Hull and East Riding Catchment Plan
March 2017

River Hull near Wansford © Vaughan Grantham

Table of Contents

Hull and East Riding Catchment Plan
March 2017

1) Vision

Our vision is for joined-up working that realises an improved water and wetland environment for the benefit of people and for wildlife.

2) Background

In 2012, the Department for the Environment, Farming and Rural Affairs (Defra) introduced the catchment based approach (CaBA), which addresses the requirements of the European Water Framework Directive (WFD) and other water-related issues through integrated, community-led action. The Environment Agency (EA) is responsible for promoting CaBA through a national network of local catchment partnerships.

3) Hull and East Riding CaBA Partnership

The CaBA Partnership for the Hull and East Riding management catchment (herein called the Partnership) was established in 2014. It is hosted by the Yorkshire Wildlife Trust (YWT) with support from the East Yorkshire Rivers Trust (EYRT) as Joint Host. YWT and EYRT are joined on the Partnership by other organisations that are responsible for the management and enhancement of the Hull and East Riding area. The other member organisations include:

- Beverley and North Holderness Internal Drainage Board
- East and North Yorkshire Waterways Partnership
- East Riding of Yorkshire Council
- Environment Agency
- Hull City Council
- Natural England
- Ouse and Humber Drainage Board
- South Holderness Internal Drainage Board
- Yorkshire Water

Hull and East Riding CaBA Partnership at Driffield Show 2016 © Annabel Hanson

Prior to the national launch of CaBA, members of the partnership had a good track record of working well. For this reason, they have readily embraced CaBA as a way of identifying shared aims and cross-cutting issues; ensuring that the work of respective partners is coordinated; and delivering improvements across the catchment. The Partnership is managed in accordance with agreed Terms of Reference, which are reviewed annually (see Appendix 1).

As set out in the Local Measures section of the Humber River Basin Management Plan, the following priority issues in the Hull and East Riding management catchment are defined as:

- Tackling diffuse pollution from urban and agricultural sources
- Promoting and developing sustainable drainage systems, including community engagement
- Restoring habitats and links to natural river processes

These issues were identified through the Partnership and in broad consultation with others. To date, projects and outreach delivered under the auspices of CaBA have targeted these priorities and demonstrated the positive impact CaBA can have at the local level.

Using CaBA, members of the Partnership have access to a wide range of skills, knowledge, experience and expertise. We have also used investment from the Catchment Partnership Action Fund (CPAF) to unlock additional support from partner organisations and external funders. This strategic combining of resources and funding has enabled the Partnership to achieve greater results – by being able scale up some projects – while ensuring good value for money. A strong example of this is the Hull Aqua Greens programme, which is described in section 8e of this plan.

4) Key Stakeholders

This document is intended to explain how the Partnership is using CaBA to make a difference in the water environment, in local communities and to the local economy – now and in the long term. By identifying our vision, priorities, objectives and plans for action, it is therefore aimed at:

- Government agencies and public bodies
- Strategic bodies
- Potential funders
- Landowning interests
- Farming and local community groups
- Educational institutions
- Academic and research organisations
- Non-government organisations
- General public

This plan will be used to maintain and develop relationships with these interested parties while building consensus around the Partnership's vision and championing CaBA at the regional and local levels.


West Beck confluence with the River Hull © David Croft

5) Advocacy and Engagement

As stated in our Terms of Reference, partners liaise with stakeholders at all levels and forge links with new interest groups as they emerge. At the strategic level, partners advocate for CaBA through their involvement in groups such as the Yorkshire Regional Flood and Coastal Committee and River Hull Board.

Waterways Partnership Conference 2015 © Vaughan Grantham

The Partnership has made connections with other catchment partnerships. The EA's Yorkshire Environment Programme Team hosts county-wide workshops that enable partnerships to share best practice, network, discuss issues pertinent to their catchments and promote joint working to achieve efficiencies and economies of scale. Several members of the Hull and East Riding CaBA Partnership are involved in the Yorkshire Derwent Partnership and the Humber catchment partnership so there is an exchange of information with our nearest neighbours. We also share our EA catchment coordinator with the Humber.

Relationships with the Hull and East Riding and Humber Local Nature Partnerships (LNP) have been struck through LNP development officers and our catchment coordinator. With regard to the Hull and East Riding LNP, the potential for collaboration is greater now it is co-hosted by East Riding of Yorkshire Council, which also hosts the Waterways Partnership.

In addition, our public sector partners provide instrumental links with the Humber and York, North Yorkshire and East Riding Local Enterprise Partnerships (LEPs). The Partnership understands the importance of showing how our work complements their strategic economic priorities and positioning ourselves to be eligible for LEP support.

At the community level, the Partnership is one of many groups that have a vested interest in our waterways. The Waterways Partnership (WWP) – a cross-sector network of managing, delivery and user groups – provides the opportunity for dialogue with these local stakeholders. Through the WWP's Executive Committee and Joint Forum, relationships have been developed with the Hull and District Angling Association, Beverley Barge Preservation Society and riparian town and parish councils to name just a few.

The WWP annual conference in 2015 was also organised with support from the Partnership to launch the CaBA concept locally. The conference gave 55 delegates a practical overview of the WFD and a means of engaging with the consultation on the revised Humber River Basin Management Plan (RBMP). The Partnership also commissioned the WWP to coordinate community drop-in sessions, which provided local people with an opportunity to learn about the RBMP consultation and offer their views and comments.

In addition to this, the Partnership has a good track record of working with landowners and user groups. One example is the Lowthorpe Mill Diversion project, funded by the EA, Natural England and Biffa Award.

Case Study 1: Lowthorpe Mill Diversion project

Through the Lowthorpe Mill Diversion project, EYRT created a new, naturalised channel to bypass the mill pool and water control structure at Lowthorpe Mill on Foston Beck, earning them The Wild Trout Trust conservation award for Medium Scale Habitat Enhancement in 2016. The project was carried out following an extended negotiation with the stakeholders involved, in particular the EA, Natural England, the land owner, farm tenant and tenant fishing club.

There are records of a water mill on the project site dating back to the early 14th century. The mill has passed through various owners and has been refurbished on several occasions. Last modified in 1770, the mill was demolished in 1959 and all structures, except the sluice, were removed.

Over time, the sluice has become a barrier to fish migration and the mill pool a sediment sink requiring regular dredging to maintain open water. To address these issues, some stakeholders proposed retaining the sluice and installing a fish pass. Defra funding was secured in 2012 to do this. Others preferred to remove the sluice and sought external advice about other options for the river.

Channel forming with the chalk substrate visible © East Yorkshire Rivers Trust

With the conclusion of the EA's silt clearing programme on the mill site in 2004, the mill pool became routinely silted up. It was clear that this would

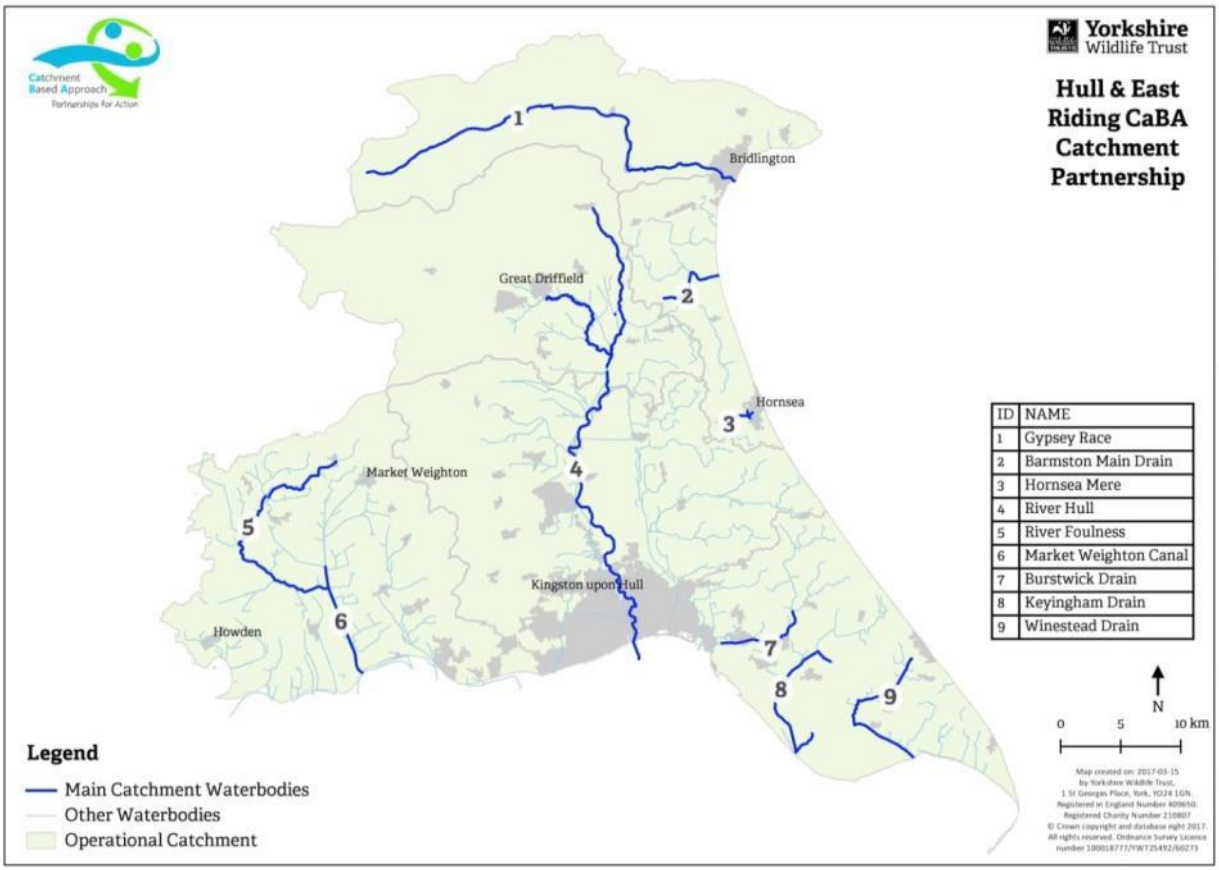
continue if no action was taken.
Since the other parties were not in a financial position to take on the silt removal, EYRT put forward a proposal, based on the external advice, to create a new river course around the mill. EYRT liaised with all those concerned to consider a number of routes for the new channel. Eventually, it was agreed that it would primarily follow the old river course then branch out across a meadow to re-join the main river.

EYRT implemented the agreed scheme, which resulted in a new meandering river measuring over 250 metres longer and with a fall that is typical of a chalk river (between 1-3 metres per kilometre). In early 2016, as the ground works progressed and landscaping was completed, the general view of the project was that it provided a great improvement to the whole river environment.

The new self-cleaning river poses very low flood risk to adjacent property and is aesthetically pleasing. Having been open for over a year, silt loving plants are being replaced by typical chalk stream species, such as water crowfoot. Fishing has also quickly naturalised with the rapid colonisation of the important invertebrates that fly anglers imitate and the re-appearance of trout. The site now offers high-class angling opportunities for local people and visitors.

The next phase of this project will focus on creating wetlands on the site. For more information, please visit EYRT's website: http://www.eastyorkshireriverstrust.org.uk/projects/low-thorpe-mill-diversion.html

6) Catchment Area



Unlike most catchment partnerships, the Hull and East Riding CaBA Partnership area comprises a series of distinct and often discrete watercourses/bodies, known locally as:

- Barmston Sea Cut
- Gypsey Race
- Hornsea Mere
- Market Weighton Canal and River Foulness
- River Hull
- South Holderness Drains (Burstwick, Keyingham, Ottringham, Thorngumbald and Winestead)

Most of these water bodies are separate from the main inland waterway network. Together, though, they are crucial to the drainage of the Yorkshire Wolds and the East Riding and to the unique landscape character of the region.

Many of the catchment's key attributes reflect this diversity and uniqueness. For example, our area boasts the most northerly chalk river system in England – the River Hull Headwaters. This and other water bodies support several nationally important fish species, including brown trout, grayling, eel and lamprey. The catchment also has numerous relic wetlands, many of which have the potential to be restored to enhance biodiversity and mitigate flood risk.


Brown Trout © Jack Perks

The water bodies in the catchment provide habitat for farmland bird assemblages and a significant population of water vole, which is recorded as part of the National Water Vole Database and Mapping Project managed by The Wildlife Trusts. Other notable species include greater water parsnip and a wide range of mayflies, caddis flies and other aquatic insects.


Japanese Knotweed © Vaughan Grantham

In addition, the Hull and East Riding is one of the catchments least affected by invasive non-native species (INNS), such as Himalayan Balsam and Japanese Knotwood. Public awareness campaigns and successful intervention schemes, many of which have involved volunteers, have helped achieve this good standing. The Partnership is currently engaged in the development of the new East Riding Invasive Non-native Species Framework, which will involve a coordinated approach to INNS management and eradication across the region and activities that demonstrate good practice.

7) Strategic Context

The diversity and complexity of the water bodies in Hull and the East Riding make managing the catchment a significant challenge. Regarding the WFD, Defra prioritises the following actions at the catchment level (listed in order of significance):

1) Protecting protected area
2) Reversing deterioration
3) Achieving improvements

These priorities are considered when the Partnership is assessing the catchment and deciding on action. A number of other strategic frameworks also influence our work. Appendix 2 is an annotated list of the national and cross-cutting documents that provide the strategic context for this plan. This annex is not intended to be exhaustive. Rather, it summarises the key plans and strategies and indicates their relevance to the catchment area.

8) Our Catchment

In order to promote a better understanding of the catchment area, an overview of each operational area, or sub-catchment, follows. Each overview includes:

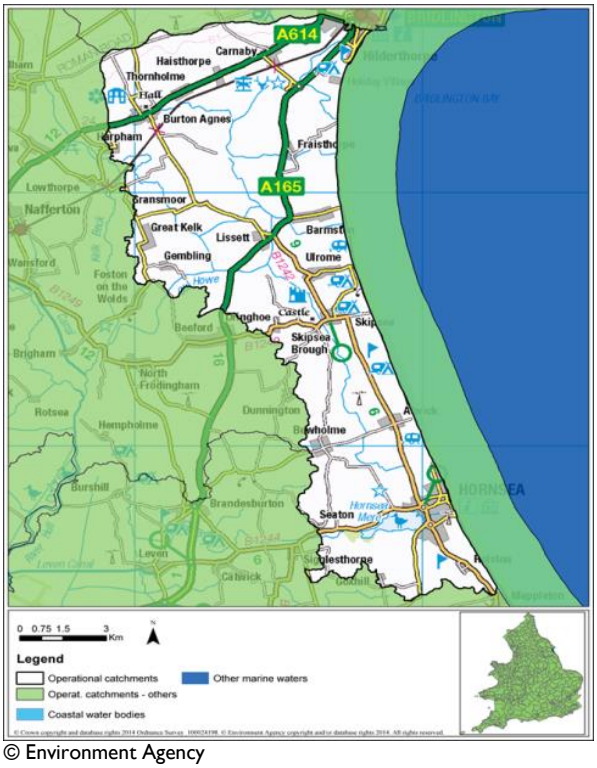
- The WFD identification for the main watercourse/body
- A description of the catchment or main watercourse/body
- The main issues affecting the catchment or main water body
- Its ecological status
- The key plans, strategies and initiatives that guide and/or influence how the catchment or main water body is managed
- The Partnership's objectives for the main water body

With regard to ecological status, the EA recognises that it can take between five and 10 years for the benefits of positive action in the water environment to be reflected. This delay in impact is factored into the EA's long-term projection for a sub-catchment or water body, which is also included.

8a) Barmston Sea Drain Sub-catchment

WFD Water Body IDs
Barmston Sea Drain from Skipsea Drain to N Sea (GB104026077780)
Barmston Sea Drain / Skipsea Drain to Confluence (GB104026077770)

This sub-catchment covers the area south of the coastal town of Bridlington, which comprises the larger settlements of Skipsea and Hornsea, a number of small rural communities and areas of agricultural land. It includes six rivers: Stream Dike, which flows from Hornsea Mere to the North Sea, and five small coastal streams (Auburn Beck, Barmston Sea Drain, Earls Dyke, Gransmoor Drain and Skipsea Drain). It also features one heavily modified lake – Hornsea Mere – which is described separately below.



© Environment Agency

The main water body, Barmston Sea Drain (also called Barmston Sea Cut), has been heavily modified due to the land drainage function it provides. Its artificial nature means that there is no natural base flow, meaning groundwater discharges do not stimulate flows. Instead, flows are dependent on upstream inputs. As a perched, embanked water body, Barmston Sea Drain provides flood alleviation for the village of Barmston.

In addition to agricultural run-off, other inputs into the sub-catchment originate from the Carnaby Industrial Estate and Yorkshire Water combined sewer overflows.

As stated in the EA's evidence pack, the main issues affecting this sub-catchment are:

- Ecological element failures due to phosphates, ammonia, dissolved oxygen and morphology
- Problematic waste water treatment works
- Lack of rural sewerage provision

Barmston Sea Drain's status was assessed as 'generally moderate' in 2009 and had not deteriorated when re-evaluated in 2013. The EA's current analysis suggests that 71% of the water bodies in this sub-catchment should have a long-term objective of achieving good status.

Main Plans, Strategies and Initiatives

Excluding Hornsea Mere, the water bodies in this catchment are the responsibility of the Beverley and North Holderness Internal Drainage Board (IDB), which is part of the York Consortium of Drainage Boards. The IDB's *Policy Statement* enshrines its approach to the management of flood risk and water levels across the area. The Board's powers and duties sit under the Land Drainage Act 1991, the Wildlife and Countryside Act 1981 and, as a competent authority, the Conservation (Natural Habitats C) Regulation1994.


Barmston Sea Drain © Environment Agency

The IDB shares the government's aim to "reduce the risk to people and the developed and natural environment from flooding and coastal erosion by encouraging the provision of technically, environmentally and economically sound and sustainable defence measures". To read the IDB's full policy, visit: http://www.yorkconsort.gov.uk/beverley.html

Partnership Objectives for Barmston Sea Drain

As this sub-catchment is managed by the IDB and much of the land is in private riparian ownership, there are limited opportunities for the Partnership to get involved. The Partnership's overarching objective, however, is to prevent deterioration and achieve good ecological status in all water bodies by 2027. To achieve this, we will:

- Continue to assess the use and management of the land adjacent to the named water bodies in order to identify enhancement opportunities and act on them
- Identify and develop activities that improve water quality with key partners, including the IDB and riparian owners

8b) Gypsey Race Sub-catchment

WFD Water Body ID
Gypsey Race from Source to North Sea (GB104026072790)

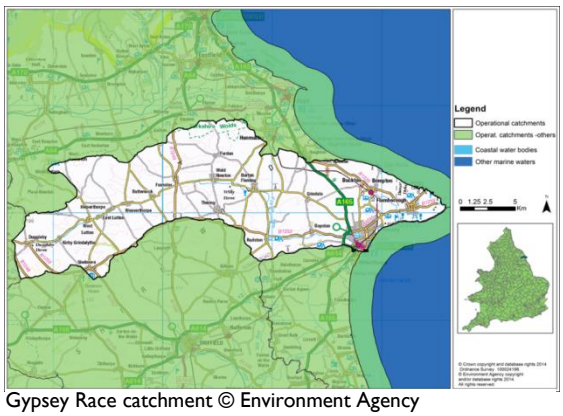
Gypsey Race is a naturally intermittent chalk-fed river that normally flows from its Headwaters at Duggleby to West Lutton where the water sinks back into the ground. Between West Lutton and Rudston, the river is normally dry. However, during very wet conditions, the water can re-appear as far upstream as Wold Newton. From Rudston to the coast at Bridlington, there is usually a continuous flow.


Boynton Bridge over Gypsey Race © David Croft

Gypsey Race is a small river in comparison with other surface water features in East Yorkshire. Water feeds back into the chalk in the West Lutton area and re-emerges further south in the aquifer at West Beck.

The sub-catchment is mainly rural and the river is contained within a well-defined valley. It is a Nitrate Vulnerable Zone as well as a groundwater zone. Spray irrigation is unlikely to have any significant impact on Gypsey Race as it continues to dry up naturally.

Improvements in the upper stretches are unlikely to have a positive benefit. Interventions in the lower stretches, however, could improve habitat provision. If Gypsey Race was split into two sub-catchments, downstream changes could lead to an improvement in its ecological classification.



Gypsey Race catchment © Environment Agency

Low flows mean that effluent from the waste water treatment works at Burton Fleming and Rudston are not readily diluted. This puts pressure invertebrate communities. Notwithstanding improvements to the effluent, increasing flow would benefit this section of the water body.

In addition, fish passage is of particular interest as sea trout have been known to run up Gypsey Race from Bridlington Harbour to spawn. The EA's Medium-Term Plan includes the removal of the weir at Woldgate to promote upstream spawning. The Partnership would like to complete this subject to appropriate funding.

The status of the Gypsey Race sub-catchment was assessed as 'generally moderate' in 2009 and, when evaluated in 2013, it had not deteriorated. The main issues affecting Gypsey Race are:

- Natural low flow conditions
- Lack of dilution for consented discharges
- Possible combined sewer discharges

The EA's current analysis suggests that 50% of the water bodies in the Gypsey Race sub-catchment should have a long term objective of achieving good status by 2027.

Main Plans, Strategies and Initiatives

The following plans, reports and schemes significantly influence ongoing and new efforts to manage and develop Gypsey Race. As such they are fundamental to the Partnership's action planning process:

a) Bridlington Town Centre Area Action Plan 2012-2021 **(part of the *East Riding Local Plan*), East Riding of Yorkshire Council, 2013**

This Area Action Plan (AAP) envisions Bridlington as 'a great place to live by the seaside with visitors welcome'. It sets out how residential, commercial and public realm developments will transform the town centre into a safer and more attractive hub for community life and year-round visitor destination.


Gypsey Race Park concept image © Bridlington Renaissance

One of the 14 enabling objectives of the AAP is to "open up the Gypsey Race corridor, making use of this historic water course to provide a new park setting for development and attractive pedestrian and cycle spine linking the railway station to the Harbour Top". This objective is being addressed through the 'Gypsey Race Park Project', which endeavours to provide better habitat for wildlife and improved streets in line with the Bridlington Integrated Transport Plan. It should be noted that some sections of the Gypsey Race Park are at

risk of flooding. As such, works to open up the watercourse are intended to increase its carrying capacity and the landscaping undertaken to create the park will increase the floodplain around it.

East Riding of Yorkshire Council is leading on this ambitious project. The Hull and East Riding CaBA Partnership was consulted during the development process, providing expert advice on the scheme. In the autumn of 2016, the council secured £697,154 from the European Regional Development Fund (ERDF) towards building the first phase of the park. This is expected to be completed by 2018. An interim hydrology study has shown that works are reducing flood risk in the town centre.

Bids for the remaining phases are underway with a view to completing the overall project by 2020. Links to the AAP and plans for the Gypsey Race Park project are available on the Bridlington Renaissance website: https://www.bridlingtonrenaissance.com/

b) *Boynton Willow Garth Site of Scientific Special Interest (SSSI) Management Plan*, Natural England, 2005

In its SSSI citation, Boynton Willow Garth is described as likely the best example of fen carr in Hull and the East Riding with particular importance given to the range of trees and shrubs it supports. Covering just over five hectares, this site contains a diverse mosaic of contrasting habitats including woodland, scrub, fen and running water. The Geological Conservation Review also recognises this site for its national importance.

The majority of the SSSI is in favourable condition. Where the site is unfavourable (but recovering), there is a Higher Level Stewardship (HLS) agreement in place to remove beech and sycamore and introduce a coppice cycle. Gypsey Race, which contains large stands of branched bur-reed, runs through the northern part of the site.

With regard to the watercourse, Natural England's management plan for Boynton Willow Garth informs the work of the Partnership in this sub-catchment. Of particular importance are efforts to:

- Support natural flow so that geomorphological features of interest are conserved
- Create riparian areas for flood storage where acceptable
- Restore natural profiles and dynamics where possible
- Manage bankside vegetation and encourage more in-channel vegetation
- Manage sediment better, especially with regard to exposed riverine sediments that help invertebrates
- Improve water quality, in particular the reduction of pollution from point and diffuse sources

Natural England's citation and management plan can be found on their designated sites system at:
https://necmsi.esdm.co.uk/PDFsForWeb/Citation/1001373.pdf
https://necmsi.esdm.co.uk/PDFsForWeb/VAM/1001373.pdf

c) *Flood Investigation Report – Burton Fleming During Winter 2012-13*, East Riding of Yorkshire Council, November 2013

During 2012 (the second wettest year on record in England), persistent wet weather resulted in exceptionally high water levels in the Gypsey Race sub-catchment, which includes the village of Burton Fleming. Increased groundwater levels in the chalk combined with high water levels in Gypsey Race meant that the groundwater was not able to drain away and remained at high levels for a prolonged period of time. This caused many seasonal springs to rise across the area and increased flows in water bodies across the Yorkshire Wolds. This combination of

these factors resulted in surface and property flooding, including significant areas of farmland in the upper catchment and the inundation of the foul water drainage system.

The flooding in Burton Fleming was widely reported in the national press and led to a formal investigation by East Riding of Yorkshire Council as the Lead Local Flood Authority. Many of the recommendations from this probe have been carried out, including:

- Liaison with riparian landowners about their maintenance responsibilities in accordance with the Land Drainage Act
- Removal of silt from the riverbed as Gypsey Race runs through the village
- Installation of a ground-water monitoring station to provide real time data and an early warning system
- Acquisition of monitoring devices and additional pumps to assist with future emergency responses

A feasibility study to assess options for channelling flood water flow in the village more effectively, alongside traditional drainage solutions, was undertaken. The conclusion was that the estimated costs of the optimal solution would outweigh the benefits and that the necessary funding would not be forthcoming. Minor surface water drainage improvements have been carried out instead. The full Flood Investigation Report and subsequent updates on these recommendations are available on East Riding of Yorkshire Council's website: http://www2.eastriding.gov.uk/council/plans-and-policies/other-plans-and-policies-information/flood-risk/flood-risk-investigations/

d) Anglers Monitoring Initiative (ongoing)

Gypsey Race is one area where volunteer citizen scientists are making a difference. EYRT is a member of the national Riverfly Partnership and regularly contributes to the Anglers Monitoring Initiative (AMI). Involved in the Riverfly scheme since its inception, EYRT trustees have carried out a wealth of surveys and sampling exercises along Gypsey Race. In many cases, school groups and other local people have been invited to take part.


© David Croft

EYRT is committed to the AMI because participation provides the opportunity to highlight significant changes in water quality; have informed dialogue with the EA; contribute to a sound, long-term dataset; and help ensure good ecological status for the future.

For more information on the Trust's AMI involvement, please visit EYRT's website: http://www.eastyorkshireriverstrust.org.uk/projects/riverfly-partnership.html


Heron on camera © David Croft

Linked to the AMI, an EYRT trustee installed a remote infra-red triggered digital camera overlooking a pool along Gypsey Race (at Boynton) for a week in the summer of 2015. The camera captured over 3,500 images, revealing some interesting visitors to the pool including a sparrow hawk, owl, heron, kingfisher, fox, water vole and grass snake. This is a great example of how volunteers provide valuable assistance with recording and monitoring life on our waterways.

Partnership Objectives for Gypsey Race

The Partnership's overarching objective is to prevent deterioration and achieve good ecological status in all water bodies by 2027. We will do this by:

- Improving the geomorphology of the watercourse
- Helping to reconnect the watercourse to the floodplain
- Improving fish passage to aid upstream sea trout spawning, including the removal of the named weir
- Remaining engaged in the local authority-led regeneration process to ensure the environmental and ecological health of the watercourse is safeguarded
- Continuing to contribute to the AMI as a means of managing water quality
- Engaging with riparian landowners and developing HLS and chalk stream restoration schemes where appropriate

8c) Hornsea Mere

WFD Water body ID: GB30430244

The Partnership has separated Hornsea Mere out from the Barmston Sea Drain description because of its unique features and management arrangement, which involves Wassand Estate (the land owner), its tenants, East Riding of Yorkshire Council, the EA, Natural England, Yorkshire Water and YWT.

Hornsea Mere and bird hide © Jess Charlton

The Estate has been in private family ownership since 1520. In addition to the Mere, the site features Wassand Hall, a fine Regency House, along with walled gardens and woodland and parkland walks. On selected days in the summer, the Hall and gardens are open to the public. The wider site is also home to an YWT-funded bird hide, sailing club, boat hire facility and café.

The Mere itself is a large, heavily modified freshwater lake situated to the west of Hornsea. The only remaining post-glacial mere in Holderness, the Mere is considered a unique relic from the time when marshes and lakes were extensive across the Holderness Plain. It is designated as a SSSI and Nitrate Vulnerable Zone. It is also a Special Protection Area (SPA) recognised for its internationally significant wintering population of gadwell; its nationally significant wintering populations of goldeneye, pochard, shoveler and tufted ducks; and its nationally significant population of post-breeding and moulting mute swan.

The centre of the Mere is two kilometres from the North Sea, which lies to the east of the site. It has a surface area of approximately 130 hectares and a mean depth of about 1.2 metres. In addition, it is surrounded by areas of fringing swamp and its environs include grassland, woodland and agricultural land.

Hornsea Mere is integral to the local land drainage system. In addition to agricultural run-off, other inputs originate from domestic sources, such as non-mains septic tanks and mis-connections from washing machines, as well as road run-off discharging into surface water systems.

The status of the water environment was assessed as poor in 2009 and 2013. The EA's current analysis suggests that the Mere should have a long term objective of achieving good status by 2027.

Main Plans, Strategies and Initiatives

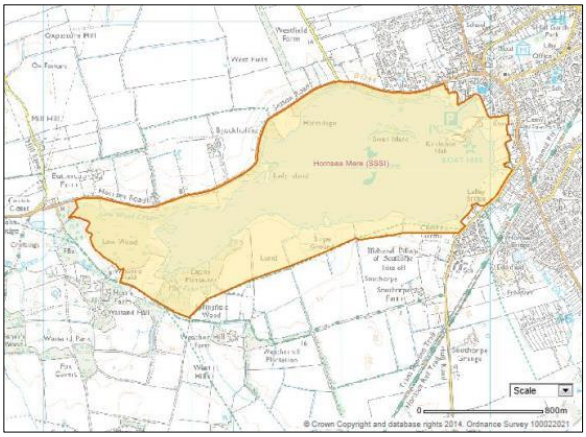
The following plans and engagement activities influence the Partnership's approach to this catchment:

***a) Site Improvement Plan: Hornsea Mere,* Natural England, 2014**

This Site Improvement Plan (SIP) identifies the key issues for this water body, the measures and actions needed to address them, and the stakeholders responsible for delivering these measures. As with all SIPs, the actions for the water dependent habitats inform the Humber River Basin Management Plan.

The issues affecting Hornsea Mere have been identified as:

- Water pollution due to increased nutrient levels from diffuse sources
- Siltation from sediment from the wider catchment
- Increased bank erosion due to the presence of Himalayan balsam
- Inappropriate water levels due to the absence of agreed control over the outlet sluice on Stream Dyke
- Public access and recreational disturbance



© Natural England

For more information about this *Site Improvement Plan*, please visit the Natural England website: http://publications.naturalengland.org.uk/publication/4536296798158848

b) *Hornsea Mere SSSI/SPA – Diffuse Water Pollution Plan*, Natural England, Environment Agency, Yorkshire Water, Wassand Estate and East Riding of Yorkshire Council, March 2014

This Diffuse Water Pollution Plan (DWPP) was developed by the partners identified above. As a live document, the plan is continually reviewed and updated.

The main pollutants affecting water quality in this SSSI and SPA are phosphate, nitrogen, suspended solids and siltation. There is also a need to achieve healthier levels of dissolved oxygen and pH. Where diffuse pollution is preventing the Mere from achieving favourable condition, this plan aims to:

- Identify the causes, impacts and knowledge gaps
- Identify remedies and plan what action will be taken
- Identify the monitoring required to validate these solutions


Hornsea Mere © Jess Charlton

One key action is to encourage farmers and land managers to engage with Catchment Sensitive Farming and enter into HLS agreements. In so doing, they will be encouraged to adopt best practice relating to:

- Reducing nutrient and silt input (e.g. by creating buffer strips and fencing off watercourses)
- Managing grassland and other habitats and more livestock grazing
- Managing feral/non-native wildfowl population
- Creating headland and arable reversion

Partners are also working on a water level management plan and engaging with managers, regulators and users of the Mere to promote better septic tank management (see below). In addition, Himalayan Balsam control and diffuse pollution risk modelling work has been completed.

The DWPP is used in tandem with the emerging *Flood Risk and Water Quality Improvement Plan*, whose development is being led by East Riding of Yorkshire Council's Flood Risk Management Team.

c) Hornsea Mere Engagement Project (2017)

Increased levels of nutrients (especially phosphates) in the Mere are creating a more algal-dominated water plant community, which is causing a general decline in water plants and associated fauna as food sources for birds. Both the SIP and DWPP suggest mounting an awareness campaign to address rural and urban septic tank failures and mis-connections which contribute to water pollution. Natural England and the EA are working with Hornsea Town Council and East Riding of Yorkshire Council to engage with local residents and farmers who have non-main sewerage. Events are being held in order to promote better septic tank maintenance. Organisers also highlight others topics including the WFD failure for phosphate and the threat of Himalayan Balsam.

d) *Revised Hornsea Masterplan: Key Themes and Strategies*, Hornsea Area Renaissance Partnership, 2014

The purpose of this masterplan is to seek investment that improves the economic vitality of this seaside town and raises the quality of life. Hornsea's growth is constrained by its coastal setting between the sea and the Mere. The plan identifies three core locations: the historic town close to the Mere; the seafront leisure area; and the town centre providing a combination of retail spaces and community services. The masterplan seeks to maximise the potential of these areas while improving the connectivity between them.


© Charles Cartwright

The plan suggests a number of schemes that would help to improve the Mere as a 'rural recreational' asset, including:

- Creation of two gateways and better pedestrian and transport links to the Mere
- Improvements to the Mere edge and woodland park
- Small-scale improvements to recreational facilities and parking (e.g. at Kirkholme Point where the sailing club is located)
- Improved play facilities at Fair Place (a common land open grassed area) and new informal country park along Stream Dyke and Grainger's Field

The plan also recognises that any proposals need to balance landscape and wildlife qualities against the viability of leisure activities and their recreational, educational and tourism potential.

This plan was commissioned by Hornsea Area Regeneration Partnership, which brings together private, voluntary and public sector organisations who aim to make Hornsea an even better place to live, learn, work, visit and invest in.

<u>Partnership Objectives for Hornsea Mere</u>

The management of Hornsea Mere is a good example of effective partnership working. Hull and East Riding CaBA partners will continue to work together to:

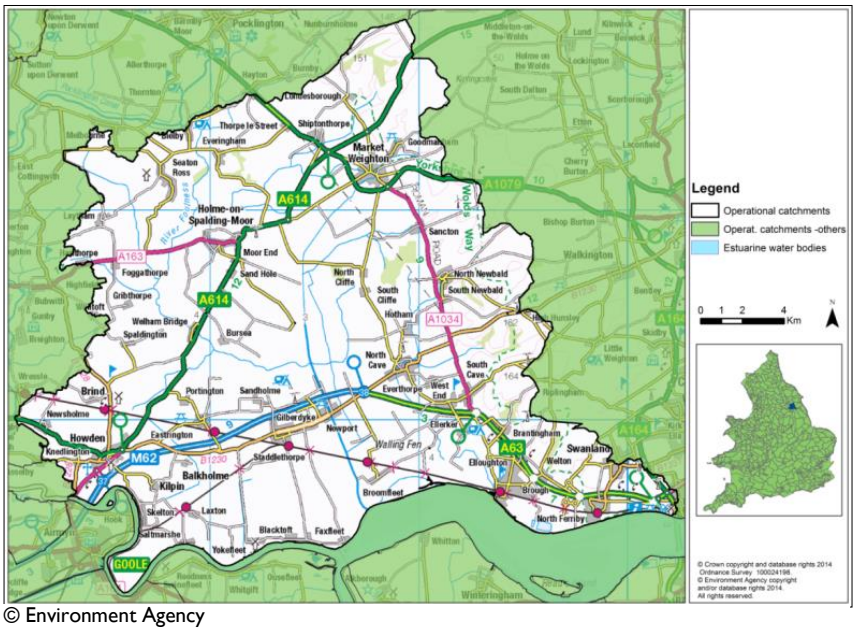
- Tackle invasive non-native species, in particular Himalayan Balsam
- Improve sediment and nutrient load management
- Work with local residents and businesses to improve water quality
- Engage with the local regeneration partnership to influence plans for the land adjacent to the Mere
- Improve fish habitat including forms of shelter and underwater cover

8d) Market Weighton Canal and River Foulness

WFD Water Body IDs:
Foulness from Black Beck to Market Weighton Canal (GB104026066690)
Foulness from Source to Black Beck (South) (GB104026066720)
Market Weighton Canal (GB70410031)

The River Foulness and Market Weighton Canal are the main watercourses in the Foulness sub-catchment. The River Foulness is a slow moving water body within a catchment that comprises agricultural land and a mixture of small towns and villages. The upper reaches of the river is formed from the confluence of the Foulness downstream of its source near the village of Londesborough with two incoming tributaries, Black Dike and Black Beck. Here, the water body is largely spring fed by water emerging from the chalk aquifer at the base of the Yorkshire Wolds. An extensive surface water drainage network also conveys water from the surrounding agricultural land. As a result, during periods of low rainfall, lowered groundwater flows and reduced surface water input results in low flows within the river.

The River Foulness is heavily modified in its mid catchment and the maintenance of the main channel has recently being devolved from the EA to the Ouse and Humber Internal Drainage Board for land drainage purposes. As part of a public sector cooperative agreement, the IDB cuts weeds to maintain flows to reduce the potential for localised flooding. The subsoil contains high concentrations of iron II oxides. Exposure to air, for example if sediment is disturbed during maintenance operations, results in the formation an insoluble precipitate called iron (III) oxide. The sediment settles on the riverbed with lighter particles forming a semi-suspension within the water column. This can impart a light brown colour to the water within the heavily modified upper reaches of the lower Foulness, around Major Bridge.



© Environment Agency

The construction of Market Weighton Canal was completed in 1782 as part of a wider scheme to drain the Walling Fen area of low-lying marsh and fen land between the town of Market Weighton and the Humber Estuary. The water body is spring fed in its upper reaches, forming Weighton Beck to the north east of Market Weighton. The Beck flows down through Market Weighton where the Canal head starts to the south west of the town. The water body flows in a southerly direction towards the Estuary, forming confluences with two downstream tributaries – Main Drain, and the River Foulness – which drain the area to the south and the east of Holme upon Spalding Moor, respectively. The Canal joins the Estuary at Broomfleet, where a lock gate physically separates the two water bodies.

In the 1960s, the area was affected by localised flooding due to heavy rainfall and the decision was taken to convert the River Foulness and Market Weighton Canal into a highland drainage carrier. This involved raising the banks and making the channels wider and deeper. The upper reaches of the Canal flow through mainly agricultural land and the settlements of Market Weighton and Newport. As a result, there are potential pressures from diffuse agriculture and urban drainage inputs.


Spined Loach Wikimedia Commons

In 2015, spined loach was recorded in the upper reaches of the Canal, its first appearance north of the River Humber in years. Spined loach is a rare species protected under the Bern Convention and several European Directives. The EA is carrying out a study to determine if their actions to protect this species are having a wider impact in the Canal. There is a desire to better understand their habitat conditions so that the Partnership might identify projects for the EA's Medium-Term Plan.

The catchment is used heavily for water abstraction for agricultural purposes. Most abstraction licences are for over-winter storage. Several licences also allow for spray irrigation of crops, using water taken directly from the Canal and its tributaries. There are two significant sewage discharges from moderately sized sewage treatment works at Market Weighton (discharging to Weighton Beck) and at Holme upon Spalding Moor (discharging to Main Drain).

In 2009, the status of the Foulness sub-catchment was assessed as 'generally moderate' and, when re-evaluated in 2013, it had not deteriorated. The main issues affecting this area:

- The need for improvements the mains and non-mains sewerage
- Better management of the environmental impact of industrial effluent run-off
- Better management of diffuse agricultural run-off

The EA's long-term projection for this catchment is that the ecological status or potential for each water body does not deteriorate and that good ecological status or potential is achieved by 2027 where physically and practically possible.


Market Weighton Canal © Waterways Partnership

<u>Main Plans, Strategies and Initiatives</u>

The following plans, projects and initiatives underpin how the water bodies in the Foulness sub-catchment have been and are managed. The Partnership recognises that many stakeholders are already working cooperatively in this area and our work here is intended complement their activities:

a) The Humberhead Levels Partnership and Broomfleet Washlands

Comprising 12 partner organisations, the Humberhead Levels Partnership (HLP) was established in 2000 as part of the Countryside Agency's Land Management Initiative. It covers the 2,000 km² Humberhead Levels National Character Area, which includes key wetland ecosystems as well as the River Foulness and Market Weighton Canal. Farming is important to the area, with 43% of it being grade 1 and 2 agricultural land.

HLP's vision is to "create an internationally renowned, unique network of wetlands in a predominantly agricultural landscape, whilst supporting thriving communities and wildlife". The group has a history of

landscape-scale delivery, including the Wetland Vision project (2008-2011) which restored and created 852 hectares of priority wetland habitat.

In 2011, the HLP successfully bid to become one of 12 Defra-sponsored 'Nature Improvement Areas' (NIAs). Key to this success was HLP's long-term vision for the National Character Area which looked forward to 2020 and beyond. The map on the right illustrates how the Humberhead Levels NIA fits within the HLP area.

© Yorkshire Wildlife Trust

One of the key sites in the NIA is Broomfleet. The EA owns two washlands here: Broomfleet Washlands on the eastern side of Market Weighton Canal and Oxmardyke Washland on the west. Covering 20 hectares, these washlands are designed with high embankments so that during times of high flow, flood water can enter via low-level spillways and then drain back into the canal as flood waters recede.

Through the NIA, 10 hectares of wet grassland and reedbed were created as a result of the RSPB working in partnership with a local mineral extractor. Together, they have also improved and created habitat for wetland birds, in particular bittern.

As part of the NIA, the Ouse and Humber Drainage Board, in collaboration with the RSPB and Natural England, have supported a HLS Agreement with the washland's tenant farmer. The washlands extend to some 39 hectares of wet grassland and reedbed now and are managed for the purpose of enhanced flood storage and habitat protection. This habitat management work was undertaken with careful regard for the site's land drainage function.

Broomfleet Washlands continues to provide important habitat for wetland birds and invertebrates, including threatened species of dragonfly through the HLS scheme. The Canal itself is a well-used coarse fishery. A fish nursery area has also been created to provide shelter and an over-wintering area for fish fry.

For more information on the HLP and the NIA, please visit the Yorkshire Wildlife Trust's website: http://www.ywt.org.uk/sites/default/files/hhl_nia_final_report.pdf

***b) Market Weighton Canal and River Foulness Action Plan,* commissioned by the Waterways Partnership, September 2012**


Southern Hawker © Vaughan Grantham

The purpose of this action plan was to raise the profile of the named waterways by identifying their recreational potential and how the biodiversity, landscape and heritage value of the sub-catchment could be conserved and enhanced for posterity.

Numerous stakeholders, including statutory bodies, local authorities, voluntary groups and parish councils, were consulted during the development of the plan. It was clear from this process that there was considerable local support for enhancing the two waterways and an enthusiasm for action to be taken.

Stakeholders agreed a series of proposed interventions, all of which are aimed at enhancing recreational use of the watercourse; providing economic benefits; managing and enhancing the environment and heritage; general awareness raising; and engaging with local communities.

The action plan was funded by the Rural Development Programme for England through the LEADER Coast, Wolds, Wetlands and Waterways Local Action Group. The Waterways Partnership commissioned it to generate interest in the watercourses and galvanise local communities. The plan is also intended to be a tool for fundraising. For more information, please visit the Waterways Partnership website: http://bit.ly/2nsjllz

Partnership Objectives for Market Weighton Canal and River Foulness

Much of the land surrounding the River Foulness and Market Weighton Canal is in private hands so any activity must be developed and carried out in negotiation with riparian owners, managing authorities and local people. While this may limit what the Partnership can do, the following objectives are considered important:

- Restoration the old line of Market Weighton Canal near the town in order to reinstate relic features and lost habitat and to increase flood relief
- More efficient use of the doors at Weighton Lock to improve water level management
- Other schemes that will help reconnect the water bodies hydrologically

8e) River Hull Catchment (Upper and Lower Hull)

WFD Water body IDs
Upper Hull (GB104026067000)
Lower Hull (GB104026067210)

The River Hull is the largest water body in the Hull and East Riding management catchment. It serves both the city of Hull and the East Riding of Yorkshire as both a drainage and navigation channel.


Aerial photograph of the River Hull © David Croft

The City of Hull
Hull is located on the North Bank of the Humber Estuary and covers an area of 7,150 hectares. In 2015, the city had a population of 258,995. Under the most recent Index of Multiple Deprivation, it ranks as the third most deprived local authority in the country.

Hull is mainly urban and predominantly built on reclaimed marshland. Outside and to the west of the city are the outlying settlements of Cottingham, Willerby and Kirk Ella, which are situated on higher ground. Most of the surface water run-off in these locations which is not stored or recharged into the ground drains eastwards towards the city.

The East Riding
Covering an area of around 240,768 hectares, the East Riding comprises 26 Wards, 171 Parishes and 210 Lower Super Output areas. In 2015, the population was estimated at 336,685. In 2013, the Office for National Statistics classified the East Riding as being approximately 93% rural by area and 44% by population.

Hull and the East Riding are contiguous local authority areas. The watercourses, drains and sewers serving the communities on the outskirts of Hull flow into the city sewer system before ultimately discharging into

the Humber Estuary. As stated in the 2015 *Hull City Council Local Flood Risk Management Strategy*, a catchment based approach is therefore needed to assess and mitigate against flooding.

The River Hull

The river itself rises from a series of springs to the west of Driffield and flows into the Estuary, which is a Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar Site and SSSI. Much of the catchment and surrounding land is at or below sea level, presenting a significant flood risk from fluvial and tidal sources. Historically, much of this land was salt marsh until the Middle Ages when efforts to drain the land intensified and the first navigation and drainage channels were cut. As a result, a complex series of channels on both sides of the river makes the management of the catchment a real challenge.

For example, the Holderness Drainage and Beverley and Barmston Drain are two of the main channels in the catchment. The former, to the east of the river, was completed in 1772, with a second phase in 1805. The Beverley and Barmston Drain on the west side was completed in 1810. These drains, along with other channels in the area, must be pumped because there were constructed, or at least heavily modified, primarily for land drainage purposes and therefore need pumping systems to move the water uphill and into the Estuary.

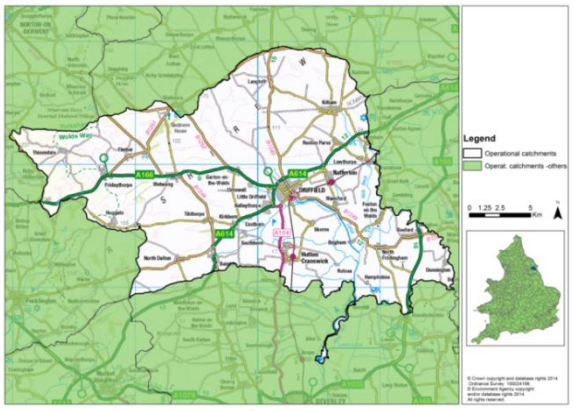

River Hull tidal barrier © Wikimedia Commons

Since 1980, the mouth of the river has been protected by a tidal barrier. When closed, the barrier can prevent tidal surges from entering the river system and causing flooding. The gate is lowered between eight and twelve times a year. In 2009, a £10 million upgrade was undertaken to ensure that the gate would remain operational for a further 30 years.

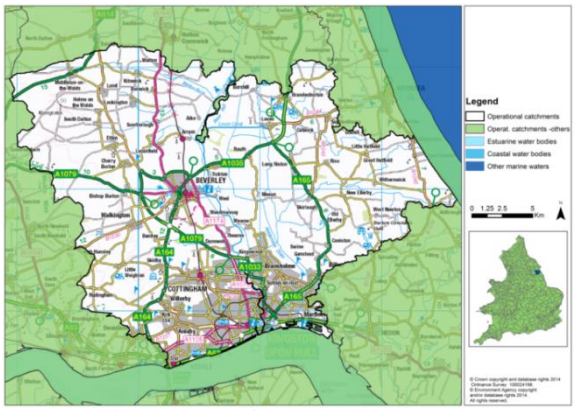
The River Hull catchment is a Nitrate Vulnerable Zone. An advice campaign is being carried out to assist farmers with nutrient management plans, encouraging them to reduce a) their use of nitrates and other nutrients and b) the loss of nutrients to surface and ground waters. There are also a number of Source Protection Zones around Cottingham, Beverley, Aike, Kilham, Burton Agnes and near Southburn. In addition, a safeguard zone has been proposed around Tophill Low (see below).

With regard to groundwater bodies, the Hull and East Riding Chalk operational catchment overlaps with the Hull and East Riding management catchment. This groundwater body is currently failing the Drinking Water Protected test with an upward trend for nitrate. Although there are no drinking water failures in our part of the groundwater body, nitrate is elevated within the groundwater.

For WFD purposes, the River Hull catchment is split into the Upper and Lower Hull operational catchments:



Upper Hull © Environment Agency



Lower Hull © Environment Agency

Upper Hull

This catchment is centred on Driffield and the surrounding area. It covers the Yorkshire Wolds from Thixendale in the west to Kilham in the north, Foxton on the Wolds in the east and Hutton Cranswick in the south. The area is characterised by rolling chalk hills and dry valleys and land use is predominantly arable. The River Hull is sourced from chalk streams located to the north and west of Driffield.

These chalk streams form the Headwaters of the most northerly chalk streams in Europe and are referred to as the River Hull Headwaters SSSI. The spring-fed streams flow towards Driffield Beck where they are joined by Driffield Trout Stream and then become the River Hull or West Beck. The river is tidal up to Struncheon Hill with tidal ranges of around two metres. The river is navigable below Corps Landing and on much of Driffield Navigation.

The main issues for this operational catchment, as identified in the EA's WFD evidence pack, are barriers to fish passage, habitat provision and nitrate in the drinking water. The status of Upper Hull in 2009 was 'generally moderate' and in 2013 it had not deteriorated. The EA's current projection suggests that 91% of the water bodies in the Upper Hull should have a long term objective of achieving good status by 2027.

Lower Hull

The Lower Hull catchment covers the area from Walton in the north down to Hull and the Estuary in the south. The village of Bishop Burton is located in the west and Great Cowden sits on the East Yorkshire coast. The operational catchment includes Hull, the East Riding urbanised settlements of Cottingham, Hessle and Willerby, and the quaint market town of Beverley.

As noted above, a series of drainage channels criss-cross the whole of the River Hull catchment. Static flows in its lower reaches, when pumps are not operating, can cause problems with dissolved oxygen levels in the summer. Fish passage is also an issue, especially at Hempholme weir (currently a Yorkshire Water asset) and at Leven canal (privately owned).

Lower Hull includes several nationally important freshwater habitats, including the Leven Canal and Pulfin Bog SSSIs, both of which are managed under agreements with Natural England (see below).

The low lying nature of the Lower Hull means that over 100,000 properties are located within the floodplain and are at risk from both fluvial and tidal flooding. A series of hard flood defences reduce the risk of flooding to Hull from the Estuary and the tidal barrier decreases the risk from tidal surges.

The EA's WFD evidence pack sets out the main issues affecting the Lower Hull:

- Need for improvements to in-channel and riparian habitat on heavily modified water bodies or those managed for flood defence and land drainage across the sub-catchment
- Barriers to fish migration
- Need for improved water treatment works operation

The EA projects that the ecological status or potential for each water body within the Lower Hull should not deteriorate and that good ecological status or potential is achieved by 2027 where possible.

Main Plans, Strategies and Initiatives

Given the complexity of the River Hull catchment, there are a myriad of plans, strategies and initiatives that inform its management and improvement. Some of these, such as the *Humber River Basin Management Plan*, *Hull and Coastal Streams Catchment Flood Management Plan* and both local flood risk management strategies, are included in Appendix 2. Below is an overview of the plans and programmes that are focused on the River Hull:

a) River Hull Integrated Catchment Strategy (RHICS), River Hull Board, April 2015

The River Hull Valley is one of the most at risk flood plains in the UK. For the first time, the RHICS provides a comprehensive assessment of all sources of inland flooding (fluvial, pluvial, surface water, and groundwater) in the area and an integrated framework for the management of flood risk for all five flood risk management authorities (RMAs) that operate here. These flood RMAs include the Beverley and North Holderness Internal Drainage Board, East Riding of Yorkshire Council, the EA, Hull City Council and Yorkshire Water. The strategy took two years to develop and provides a clear understanding of the impacts and cost of flooding to people and businesses.

As part of the RHICS, a survey of the river was undertaken. Across the catchment, some 230 kilometres of watercourse were identified as main rivers with a combined average annual rainfall of between 625 to 825 millimetres. A large volume of silt and other obstructions were identified under the water line. These factors interfere with the flow of the river and potentially increase the risk of flooding in surrounding areas.

The strategy put forward the following recommendations to tackle issues along the River Hull:

- Dredging and re-profiling the channel, including the removal of numerous sunken boats
- Work on the mitre gates on the tidal barrier
- Increased capacity at several pumping stations and raising the embankments along Holderness Drain
- Bransholme flood mitigation schemes
- Raising the embankments along the Beverley and Barmston Drain
- Smaller pumps installed at Wilfholme and Hempholme pumping stations
- Upland natural attenuation
- Continued maintenance and refurbishment of existing flood management assets

© Michael Lee

The River Hull Board is responsible for overseeing delivery of the strategy and identifying appropriate funding for these aforementioned schemes. The Board is also exploring the notion of establishing a navigation authority for the whole of the River Hull. Hull City Council fulfils this role within the city limits. However, responsibility for navigation beyond this boundary needs clarification. For more information about RHICS, please visit the East Riding of Yorkshire Council website: http://www.eastriding.gov.uk/riverhull

b) *Restoring the River Hull Headwaters: River Restoration Plan – Final Report*, Environment Agency and Natural England, June 2010

As one of the most northerly chalk streams in the country, the River Hull Headwaters have been designated as a SSSI based on the following characteristics:

- Aquatic vegetation characteristic of chalk streams, including stream water crowfoot, lesser water-parsnip, mare's tail, spiked water-milfoil and reed sweet-grass

- Areas of species-rich wet grassland and fen, especially between Driffield and Wansford
- Extensive areas of alder and willow carr in several areas of wet woodland
- Rich invertebrate fauna including locally uncommon species of mayfly and snail
- Diverse breeding birds including waders such as lapwing, snipe, wildfowl, yellow wagtail and a variety of warblers


Northern Lapwing © Wikimedia Commons

In 2010, the Headwaters were classified 'poor' as a result of historic management. Over time, the river has been widened and deepened. When combined with low flows resulting from abstraction and flow diversion, the quality of habitat has therefore declined. The vision set out in this plan is for the river to "return to ecological health with high water levels in the winter when the springs rise and a clean gravel bed supporting a rich variety and abundance of aquatic plants for invertebrates, fish, mammals and birds to thrive".

A detailed investigation of the geomorphological and ecological behaviour of the SSSI, which involved a detailed walkover survey of the entire area and comprehensive review of existing data and reports, revealed four key issues that were having an adverse impact:

- Fine sediment supply and deposition
- Channelisation and low flows
- Lack of bankside shelter and over-shading
- In-channel structures, such as weirs and sluices, altering flow patterns and sediment transport


Bishop Burton College students helping on the Driffield Water Forlorns project © Alan Mullinger

In order to address these issues, the plan proposes a number of solutions, including:

- Changing agricultural and land drainage management practices (e.g. reviewing maintenance regimes)
- Altering flood and informal embankments (e.g. removing or re-grading informal embankments)
- Enhancing aquatic, marginal, bankside and wetland habitats (e.g. enhancing floodplain wetland habitats)
- Modifying in-channel structures (e.g. installing fish passages on weirs)
- Preserving existing habitats (e.g. retaining existing woody debris in the river channel)

In order to direct the delivery of these solutions, an ambitious pipeline of short- and long-term projects was included in the plan. Numerous schemes, which have involved members of the Partnership, have already been executed. For example, the case study on the Lowthorpe Mill Diversion Project in section 5 is an excellent example of how problems with an in-channel structure have been overcome.

To access the restoration plan, please visit the River Restoration Centre website:
http://www.therrc.co.uk/DesignatedRivers/River_Hull_Headwaters_Restoration_Plan.pdf

c) *Crystal Clear Programme*

The *Crystal Clear* Programme, funded by the WREN Biodiversity Action Fund and led by Yorkshire Wildlife Trust (YWT), is another initiative that has been undertaken under the auspices of the *River Hull Headwaters Restoration Plan* and is exemplary of the catchment based approach.

Crystal Clear is a portfolio of projects focused on restoring habitat for fish and aquatic invertebrates, all of which depend on clean, silt-free river gravels and plentiful marginal and submerged plants. It also includes improvements to bankside and wetland habitats that are located alongside the Headwaters' fragile chalk streams. Delivery of this programme relies on support from a number of partners, including Natural England, the EA, EYRT, West Beck Preservation Society, fly fishing club and private landowners.

The most ambitious *Crystal Clear* project to date is the transformation of a former commercial fish farm into a mosaic of wetland habitats including wet woodland, fen, wet grassland and reedbed. This new YWT nature reserve, called Skerne Wetlands, has seen major improvements to the West Beck chalk stream (part of the River Hull Headwaters SSSI) which flows through the former fish farm.

Case Study 2: Skerne Wetlands

This site was formerly known as Humberside Fisheries and had been run as a commercial coarse and trout fishery supplying stock to the fishing industry. The first ponds were created in the 1970s and grew from a few acres to its current size of 70 acres. In March 2012 following discussions with the landowner, the site was acquired by YWT with a grant from Natural England and matched funding from YWT.

The summer of 2012 was one of the wettest on record and it became apparent that the highly engineered fish farm site, although affected by high flows and flooding, was not linked to the river and was largely disconnected from the floodplain.

YWT, working in partnership with the EA and Natural England, developed a plan to create a mosaic of wetland habitats that would complement the West Beck chalk stream and re-connect the river with its floodplain if possible.


Skerne wet woodland creation site © Jon Traill

The first step was the removal of the fish farm impoundment weir at Cleaves Bridge, which was carried out in early 2013. This was followed by a change to the abstraction licence preventing any water being taken from the SSSI chalk stream in times of low flow.

After a year of investigation that provided a better understanding of the complex nature of the site, along with exploring the possibilities for future management, funding was secured to enable YWT to transform it into a wildlife reserve. A vision document was also produced, which included a wide range of ideas – some which may be seen to be aspirational but all of which could be achieved with the right funding and a will to deliver.

This document enabled YWT to submit a successful funding bid to WREN Biodiversity Action Fund in 2013 and launch the *Crystal Clear* chalk stream programme in the autumn of that year. The bid unlocked £248,000 in funding over three years, which was matched by £130,000 from the EA's WFD fund and Natural England's HLS scheme and with contributions from YWT and EYRT.

A large proportion of this funding was targeted at this project site, which became Skerne Wetlands, to recreate and restore wetland habitats across the 70 acres along with chalk stream restoration along the 1.2-kilometre stretch of West Beck.

Detailed designs for both the 'Western and Eastern Wetland Areas' were drawn up with habitat creation work starting in autumn 2014. This has resulted in over 25 acres of reedbed and a five-acre block of new

wet woodland on the Western Wetlands. The Eastern Wetlands are developing as areas of wet grassland and fen along with open water habitats and willow coppice.

Green engineering techniques have been used to improve in-stream habitats of West Beck, thereby reducing siltation and improving flow dynamics and stream bed morphology. The medium-term ambition is to allow the chalk stream to re-meander back onto the fish farm site, fully re-connecting the river to its floodplain and allowing the wetland habitats to interact with the stream.

All of these activities will not only provide amazing potential for wildlife but also flood alleviation around the Headwaters by reducing the pressure on the surrounding land and drainage systems. Wildlife is already thriving with many species breeding on-site including kingfisher, reed bunting, water vole and grass snake. Another major success is the return of spawning brook lamprey recorded in the 'newly found' gravels by the former impoundment weir at Cleaves Bridge.

d) *A Living Landscape: A Healthy Future for Wildlife and People*, Yorkshire Wildlife Trust, started 2006


West Beck chalk stream SSSI, Wansford Bridge © Yorkshire Wildlife Trust

A *Living Landscape* is a recovery plan for nature championed by The Wildlife Trusts since 2006. It represented a new way of thinking about how land is managed for the benefit of wildlife, people and the economy. This vision of this plan is that 'living landscapes' will be special places where wildlife flourishes and recovers from past decline.

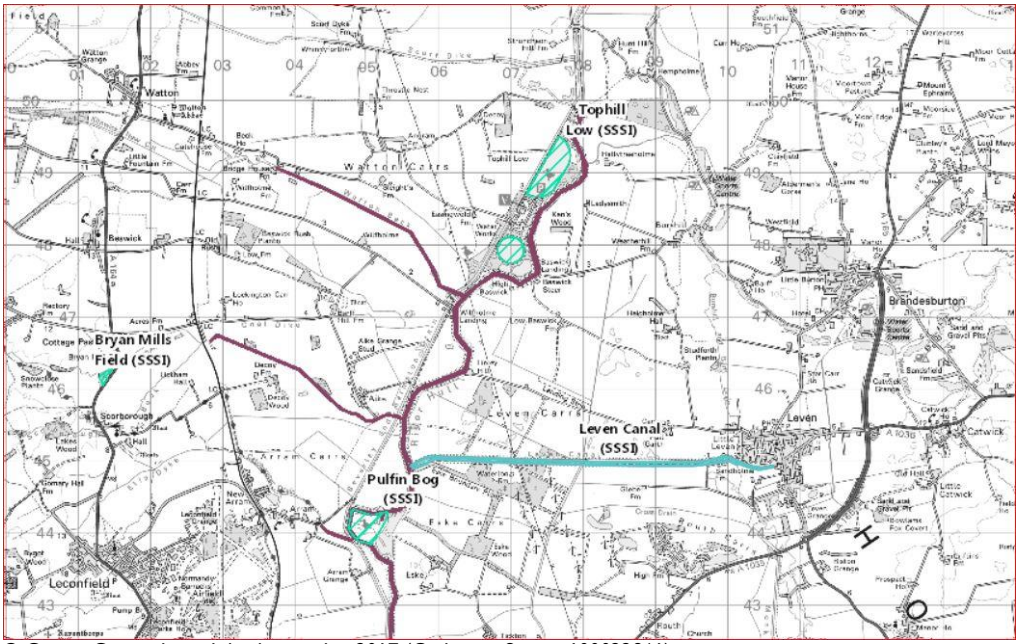
Within this concept, there is an emphasis on bigger, more long-term thinking and building on the foundations laid by past generations of conservationists. As such, 'living landscapes' are intended to embed landscape-scale projects within whole river catchments and entire tracts of upland with the understanding that they may take decades to deliver. The River Hull has been identified as one such important place.

Living Landscape work is sympathetic with the CaBA because it focuses on landscapes or large areas, rather than discrete habitats. It also relies on a multi-disciplinary approach with work being carried out by a range of organisations and local communities. In addition, *Living Landscapes* deliver environmental benefits for people, such as improved wellbeing, skills training and sustainable tourism, as well as enhancing conditions for wildlife.

For more information about the Living Landscape concept and the River Hull Living Landscape, please visit The Wildlife Trusts' website: http://www.wildlifetrusts.org/living-landscape/our-vision and http://www.wildlifetrusts.org/living-landscape/schemes/river-hull-living-landscape

e) Sites of Scientific Special Interest (SSSI) – Lower Hull

In the Lower Hull operational catchment, there are four SSSIs where the Partnership is particularly active and has a vested interest. These sites are Bryan Mill Fields, Leven Canal SSSI, Pulfin Bog SSSI and Tophill Low SSSIs. They are identified in turquoise on the map below.



Bryan Mill Fields SSSI

This site comprises a tall fen community which occupies the centre of a small un-grazed field, the surrounding drier areas of which have been planted with trees. The low lying central area is wet and seemingly spring-fed. The fen area has developed over a complex of spring heads, which create small areas of surface water. It supports stands of lesser pond sedge, greater tussock-sedge, reed, reed sweet-grass, meadowsweet, great willowherb, common valerian and blunt-flowered rush. Numerous other marsh and fen species are also present.

In 2011, Natural England assessed the condition of the site as favourable. Annual cutting and removal of the fen vegetation has allowed more diverse wetland plants to survive amongst the tall herbs. There is also the potential to re-introduce grazing, which could improve vegetation structure and species diversity across the site.

Leven Canal SSSI

Stretching five kilometres, Leven Canal was cut in 1802 across the marshes and meres of the River Hull Valley. Following the drainage of the surrounding marshland, it provided a refuge for wetland plants and now supports an important remnant of this once much more widespread vegetation.

Running east-to-west, Leven Canal meets the River Hull at Aike. Access to the river, however, is blocked by a flood bank. The Canal is bisected by the Holderness Drain at Farfox. It is the UK's only privately owned inland waterway.


Leven Canal © Vaughan Grantham

The Canal is fed by calcareous springs supplying water of a very high quality. The canal sides and banks show areas of emergent fen species, including large stands of common reed and common clubrush, together with purple small-reed, narrow small-reed and hybrids, tubular water dropwort, water horsetail, purple loosestrife, brown sedge and bottle sedge. There is a wide range of aquatic plant species including arrowhead, flowering rush, yellow water-lily, white water-lily and shining pondweed. Part of the canal is also used as a stew-pond for rearing trout.

In 2013, part of the Canal was described as unfavourable with no change due to siltation. The need for regular tree works and a sympathetic dredging plan has been proposed to address the accumulation of silt to improve these conditions. The remainder of the Canal is unfavourable but recovering due to an ongoing programme of vegetation management that is improving the wetland plant communities for which the site is notified. Natural England maintains a management agreement for the water body with the Canal's owners.

Pulfin Bog SSSI

The name, Pulfin, is believed to be a corruption of "pool fen", the name given to the site in the 14th-century. Reflecting this fact, the site is indeed a remnant of the extensive fens that once spread across the River Hull Valley.

Pulfin Bog © Laura Popely

Conditions are favourable across this SSSI with abundant plant life. Fenland plants, such as common meadow-rue, common valerian and marsh woundwort, can be found during the summer along with yellow and purple loosestrife and the rare marsh pea. Patches of scrub, most of them dominated by grey willow, occur and bap willow is also present.

The southern two-thirds of the site consist of dense reedbed, which is managed with a combination of rotational summer and winter cutting, thereby maintaining species diversity.

The fen communities on the east side are bordered by neutral grassland, within which two borrow pits have been excavated. One of these is now flooded and has developed interesting aquatic flora which includes water plantain, arrowhead, unbranched bur-reed and water soldier.

The on-site breeding bird community is characteristic of reed and fen habitats, including reed bunting, reed and sedge warblers.

Pulfin Bog is managed as a nature reserve by YWT. For more information about Pulfin Bog Nature Reserve, please visit their website: http://www.ywt.org.uk/reserves/pulfin-bog-nature-reserve

Tophill Low SSSI

Situated some 10 kilometres southwest of Driffield, this SSSI is located at an active Yorkshire Treatment Works flanking the River Hull. Opened as a nature reserve in 1993, the site now features an impressive new wildlife viewing centre (new in 2017) and 12 hides spreading across the 300-acre site.

Tophill Low, South Lagoon © Wikimedia Commons

Two artificial reservoirs dominate the reserve, storing water that is abstracted from the River Hull and used for public supply. These reservoirs support nationally important concentrations of gadwall, shoveler and tufted duck together with locally important populations of goldeneye, great crested grebe, mallard, pochard, teal and wigeon. Around the perimeter, a network of marshes, ponds, woodlands and grasslands result in more than 160 bird species visiting the site annually, with over 60 visible in mid-winter. The reservoirs also attract a wide range of other wildfowl species throughout the year, particularly during spring and autumn migration

.

To find out more about Tophill Low Nature Reserve, please visit: http://tophilllow.blogspot.co.uk/.

f) Hull SUDs Retrofit Project

The Hull and Haltemprice area within the River Hull catchment is classified as one of the top 10 areas of significant flood risk in the country as defined in the Preliminary Flood Risk Assessments for the Flood Risk Regulations. In 2007, this area was affected by a period of heavy sustained rainfall causing extensive flooding throughout Hull with 8,657 residential and 1,300 commercial properties inundated.

A number of factors relating to Hull's unique drainage systems contributed to this flooding, including:

- Land drainage and watercourses running into the piped sewer systems mean that sewers are at capacity in the city.
- Overland flows from outlaying rural areas and higher ground put pressure on the city's drainage systems.
- Local drainage capacity is limited.
- The lack of gravity "fall" in the city means that the flows in the sewers back up until the water has reached the pumping stations.

What made the flooding so serious in 2007 was a combination of these factors.

In 2009, Hull City Council commissioned the *Hull Surface Water Management Plan (SWMP)* – one of four pilot plans in the country. The plan provided a long-term strategy for Hull's surface water management including the identification, assessment and selection of preferred options for implementation. The Hull SUDs Retrofit Project, later to be branded as the Aqua Greens programme, as considered as part of this plan. Aqua Greens are dual-purpose public spaces which provide temporary flood water storage along with multiple benefits, such as better recreational opportunities, to the community. HCC, the EA and DEFRA committed funding to construct a series of SUDs and pilot the Aqua Greens concept.

Case Study 3: Hull's Aqua Greens Programme

In 2015, the Partnership bid successfully for an award from Defra's Catchment Partnership Action Fund (CPAF). Part of this award was allocated to HCC and used to deliver three SUDs across the city as part of the Aqua Greens programme. Although surface water flooding was the motivation for these schemes, they were also designed to address WFD issues, including poor water quality.

In order to determine where best to invest the CPAF funding, HCC used their Flood Bus to communicate the wider benefits of developing SUDs and consult residents on potential locations. The following sites were agreed and delivered by the council with support from YWT and other CaBA partners:

© Hull City Council

Suttoncross Drain, part of the Holderness Drain system, is failing due to poor water quality, which is caused by stagnation and a lack of flow. Wimpey Fields is an area of recreational land that runs alongside the drain at Howdale Road. This site is often waterlogged, making it unsuitable for sport and play. As part of the Aqua Greens programme, HCC built a swale and dry detention basin on-site. The spoil from the excavation of the basin was used to build a raised football pitch. These actions have resulted in improved site drainage and a better recreational site which is now well-used by residents.

Lambwath Stream has been filled in where it runs through the city. Reinstating the stream as a drainage system was deemed to be too costly. As an alternative, a 200-metre swale, which follows the line of the old watercourse, has been created in the playing fields off of Bellfield Avenue. This location was selected because it is adjacent to a housing estate that has a history of flash flooding. The site can therefore catch run-off from the estate (in the swale) at peak times and provides better opportunities for leisure and biodiversity.

In 2007, Inmans Primary School in Hull was badly flooded and has never re-opened. ***Willerby Carr Dyke***, which runs through the site, was a culverted drain. It was agreed that the dyke would function better if it was daylighted. HCC took on this ambition and made an impressive feature of it. A 300-metre watercourse now meanders through the site. New footbridges, paths and community gardens have been created, making it a haven for wildlife and a pleasant public open space.

© Hull City Council

This scheme was short-listed for the Medium Scale Permanent Award in the 2016 CIRIA BIG Biodiversity Challenge. For more information, please visit the BIG Biodiversity Challenge website: http://www.bigchallenge.info/2016-shortlisted-entries

Since the beginning of the Aqua Greens programme, HCC officers have worked hard to advocate for these alternative drainage systems. Over the past few years, they have been able to win widespread support from local ward members, who understand and value the importance of the schemes and want to see the programme continue. In-house teams are used to maintain the Aqua Greens and, in some cases build them, which helps to reduces cost and makes them sustainable.

Another positive outcome for HCC and the wider Partnership is better dialogue and closer working with Yorkshire Water. The water company is liaising with HCC, East Riding of Yorkshire Council and other partners on an investment bid for 2019 onwards that proposes to improve and upgrade the sewer infrastructure in Hull and Haltemprice area. The bid is based on the concept of "Water Culture" or "Living with Water", which entails collaborative approach to raising public awareness about flood risk and managing that risk. This level of partnership working is also intended to attract funding from other external sources that will be needed to carry out their shared aspirations.

g) Sullied Sediments Sediment Assessment and Clean Up Pilots in Inland Waterways in the North Sea Region

Interreg
North Sea Region
Sullied Sediments
European Regional Development Fund
EUROPEAN UNION

Many of our inland waterways are affected by the introduction of Watch List chemicals that are not currently regulated under the WFD. These chemicals are introduced into our waterways through our day-to-day activities and by industry and accumulate in the sediments found in our rivers and canals. Many can be harmful to wildlife due to the disturbance they cause in the aquatic environment.

Water regulators and managing authorities do not always know the levels, the locations or the impacts of these pollutants. An interdisciplinary partnership, led by the University of Hull, has received €2.043.413 in co-funding from ERDF, through the Interreg North Sea Region Programme, to develop tools, procedures and novel clean-up techniques that will address these issues.

With these new solutions in place, regulators and water managers should be able to make better decisions with regard to the management, removal and disposal of sediments, thereby reducing economic costs to private and public sector organisations, and the impact of these pollutants on the environment.

'Sullied Sediments' will be carried out in three river basin districts in the North Sea Region, including the Humber and in particular the River Hull. The work that will be carried locally will include sediment characterisation and analysis and the testing of an innovative clean-up approach at waste water treatment plants. These activities will yield new and useful data about conditions in the river and how we might deal with certain pollutants more cost-effectively.

In addition, the project aims to reduce the amount of chemicals entering the water system by raising awareness about what we, as consumers, are releasing into the environment through the use of common drugs and household products. This will include the involvement of volunteers in a water sampling initiative. This campaign will be developed and piloted in the River Hull catchment before being rolled out across the North Sea Region, so there will be the opportunity to involve local people in this ground-breaking project.

For more information about Sullied Sediments, please visit the project web space: http://northsearegion.eu/sullied-sediments.

Partnership Objectives for the River Hull

The Partnership's long-standing involvement in this catchment is driven by its size and complexity. The principles of CaBA are inherent in the *River Hull Headwaters SSSI Restoration Plan, Crystal Clear* programme and *Living Landscapes* vision. The objectives and priority locations identified as part of these initiatives will continue to inform what we do. Likewise, the Aqua Greens programme underscores the importance of developing innovative and sometime small-scale interventions and of partnership working at all levels.

For both the Upper and Lower Hull catchments, the Partnership will broadly focus on:

- Tackling diffuse urban and agricultural pollution, in particular with relation to drinking water issues
- Reconnecting habitats and watercourses to the flood plain
- Improving and emphasising natural geomorphology
- Developing sustainable drainage systems which deliver community benefits where possible
- Remaining engaged in the development and delivery of the proposed RHICS projects

8f) South Holderness Drains

WFD Water body IDs
Burstwick Drain (GB104026067200)
Sands/Keyingham/Roos Drain from Source to Humber (GB104026067230)
Ottringham Drain from Ottringham Grange to Humber (GB104026066510)
Winestead Drain from Source to Humber (GB104026066570)

The operational catchment described by the EA as 'Burstwick and Eastern Drains' is known locally as 'South Holderness Drains'. The main water bodies in this area are:

- Burstwick Drain
- Keyingham Drain
- Ottringham Drain
- Thorngumbald Drain
- Winestead Drain

© Environment Agency

The map on the right depicts the South Holderness Drains sub-catchment as a whole. The EA's Catchment Data Explorer does not provide information on Thorngumbald drain. All of the other water bodies, however, are included in it. According to the Data Explorer, all were classified as 'moderate' in 2009 and 2015 and are expected to achieve 'good' status by 2027.

The table below provides basic information about these water bodies:

Drain	Hydromorphology	Length	Area	Protected Area(s)
Burstwick	Artificial	9.2 km	26.3 km²	Nitrates Directive
Keyingham	Artificial	26.8 km	71.0 km²	Bathing Water Directive Habitats Directive Nitrates Directive
Ottringham	Artificial	6.4 km	21.5 km²	Nitrates Directive
Winestead	Heavily modified	15.5 km	59.6 km²	Conservation of Wild Birds Directive Habitats Directive Nitrates Directive

Burstwick Drain


Burstwick Drain © Wikimedia Commons

The most significant water body in this catchment is Burstwick Drain, which drains the town of Hedon and village of Burstwick. Its lower reaches are canalised and very slow moving. A set of tidal gates at its confluence with the Estuary control flows, which are unimpeded on the ebbing tide and restricted on the flood side when the gates are used to prevent tidal egress. Under these conditions, the freshwater flows within Burstwick Drain tend to back up, checking flows downstream.

Two storm/emergency overflows from sewage pumping stations discharge into Burstwick Drain, a short distance upstream of the WFD monitoring point. Due to the slow-moving nature of the water body at this location and the influence of nutrients from both the overflows and inputs further upstream, diatom blooms occur at certain time of the year, especially when it is warm.

One of the main problems in Burstwick Drain is the seasonal variation in phosphate and dissolved oxygen levels. Peak levels are recorded in the middle months of the year, especially at sewage discharge points, when there is less rain to dilute effluence. Recent fish kills have also occurred, which the EA is investigating.

Managed Realignment Sites

This sub-catchment includes a number of managed realignment and habitat creation sites, which are overseen by the EA-led Humber Managed Realignment Group (HMRG). Identified in the 2008 *Humber Flood Risk Management Strategy*, these sites are intended to replace habitat lost due to coastal squeeze and planned development in order to meet the legal requirements of the Habitats Regulations.

A number of these sites have been created and are now managed as YWT nature reserves, such Paull Holme Strays and Welwick Saltmarsh. The former site, close to Thorngumbald Drain, is visited by thousands of wintering waders, including knot and golden plover, black and bar-tailed godwits, redshank, lapwing and curlew.

The latter, which abuts the bottom end of Winestead Drain, is the most extensive area of saltmarsh on the North Bank of the Humber. This site is ideal for spotting wintering raptors and owls as well as short-eared owl, merlin, peregrine, marsh harrier, hen harrier and kestrel. In addition to these, sites at Skeffling and Tunstall


Paull Holme Strays Aerial 2006 © Institute of Estuarine & Coastal Studies

are currently under development and a proposed lagoon site at Cherry Cobb Sands has been designed but is not yet in the delivery phase.

These sites bring considerable wildlife value to the sub-catchment. However, they are not dealt with in detail in this catchment plan because of the delivery and management structure already in place. The EA is responsible for delivering sites arising from the impact of coastal squeeze and shares this responsibility with developers in the case of compensation and mitigation sites. Due to the scale and complex nature of these schemes, many members of the Partnership are involved in the realisation of these sites. This work, however, is overseen the HMRG identified above.

Main Plans, Strategies and Initiatives

The South Holderness Drains sit within the purview of the South Holderness Internal Drainage Board. This IDB is responsible for an area measuring 32,000 hectares, which includes 6,750 hectares of agricultural land and 194 hectares of industrial property (including a key employment site allocated in the *East Riding Local Plan*). The majority of the IDB's drains flow directly into EA-maintained main rivers with pumped or tidal outfalls.

The IDB's 2013 policy statement sets out how it will manage flood risk through the provision of adequate and cost-effective flood warning systems and sound and sustainable flood and coastal defence measures. The IDB also discourages development in areas at risk of flooding and coastal erosion.

For more information about the IDB, please visit their website: http://www.southholdernessidb.co.uk/.

Partnership Objectives for South Holderness Drains

With this sub-catchment being under the management of the IDB and much of the land in private riparian ownership, there are limited opportunities for the Partnership. The Partnership's overarching objective is to prevent deterioration and achieve good ecological status in all water bodies by 2027. To achieve this, we will:

- Support the development of sediment management plans and any action arising from them
- Promote agricultural best practice
- Pursue habitat creation where appropriate

9) Data and Evidence

The Partnership uses a range of data and evidence to inform the projects that are planned and delivered under the auspices of CaBA. Many of the plans, strategies and projects described above and in Appendix 2 have produced new research and intelligence, which are beneficial to the Partnership. Below is a summary of the other sources of information that are also used as part of our catchment planning process:

National Evidence

a) EA Catchment Data Explorer (http://environment.data.gov.uk/catchment-planning/) – *This online tool enables users to explore and download information about the water environment. It supports and builds upon the data provided in the river basin management plans.*

b) EA Evidence Packs (prepared by catchment coordinators) and the EA Medium-Term Plan (held by the Environment Programme Team)

c) National Water Vole Mapping Project (http://www.wildlifetrusts.org/watervole-project) – *Established in 2008 by the UK Water Vole Steering Group, this project collates water vole survey records, maps the distribution of this species and identifies important areas for water vole conservation. It also collates and maps data on the American mink. The project is managed by The Wildlife Trusts.*


Water vole © Tom Marshall

Regional, Local and Partnership-Generated Evidence

- Anglers Monitoring Initiative surveys and data returns submitted by EYRT volunteers
- Environment Agency and Yorkshire Water local nitrate studies (forthcoming)
- Flood Defence Grant in Aid (FDGiA) evidence base
- Feedback from CaBA questionnaire used at local events (see Appendix 3)
- Feedback from the *Clear Water: De-mystifying the Water Framework Directive* conference, co-organised with the Waterways Partnership to promote CaBA and involve local people in the Humber RBMP consultation mentioned (see section 5)
- Feedback from CaBA Drop-ins organised to promote CaBA and support the Humber RBMP (see section 5)
- Prioritisation exercise carried out in 2014 by partners to agree which projects to put forward for Catchment Restoration Fund and include in the EA's Medium-Term Plan
- Yorkshire Water PR14 Business Plan

Clear Water Conference © Vaughan Grantham

Data-sharing Arrangements

- EA Fisheries data
- Natural England data to inform Higher Level Stewardship options
- North and East Yorkshire Ecological Data Centre (NEYEDC)
- Local authority data generated for Local Wildlife Sites
- Yorkshire Wildlife Trust site-specific reports for River Hull Headwaters schemes

10) Project Plan

In 2017-18, the Partnership will carry out an opportunity mapping exercise to pinpoint where we will target our efforts over the next five years. Initial discussion will take place during regular meetings. The intention of the Partnership is to then organise a wider consultation gathering to engage with other stakeholders and listen to their views. The projects identified below have been carried out or are being developed in line with CaBA principles in order to support the vision and objectives of our Partnership.


Water Forlorns Project © David Croft

Past and Ongoing Projects

a) Water Forlorns Project (completed)

The purpose of the project was to return a chalk beck running through the centre of Driffield to a more natural state and improve it for wildlife. A meandering gravel channel was created in bed of the stream and native wild water plants were planted on its

margins. EYRT spearheaded this project with support from Driffield Town Council, YWT and Driffield Partnership (a local regeneration group).


Tree planting as part of the Lowthorpe Mill project © Alan Mullinger

b) Skerne Wetlands Project (ongoing)
See Case Study 2 in section 8e

c) Hull Aqua Greens programme (ongoing)
See Case Study 3 in section 8

d) Lowthorpe Mill Diversion Project (completed)
See Case Study 1 in section 5

<u>Aspirational and Flagship Projects</u>

***a) Natural Flood* Management**
Across the environmental, ecological and water management sectors there is considerable discussion about the value of natural flood management and how it can best be delivered. An indication of the national importance of this approach is the government's commitment of £15m to natural flood management projects. In 2016, Defra also announced a new Countryside Stewardship facilitation fund aimed at encouraging farmers, foresters and other land managers to develop natural flood management projects on their land. In recognition of this, the Partnership will explore natural flood management opportunities in-depth as part of the mapping exercise carried out in 2017-18.

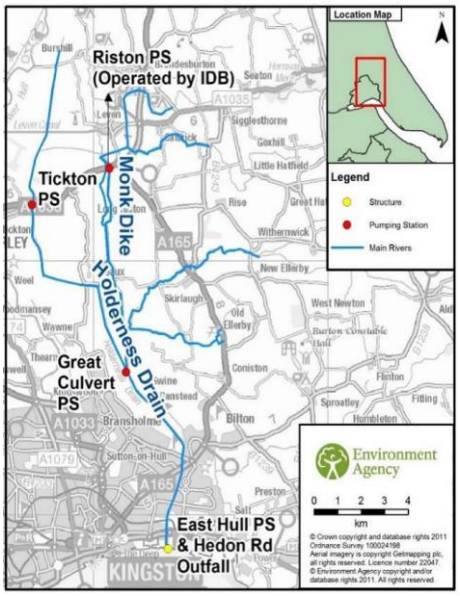
b) Castle Hill/Holderness Drain Project
As part of the wider Holderness Drain flood alleviation scheme, this project would provide a long-term solution to flooding from the Holderness Drain and the issues at East Hull Pumping Station.

The pumping station has insufficient capacity to manage flood flows. There are also significant health and safety problems associated with its operation and major investment is needed to maintain the existing system for the future. The station is located in a part of Hull called Bransholme where there are 1,750 properties at risk of flooding (1:100 year event). Also at risk are large areas of agricultural land in the middle and upper parts of the catchment.

This project proposes to purchase 155 ha of Crown Estates land at Castle Hill, which straddles the boundary between Hull City Council (HCC) and East Riding of Yorkshire Council (ERYC), in order to create a multi-functional flood storage site. This site would remove pressures on both the drain and the pumping station. Key project objectives include:

- Creating habitat and improve the environment, e.g. a potential nature reserve
- Minimising maintenance and operational costs
- Working with partners to develop a scheme that delivers multiple benefits

The organisations involved in this large-scale project concept to date are East Riding of Yorkshire Council, the EA, HCC, Natural England, Yorkshire Water and YWT.




Castle Hill overview map (top) and site image (above) © Environment Agency

c) River Hull Valley Partnership

Under the auspices of the Partnership, we are exploring the possibility of creating a landscape-scale partnership for the River Hull Valley, The proposed vision is for a connected, vibrant and wildlife-rich river landscape. Key activities within the project could include:

- Supporting the local and regional economy (e.g. through sustainable farming and creating high quality heritage and recreation tourism opportunities)
- Managing land and water more sustainably to deliver multiple benefits to communities and mitigating the impacts of climate change
- Increasing the understanding and appreciation of the River Hull catchment
- Promoting and increasing awareness of the catchment

This project is in the very early stages of development. Partners have agreed, however, that the time is right to pursue the project because it would build on the excellent work that has already been carried out as part of the *River Hull Headwaters Restoration Plan*.

Project Pipeline

As part of the opportunity mapping exercise noted above, a list of those projects that could be delivered relatively easily should the right funding and/or support become available will be developed. This 'pipeline' list will be appended to the next iteration of this catchment plan.

11) Monitoring and Evaluation

The Hull and East Riding Catchment Plan was agreed with the Hull and East Riding CaBA Partnership on 31 March 2017. It will be reviewed on an ongoing basis and updated formally on an annual basis.

To date, the Partnership has operated informally but in line with the agreed Terms of Reference. Meetings are held quarterly unless business requires additional discussion.

Many of the projects that have been delivered through the Partnership have come about due to a strategic mix of expertise, experience, finance and resources. In some cases, we have been able to draw together different sources of funding in order to broaden the scope of projects.

To date evaluations have been carried out largely to satisfy the requirements of commissioners and external funders. The Partnership recognises the value of having a standard approach to evaluating projects and views this as an area for development for the next year.

As part of the catchment planning process, the National CaBA Support Group has encouraged all CaBA partnerships to undertake a self-evaluation.

Plan Component	Initial	Growing	Sustainable
Vision	✓		
Data and Evidence		✓	
Project Plan	✓		
Monitoring and Evaluation	✓		

Our self-evaluation suggests that we have a strong and positive foundation on which to build the Partnership. Partners will work on qualifying and quantifying what they do in support of the CaBA and capture this more formally through regular reviews of this plan, through their own reporting and communication channels and through an improved evaluation process.

Appendix 1 – Terms of Reference (revised March 2017)

1. Background

The Executive Group of the Hull and East Riding CaBA Partnership comprises representatives of organisations responsible for the enhancement of the Hull and East Riding Water Management Area and will operate on the basis of a shared commitment to deliver agreed aims and objectives.

2. Membership

The following organisations are current members of the Partnership's Executive Group:

Beverley and Nth Holderness IDB	Jon Church
East Yorkshire Rivers Trust	**Alan Mullinger – Joint Host**
East Riding of Yorkshire Council	Jeremy Pickles
Environment Agency	Karen Paterson
Hull City Council	Rachel Glossop
Natural England	Chris McGregor
Ouse and Humber IDB	Eddie Allen
South Holderness IDB	Ralph Ward
Waterways Partnership	Annabel Hanson
Yorkshire Water	Mark Morton
Yorkshire Wildlife Trust (Lead Partner)	**Jon Traill – Lead Host**

New members can apply to join the Partnership. Applications will be discussed via the Partnership Host at Partnership meetings. Other individuals and organisations may be invited to meetings as regular or occasional attendees.

3. Meetings

To deliver the aims and objectives of the Partnership, members will:

i. Meet on a quarterly basis (usually March, June, September and December).

ii. Attend all partnership meetings, which will be hosted by Jon Traill (as the Catchment Partnership Host), Living Landscape Programme Manager, Yorkshire Wildlife Trust.

iii. Be representative of staff from all founding bodies and contribute on behalf of all colleagues. Members will take account of the views of colleagues at all levels and from all work areas and work patterns. They will achieve this by maintaining regular contact with a cross-section of colleagues to obtain views and feedback.

iv. Consider regional issues put forward by members and identify and have the authority to consider any subject which members consider worthwhile and to formulate possible solutions.

v. Contribute to the achievement of the Partnership's overall aims, objectives and projects as set out in the Catchment Plan (prepared March 2017).

4. Responsibilities of the Partnership Host – Yorkshire Wildlife Trust (YWT)

The Partnership Host will:

i. Chair meetings and ensure there is a secretariat for the group.

ii. Ensure that membership of the Executive Group is representative and includes non-governmental organisations, relevant government agencies, and relevant Local Authorities.

iii. Co-ordinate strategic activities of the Partnership.

iv. Together with partners, drive forward the Catchment Plan and action points arising from the meetings.

5. Responsibilities of the Partners

The Executive Group of the Partnership will report on the implementation and progress of the aims and objectives set out in the Catchment Plan as follows:

i. Set a strategic direction through the Catchment Plan and agree priorities in order to deliver the Partnership's aims and objectives.

ii. Share knowledge, experience and best practice by encouraging joint working between partners.

iii. Ensure integrated delivery by identifying cross-cutting issues and inter-linked projects which are beneficial to partner organisations.

iv. Ensure liaison is developed and maintained with key statutory bodies, non-governmental organisations, landowning interests, farming and local community groups, educational institutions, academic and research organisations and the general public.

v. Seek resources to achieve effective implementation of the Catchment Plan;

vi. Monitor progress against aims and objectives through regular updating and development of the Catchment Plan

6. Responsibilities of the Joint Host – East Yorkshire Rivers Trust (EYRT)

The Joint Host will:

i. Support the Lead Host (YWT) and ensure the secretariat is in place (in YWT's absence).

ii. Promote a sense of ownership amongst the organisations represented on the Partnership.

iii. In liaison with the Partners, assist on developing the Catchment Plan and agree shared priorities.

iv. In liaison with the Partners, identify resource issues and seek funding opportunities for CaBA activities.

v. Co-ordinate and share information between the Partners.

7. Working Groups

The Partnership may convene working groups and nominate individuals (including non-partners) to be involved and lead those groups to:

i. Jointly deliver projects selected from the Catchment Plan.

ii. Refine and re-prioritise projects, where appropriate, that are identified in the Catchment Plan.

iii. Draw up new projects and programmes for consideration by the Partnership.

8. Governance & Decision Making

The Partnership will work collaboratively on any proposals put forward and should a vote be needed each member has one vote, with a decision being reached by a simple majority. Should a split decision occur, the chair holds the right to have the casting vote.

Allocation of money (through the CaBA Partnership) for direct project delivery will always be agreed by a Partnership vote, with a majority needed to take forward any proposals.

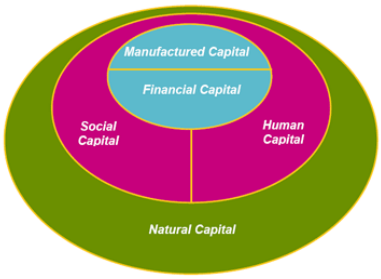
In the event of a dispute or disagreement over a decision taken, a partner has the right to take their grievance to either the Lead Host (YWT), Joint Host (EYRT) or the Catchment Co-ordinator (Environment Agency) to discuss, either formally (e.g. minutes taken) or informally.

These Terms of Reference are correct as of 31 March 2017 and will be reviewed on an annual basis to ensure they are up-to-date and to allow any changes to be made.

Appendix 2 – National and Cross-cutting Plans and Strategies

The following documents inform the work of the Hull and East Riding CaBA Partnership and the action it takes. This overview is intended to set out the strategic context for the Hull and East Riding Catchment Plan. Some of the documents make reference to natural capital, which can is defined as:

Natural capital refers to the country's supply of natural assets, including rivers, forests, land, minerals and oceans, all of which provide benefits to people such as clean air, clean water, timber, food and recreation. The natural environment can be viewed as capital (natural capital) alongside the other capitals (social, manufactured, human).



(Explanation and diagram courtesy of Defra)

National Level

25 Year Environment Plan, Department for Environment, Food & Rural Affairs (Defra), forthcoming

This plan will set out how Defra will deliver the best natural environment by making more integrated decisions and using catchments and landscapes as the building blocks rather than single species or features. It is expected that a natural capital approach will be promoted, which means working with our natural assets, as identified above, to deliver a range of environmental, economic and social outcomes.

Catchment Based Approach: Improving the Quality of our Water Environment, Defra, May 2013

The water environment is affected by every activity that takes place on land as well as through our actions in abstracting, using and returning water to rivers, the sea and the ground. Catchments are the natural scale to consider this aspect of the environment. Defra published this policy framework to promote the catchment based approach, which advocates better coordinated action at the catchment level by all those who use water or influence land management as well as at the local level, supported by the EA and other organisations.

Link: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/204231/pb13934-water-environment-catchment-based-approach.pdf

Catchment Sensitive Farming: Humber River Basin District Strategy 2016 to 2021, Natural England, 2016

This document outlines the proposals for Phase 4 of Catchment Sensitive Farming (CSF) work in the Humber River Basin District between 2016 and 2021. It describes the outline evidence of the water quality issues, the mechanisms and measures CSF will deliver and the resources we will use to support and achieve our objectives and underpin partnership and liaison arrangements.

The CSF programme helps farmers take action to address agricultural diffuse water pollution using advice and incentives. Since 2006 CSF has been working in specific Priority Catchments where agriculture is having the most significant impact on rivers, lakes and estuaries. Programme evaluation has demonstrated the effectiveness of CSF's approach in reducing pollutant loads and improving water quality. CSF Phase 4 builds on this previous work and brings several new features which improve the effectiveness of the programme at addressing diffuse water pollution working with a wide range of partners.

Link: http://publications.naturalengland.org.uk/file/5994470640713728

***Creating a Better Place: Our Ambition to 2020*, Environment Agency, April 2016**

This document states how the EA will protect and improve our natural resources in years to come, alongside Defra's proposed 25-year environment plan (see above). The EA's vision is to create a better place for people and for wildlife. It will achieve this by creating a cleaner, healthier environment which benefits people and the economy; a nation that is better protected against natural threats and hazards, with strong response and recovery capabilities; and through higher visibility, stronger partnerships and local choices.

Link: https://www.gov.uk/government/publications/environment-agency-our-ambition-to-2020

***Water for Life and Livelihoods: Humber River Basin District River Basin Management Plan*, Environment Agency, updated December 2015**

This plan sets out the current state of the water environment; pressures affecting the water environment; environmental objectives for protecting and improving the waters; a programme of measures, actions needed to achieve the objectives; and progress made since the 2009 plan. The document is also intended to inform decisions on land-use planning because water and land resources are closely linked.

Link: https://www.gov.uk/government/publications/humber-river-basin-district-river-basin-management-plan

***Conservation 21: Natural England's Conservation Strategy for the 21st Century*, Natural England, 2016**

As the Government's statutory adviser for the natural environment in England, Natural England uses this strategy to explain how they will work to protect the country's nature and landscapes for people to enjoy and for the services they provide, in support of Defra's ambitions for the environment. Three guiding principles will guide this work, which are to create resilient landscapes and seas; put people at the heart of the environment; and grow natural capital.

Link: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/562046/conservation-21.pdf

Regional and Local Level

***Waterways Strategy 2012-20*, East and North Yorkshire Waterways Partnership, 2012**

This strategy articulates a long term strategic approach to the development of the inland waterways in the East Riding, Hull and parts of North Yorkshire. Through extensive consultation, partners agreed the document's outcomes, priorities and objectives, making it the framework through which the group works to realise 'the potential of the area's waterways' between 2012 and 2020.

Link: http://www.ruralprogrammeseastyorkshire.co.uk/past-programmes/leader-2007-2013/funded-projects/waterways-partnership/waterways-strategy/

***Council Business Plan and Financial Strategy 2016-2021*, East Riding of Yorkshire Council, 2016**

The council's vision is to improve the quality of life for our community; earn the respect of the people we serve and build pride in belonging to the East Riding of Yorkshire. One of its five priorities is 'valuing our environment', which focuses on the corporate approach to responding to climate change, developing infrastructure and safeguarding heritage.

Link: http://www2.eastriding.gov.uk/council/plans-and-policies/council-business-plan/

East Riding Local Plan, East Riding of Yorkshire Council, 2016

This new plan sets out a long term strategy that guides new development across the East Riding through to 2029, including the allocation of sites that will provide new housing and employment opportunities, alongside the delivery of supporting infrastructure. The document is also used to make decisions on planning applications.

Link: http://www2.eastriding.gov.uk/environment/planning-and-building-control/east-riding-local-plan/what-is-the-east-riding-local-plan/

Hull and Coastal Streams Catchment Flood Management Plan (CFMP), Environment Agency, 2010

This document gives an overview of the River Hull and its tributaries and sets out the EA's preferred approach for sustainable flood risk management over the next 100 years. The CFMP has been prepared in partnership with regional and local planning authorities, community and environmental groups and other stakeholders.

Link: https://www.gov.uk/government/publications/hull-and-coastal-streams-catchment-flood-management-plan

Hull Local Plan, Hull City Council, forthcoming

The new Hull Local Plan will be used to guide development in the city up to 2032. It identifies land for different uses and once adopted, its policies are used to determine planning applications. The Hull Local Plan is accompanied by a city wide policies map.

Link: http://www.hullcc.gov.uk/portal/page?_pageid=221,52707&_dad=portal&_schema=PORTAL

Hull City Plan, Hull City Council, 2013

This plan aims to create 7,500 jobs for local people through various projects and investments driving the delivery of a clear set of ambitions, namely UK Energy City, Destination Hull and Community and Opportunity. Achieving these ambitions will help Hull seize the once-in-a-generation opportunity it now has to reassert its role as a gateway to Europe and part of the Northern Powerhouse of cities that will help to rebalance the economic, social and cultural fabric of the UK.

Link: http://cityplanhull.co.uk/

Humber Strategic Economic Plan, Humber Local Enterprise Partnership (LEP), 2014

This is the Humber LEP's overarching plan for growth through to 2020. This plan has five pillars: creating infrastructure that promote growth; supporting businesses to succeed; a great place to live and visit; a skilled and productive workforce; flood risk and environmental management. Within the last pillar are two objectives, which are i) to stimulate economic development through further investment in flood and coastal risk management and ii) promote and embed sustainable development across the LEP area to sustain the natural environment.

Link: http://www.humberlep.org/strategies-and-deals/the-humber-strategic-economic-plan/

Local Flood Risk Management Strategies

The Flood and Water Management Act requires the EA to manage a national strategy for flood and coastal erosion risk management (FCERM) in England. Lead local flood authorities (LLFAs) must also have their own strategies for FCERM that are consistent with this national strategy. Each local document must consider local flood risk which results from surface water flooding, groundwater flooding and flooding from ordinary watercourses as appropriate.

LLFAs are responsible for managing their local strategies, and other risk management authorities, including local authorities, drainage boards, water companies and highways authorities must act consistently with it.

Link (East Riding): http://www2.eastriding.gov.uk/council/plans-and-policies/other-plans-and-policies-information/flood-risk/local-flood-risk-management-strategy/

Link (Hull): http://www.hullcc.gov.uk/portal/page?_pageid=221,1429916&_dad=portal&_schema=PORTAL

York, North Yorkshire and East Riding Local Enterprise Partnership (LEP), *Strategic Economic Plan*, 2014, and *Better Jobs, More Homes, New Investment: Strategic Economic Plan Update* 2016

This LEP's vision is to make its area the place in England to grow a small business, combining a quality business location with a great quality of life and a high quality environment. To support this vision, the plan has five strategic priorities: profitable and ambitious small and micro businesses; a global leader in food manufacturing, agri-tech and bio-renewables; inspired people; successful and distinctive places; and a well-connected economy.

Link: http://www.businessinspiredgrowth.com/wp-content/uploads/2017/01/strategic-economic-plan-sections-1-2.pdf

Link: http://www.businessinspiredgrowth.com/wp-content/uploads/2017/01/SEP-Update-2016.pdf

Yorkshire Water, *Our Blueprint for Yorkshire: The Next 25 Years*, revised December 2013

Yorkshire Water's 25-year plan defines the long-term outcomes as identified by the company in consultation with customers. The outcomes and measurable objectives set out in this plan as well as their five-year summary plan (2015-2020). The latter sets out how Yorkshire Water will work in partnership to protect the environment while ensuring that they meet their statutory obligations.

Link: https://www.yorkshirewater.com/about-us/what-we-do/our-blueprint-for-yorkshire/

Appendix 3 – CaBA Questionnaire

Catchment Based Approach Questionnaire

As Catchment Hosts along with the Yorkshire Wildlife Trust, East Yorkshire River Trust values your comments on the aims of this initiative towards a healthier water environment.

Name:
Address:
River Catchment

Your particular Interest - please circle:

Agriculture	Land Management	Mammals & Birds	Angling	Boating	Nature conservation
Invasive plants	Protected habitat	River Maintenance	Urban watercourses	Flood Defence	Drought Concerns

Please comment on the concerns or issues relating to your selection/s.

Are your wishes realistically achievable? Please circle:

Unlikely	With difficulty	Possibly	Highly likely	Definitely

If unlikely, what do you believe the reasons for your answers are?

No private funding locally available	No apparent local /national interest in the issue.	Loss of council/government /EU funding

Please add further comments:

Would you wish a Catchment Host officer to contact you?

YES	NO	Please keep me informed of developments.

Please return this questionnaire to:

East Yorkshire Rivers Trust. 1 Riverside, Driffield, East Yorkshire, YO25 6PA, or Yorkshire Wildlife Trust, 1 St George's Pl, York, North Yorkshire. YO24 1GN

Please add any other comments on the reverse of this page. Thank you for your time.