.anglingresearch.org.uk/sites/resources.anglingresearch.org.uk/files/Final%20report.pdf
16 http://www.nuigalway.ie/semmr/water_quality_estimates.html
17 Valuation of Market Benefits from Water Quality Improvements – Part B: Benefits to Non-water Company Sector, AMEC, 2013, p24 - 26
18 http://www.nuigalway.ie/semmr/water_quality_estimates.html
19 http://www.nuigalway.ie/semmr/water_quality_estimates.html
Housing and economic regeneration
Living near to or next to water has an estimated increase of value of between 10 – 40%\(^{21}\). Waterfront properties can lose value if the quality of the water decreases due to algae or unpleasant odours\(^ {22}\). It appears the value that is placed in waterfront properties relates to the clarity of the water as opposed to the quality of the water. Those residents who use the water for leisure will contribute to the leisure economy.

Research undertaken in Birmingham established that the regeneration of the canal side development had an impact of £25.7mil - £57.1mil in property value uplift between 2001 and 2007\(^ {23}\). This however cannot be entirely attributed to an increase in water quality. A 2002 study from the University of Essex notes the impact of blue-green algae on house prices, estimating that the loss of a value of a property could be up to 10%\(^ {24}\). The TCPA in 2004 reported that street trees and views of natural landscapes and waterways can increase property value between 6% and 18%\(^ {25}\). While Ge et al note that value of homes when linked to water is in relation to increased values is related to the appearance of the water as opposed to necessarily how clean it is\(^ {26}\).

Overall the impact of poor water quality on residential stock appears to have to be significant to have an economic impact. Where the impact is most clearly felt is areas in which there is a significant improvement in water quality.

There is a variety of literature that links economic regeneration and waterside regeneration. The Mersey Basin Campaign concluded that property development on the water front had been a significant benefit of the Mersey Basin Campaign and that visual and physical water quality was key to this. The value of water quality and regeneration hinged on accessing once industrial land to use for new uses including residential, commercial and leisure spaces. A 1998 evaluation notes that; ‘

“This combination of assets has been widely capitalised upon, and many once derelict waterside areas have been transformed into vibrant commercial, leisure and residential developments…Redevelopment of exposed problems of poor water quality, which in many ways stood as a marker in public perceptions of environmental neglect”\(^ {27}\).

There is also international evidence of the value of clean waterways for example through the regeneration of Gothenburg\(^ {28}\) and opening the waterfront to development and Rotterdam.
North West Water Bodies: Economic impact of clean water

<table>
<thead>
<tr>
<th>Type of impact</th>
<th>Economic impact of clean water</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mersey Estuary</td>
</tr>
<tr>
<td>Industry</td>
<td>Low</td>
</tr>
<tr>
<td>Transport and shipping</td>
<td>Low</td>
</tr>
<tr>
<td>Farming</td>
<td>Low</td>
</tr>
<tr>
<td>Tourism and leisure overall</td>
<td>Medium</td>
</tr>
<tr>
<td>Tourism and leisure – Angling</td>
<td>High</td>
</tr>
<tr>
<td>Tourism and leisure – Sailing</td>
<td>High</td>
</tr>
<tr>
<td>Tourism and leisure – Walking</td>
<td>N/A</td>
</tr>
<tr>
<td>Housing</td>
<td>Medium</td>
</tr>
<tr>
<td>Economic Regeneration</td>
<td>High</td>
</tr>
</tbody>
</table>
The Economic Impact of Clean Water on the Mersey Estuary

The Mersey covers 110km flowing from the Peak District through Manchester and out to sea at Liverpool. The river is used by a large number of stakeholders and is strategically important to the North West. At present the water quality in the Mersey is defined as bad by the Environment Agency. The key uses along the Mersey are industry, chemicals, oil refinery, energy, manufacturing, waste management, water waste management and shipping.

There is a wide range of information about the River Mersey. The Mersey Rover Campaign which ran from 1985 for 25 years lead the way in clearing the Mersey and contributing to economic regeneration. The Mersey was once the most polluted estuary in the UK. The main issue for the Mersey was the amount of oxygen in the river driven by high levels of sewage discharged into the Mersey and overall neglect.

There are a number of large abstraction licences along the Mersey for industry, farming, golf courses and water supply (United Utilities). Industry generally uses water for cooling processes; the quality of the water generally does not impact on industry.

29 River Mersey, Mersey Basin Campaign reference.
## Economic Impacts – Mersey Estuary

<table>
<thead>
<tr>
<th>Type of impact</th>
<th>Impact level</th>
<th>Details of impact</th>
</tr>
</thead>
</table>
| Economic regeneration  | High         | There is evidence from the Mersey Basin Campaign that the main economic impact of cleaner water in the Mersey was the regeneration benefit. A 1998 study concluded that property development on the water front had been a significant benefit of the Mersey Basin Campaign and that visual and physical water quality was key to this. The value of water quality and regeneration hinged on accessing once industrial land to use for new uses including residential, commercial and leisure spaces. The value of water generally tended to be in regards to appearance for example a bar or restaurant being next to attractive water provided another ‘room’, while for residential property water was valued in terms of a unique location, finally office location was less affected by water quality but it was seen as a contributing factor to the speed of sale or lease or the space.  

| Tourism and Leisure    | High         | The benefit for tourism, property and commercial values remains relevant to the Mersey and continuing to keep it clean. The water quality on the Mersey is important in terms of tourism and recreation. It was estimated in 2010 that tourism added £3billion to the local economy and key attractions included Liverpool Maritime Museum and the Tate both of which benefit from their location at Liverpool waterfront is a World Heritage Site. For these sites the aesthetic water quality appears to be the most important factor.  

| Farming                | Low          | There is farming along the Mersey, however there is little evidence that the farms along the Mersey are particularly impacted by a change in water quality.  

The economic impact of clean water on the River Weaver

The River Weaver runs across West Cheshire. The catchment area is mainly rural with livestock farming being particularly dominant; this type of farming reflects the overall farming sector in the North West. The River Weaver also has a number of angling and sailing clubs within the catchment. The overall quality of the water in the River Weaver is moderate.
### Economic impact – River Weaver

<table>
<thead>
<tr>
<th>Type of impact</th>
<th>Impact level</th>
<th>Details of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tourism and Leisure - Angling</strong></td>
<td>High</td>
<td>The largest economic benefit of clean water in the Weaver is in regards to the leisure activities on the Weaver. Water quality has an impact on anglers their choice whether to fish on the river. It is estimated that an improvement in water quality could have. Johnstone and Markandya (2006) estimated that anglers value each angling trip at £24. While fishing for certain species of fish such as Salmon can provide an increased economic output. Cleaner water in the Weaver may lead to more fish species to encourage anglers to visit more.</td>
</tr>
<tr>
<td><strong>Tourism and Leisure - Sailing</strong></td>
<td>Medium</td>
<td>There are a number of sailing clubs on the Weaver whom have an economic impact. Adamowicz, W. L., G.D. Garrod, and K.G. Willis (1995) place a value of £6.66 per user, per year on the use of canals for boating. If water quality decreases there may be an impact on sailing and use of the water, however, an increase in it, is unlikely to see additional users.</td>
</tr>
<tr>
<td><strong>Farming</strong></td>
<td>Low</td>
<td>The economic impact of improving water quality for livestock farming is likely to be minimal. Water quality can impact on livestock weight and health. Studies from the USA, Canada and Australia have found that livestock health improves when water is provided in troughs as opposed to from the water body directly.</td>
</tr>
</tbody>
</table>

---

32 [http://www.nuigalway.ie/semru/water_quality_estimates.html](http://www.nuigalway.ie/semru/water_quality_estimates.html)
33 [http://www.nuigalway.ie/semru/water_quality_estimates.html](http://www.nuigalway.ie/semru/water_quality_estimates.html)
The economic impact of clean water on the River Irwell and Manchester Ship Canal

The River Irwell and Manchester Ship Canal flow through Greater Manchester. The water is a heavily modified water body and has a large amount of industry along its banks. The water body quality is moderate.

The river and ship canal is partly owned by Peel Ports, and use used by a variety of recreational users including the Salford Water sports Centre and the Salford Friendly Anglers. There are also a large number of industrial users along the river.
### Economic Impact – River Irwell and Manchester Ship Canal

<table>
<thead>
<tr>
<th>Type of impact</th>
<th>Impact level</th>
<th>Details of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic regeneration</td>
<td>High</td>
<td>Water quality has had the greatest economic impact in the Manchester Ship Canal via the regeneration of Salford Quays. There is evidence from the Mersey Basin Campaign that the main economic impact of cleaner water in the Mersey was the regeneration benefit. An evaluation of the project carried out in 2006 found that the campaign was seen as instrumental in regenerating the Salford Quays area. Water quality improvement in the Quays has led to investment in housing and commercial uses and has increased visitors to the Quays for cultural attractions such as The Lowry and imperial war museum. Finally the Quays also are used by people taking part in water sports including swimming and rowing(^\text{35}).</td>
</tr>
<tr>
<td>Tourism and leisure -</td>
<td>High</td>
<td>Finally, water quality has an impact on anglers their choice whether to fish on the river. It is estimated that an improvement in water quality could have. Johnstone and Markandya (2006) estimated that anglers value each angling trip at £24(^\text{36}). Salford Friendly Anglers are proactive in managing local water bodies, and see the benefit of cleaner water for their members and potential members.</td>
</tr>
<tr>
<td>Angling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>Low</td>
<td>There is little evidence to suggest that the quality of water has an economic impact on industry. Industry generally extracts water from water bodies for cooling purposes and treats it before it is used. Industry also discharges water into the water body. There is potentially a small economic impact on industry if the water body has poor quality and high levels of diffuse pollution. The levels of diffuse pollution may limit the discharge level into the water body thereby limiting industrial output for a small time.</td>
</tr>
</tbody>
</table>


\(^{36}\) [http://www.nuigalway.ie/semru/water_quality_estimates.html](http://www.nuigalway.ie/semru/water_quality_estimates.html)
The economic impact of clean water on the Ribble Estuary

The Ribble Estuary flows through Lancashire. Between 2010 and 2012 the water quality of the river improved from poor to moderate.

The River Ribble is heavily modified and is used by a variety of stakeholders. The main stakeholders are anglers, walkers, agriculture and a small amount of industry. The estuary also is important to the coastal towns of Lytham and Southport, both of whom have a tourist industry.
### Economic Impact – Ribble Estuary

<table>
<thead>
<tr>
<th>Type of impact</th>
<th>Impact level</th>
<th>Details of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism and leisure – Angling</td>
<td>High</td>
<td>The largest economic benefits that clean water on the River Ribble provide are in relation to tourism and recreation. Several assessments of the economic value of anglers have been undertaken nationally and internationally. Water quality impacts on the anglers choice of where to fish due to the health and variety of fish available in the water body. Finally, water quality has an impact on anglers their choice whether to fish on the river. It is estimated that an improvement in water quality could have. Johnstone and Markandya (2006) estimated that anglers value each angling trip at £24.</td>
</tr>
<tr>
<td>Tourism and leisure - walking</td>
<td>Medium</td>
<td>Walkers in along the River Ribble are a key part of the recreation industry. Walkers value clean water and access to clean water, the economic impact of walkers however is unclear.</td>
</tr>
<tr>
<td>Farming</td>
<td>Low</td>
<td>The economic impact of improving water quality for livestock farming is likely to be minimal. Water quality can impact on livestock weight and health. Studies from the USA, Canada and Australia have found that livestock health improves when water is provided in troughs as opposed to from the water body directly.</td>
</tr>
</tbody>
</table>

---

37 http://www.nuigalway.ie/semru/water_quality_estimates.html  
The economic impact of clean water on the Lake District National Park

The Lake District National Park is in Cumbria and is one of the key tourism sites in the UK. The water quality in the water bodies in the Lake District are generally moderate or good. However a number on the periphery of the park are defined as poor. There are three officially recognised bathing waters in the Lake District all on Lake Windermere. In 2013 two of the waters were defined as compliant and one failed the required standard.

The key economic driver in the area is tourism, and therefore water quality in the Lake District may impact economic growth. Cumbria Tourism estimate that in 2012 the Lake District received 14 million visitors, who contributed £994 million to the local economy and provided employment for just under 15,000 full time equivalent posts.39 The top visitor attraction in Cumbria in 2013 was Windermere Lake Cruises which received 1.4 million visitors.

Tourism and recreation are the prime uses of the Lake District water bodies. The water is also used for agriculture, forestry and mining and quarrying.

## Economic Impact – Lake District

<table>
<thead>
<tr>
<th>Type of impact</th>
<th>Impact level</th>
<th>Details of impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tourism</td>
<td>High</td>
<td>Water quality has the most economic impact in the Lake District on tourism. A number of pieces of research have been undertaken to assess the impact of clean water on water bathing bodies. URS estimate that improvement in water bathing quality in the North West could increase by £340.5 million over the next five years. While it has been estimated that the impact on tourism from poor quality water from algae bloom and eutrophication may lead to a loss in the UK economy of £2.96 million - £11 million. Using the above analysis there is evidence that an overall change in water quality in the Lake District is unlikely to have a considerable impact on tourism due to the Lake District's significance as a key visitor destination. However if there was a significant change in water quality this may have an impact on the users of the water and consequently reduce visitor numbers.</td>
</tr>
<tr>
<td>Tourism – sailing and boating</td>
<td>High</td>
<td>The Lake Districts is a key area for sailing and boating, water quality can impact on decisions on whether to use the water body for sailing or boating. Adamowicz, W. L., G.D. Garrod, and K.G. Willis (1995) place a value of £6.66 per user, per year on the use of canals for boating. As we as boating water bodies are also valued by kayakers, Stephen Hynes, Nick Hanley and Eoghan Garvey (2007) estimate that a 25% improvement in water bodies in a site in Ireland has a value of 0.52 Euro per trip.</td>
</tr>
<tr>
<td>Farming</td>
<td>Low</td>
<td>Farmers do not solely rely on the Lake District water bodies for water for livestock. An overall change in water quality is unlikely to have a significant impact on them.</td>
</tr>
</tbody>
</table>

---

40 URS WFD and bathing waters
42 [http://www.nuigalway.ie/semru/water_quality_estimates.html](http://www.nuigalway.ie/semru/water_quality_estimates.html)
43 [http://www.nuigalway.ie/semru/water_quality_estimates.html](http://www.nuigalway.ie/semru/water_quality_estimates.html)