

APPENDIX G

Overview of Environment Agency CFMPs

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Information and extracts are taken from the following documents:

1. River Aire Catchment Flood Management Plan - Draft main stage summary document, June 2008
2. Derwent Catchment Flood Management Plan - Draft main stage summary document, June 2008
3. Don and Rother Catchment Flood Management Plan - Draft main stage summary document, June 2008
4. Planning for the rising tides - The Humber Flood Risk Management Strategy, March 2008
5. Hull and Coastal Streams Catchment Flood Management Plan - Draft main stage summary document, June 2008
6. Yorkshire Ouse Catchment Flood Management Plan - Draft main stage summary document, June 2008
7. River Trent Catchment Flood Management Plan – Draft Report, October 2007

Area	Reference	Extract
Axholme and North West Lincolnshire	River Trent CFMP	This is a low-lying, flat, artificially drained area - only a small proportion falls within the East Riding. Flood risk is identified as low to medium, and is mainly from the tidal River Trent and the lower rivers Idle and Thorne on the west bank. Potential sources of increased future flood risk include climate change and increased surface water run-off from land use change. The principal objective is to reduce the cost of flood risk management to allow more focused investment where the need is greater. Hence the proposed policy option is to reduce existing flood risk management actions (accepting that flood risk will increase over time) whilst minimising disruption to economic damages.
Bielby Beck	River Derwent CFMP	The main areas at risk are Wiberfoss and Hayton. Neither of these are defended. The Environment Agency will periodically review the feasibility of any options for reducing flood risk to the villages. Further to this they will seek to prevent inappropriate development in the floodplain and investigate the potential for creating a habitat for water vole.
Bridlington	River Hull CFMP	Gypsy Race is culverted through the majority of Bridlington and enters the North sea through an outlet pipe in the Sea Wall. The main mechanisms for flooding are both fly tipping which blocks the culverts and drains, and high tides causing tide locking of Gypsy Race. Flooding has also been recorded from surface water within Bridlington, particularly during the summer 2007 floods where parts of Bessingby Road were affected. The coastal defences are maintained by East Riding of Yorkshire Council.
Brough	Humber Strategy	The remaining life of the existing defences is variable, west end is 20 years or more, east end 10 to 20years. The defences are managed by Environment Agency. The defences at the western end have been improved within the last 10 years and as a result are in good condition and provide a good standard of protection. Work is needed to improve the condition of the remaining defences and the standard they provide. The Environment Agency intend to protect Brough and the BAe factory as well as improving the standard of protection they receive by building a new defence across the new airfield to high ground behind Welton Water. They cannot economically justify maintaining defences at the eastern end of the area, therefore intend to withdraw from these defences.

Brough Haven to Weighton Lock	Humber Strategy	The remaining life of the existing defences is variable, eastern end 20 years or more, western end 10 to 20 years. The defences are managed by the Environment Agency, Associated British Ports and others. Defences between Brough Haven and Crabley Farm have been improved within the last 10 years and as a result give a good standard of protection. Remaining defences are owned by others and are in fair to poor condition and are narrow and difficult to maintain. They are likely to need improvement in the next 15 to 20 years. The Environment Agency plan to maintain their defences although they are not responsible for all. The Environment Agency are considering leaving some of the defences lower than others to enable them to predict which areas are more likely to flood and hence manage the risk. Flood storage schemes have been identified in the Humber and Ouse strategies.
Bubwith, Breighton, Wressle and Barmby on the Marsh	River Derwent CFMP	The Environment Agency will investigate the potential for creating lowland hay meadow and flood storage here.
Burstwick	River Hull CFMP	Sea level rise will increase the duration of Burstwick Drain's tide locking. The main areas at risk of flooding are Burstwick and Hedon (both flooded in summer 2007). Localised defences will be put in place at these two locations to reduce the risk of flooding. Existing defences will be maintained and improved. The Environment Agency aim to reduce the impact of frequent flooding in urban areas by maintaining conveyance where it is both effective and sustainable to do so. The high numbers of greenhouses used in this area is thought to contribute to runoff generation.
Easington and Kilnsea	Humber Strategy	The remaining life of the existing defences is generally 10 to 40 years. The defences are managed by the Environment Agency, apart from the new sea defences at Kilnsea which are managed by the villagers. The area is protected by two sets of defences, beside the estuary and the sea. The sea defences are threatened by the retreating coastline; those protecting Kilnsea have recently been replaced and are expected to last for between 20 and 30 years before the retreating coastline reaches them, while those protecting Easington are expected to last for between 30 and 40 years. The estuary defences are expected to need minor repairs every few years and major improvement in about 20 years. The Humber Flood Risk Management Strategy states that the Environment Agency have no plans to maintain the new flood defence embankment built near to the sea at Kilnsea.

Goole	Humber Strategy	The remaining life of the existing defences is 20 years or more. The defences are managed by the Environment Agency. Defences are generally in good condition and provide a good standard of protection. However, in places the banks of the River Ouse are being eroded by the river and are showing signs of instability, for example at Hook Road. Parts of the area are also at risk of flooding from high flows in the river Ouse. The Environment Agency intend to improve the area's existing defences. To enable this the Environment Agency are seeking public funds with contributions from major beneficiaries and from developers to pay the full cost of new works needed to protect their development.
Goole Fields and Crowle	Humber Strategy	The remaining life of the existing defences is generally 10 to 20 years. The defences are managed by the Environment Agency, Associated British Ports and others. The defences are generally in good condition, providing an adequate standard of protection. Defences at Swinefleet are planned to be improved within the next 15 years. The Environment Agency will improve the defences that they are responsible for, and will consider keeping sections of the defences lower than others.
Gypsey Race	River Hull CFMP	The area is a chalk and groundwater dominated one. The effects of climate change on groundwater are not fully understood. The limited floodplain is vital to managing the risk of flooding in Bridlington. The Environment Agency will promote sustainable land management, and will look to reduce the consequence of groundwater flooding by controlling possible groundwater contaminants such as Wold Gate Landfill Site, Bessingby. The Environment Agency are looking to improve/remove culverts where appropriate.
Hessle Frontage	Humber Strategy	The remaining life of the existing defences is variable, but locally 5 years. The defences are managed by East Riding of Yorkshire Council and others. Defences are in generally poor condition providing a low standard of protection. The shoreline is being worn away by tides and waves in places, which could threaten the defences. The Environment Agency anticipate that it will become increasingly expensive to defend these areas, and will be looking into other ways of managing the flood risk.
Holderness	River Hull CFMP	Many of the watercourses have pumping stations to allow them to drain into the Humber estuary at all states of the tide. The Environment Agency will work to reduce the risk of flooding to people and property where it can be justified, and will discourage inappropriate development in undeveloped floodplains.

Hornsea	River Hull CFMP	There are a number of different organisations and individuals responsible for the water levels and control structures of Hornsea Mere. It is likely that there will be a greater risk of surface water flooding could result from increased rainfall and sea levels. The coastal defences that protect the town are managed by East Riding of Yorkshire Council. Flooding from the sea is the greatest risk within the area, and tide locking also affects the area. The Environment Agency intend to gain a better understanding of the interaction between the Mere, surface drainage and tide locking to help them with long term plans. The Environment Agency will also look into the feasibility of providing defences for existing properties at risk particularly where the Social Flood Vulnerability Index is high. The Environment Agency will develop a detailed water level management plan for Hornsea Mere SSSI.
Hull East	Humber Strategy	The remaining life of the existing defences is 10 to 20 years. The defences are managed by Environment Agency, Hull City Council and British Ports. The defences are generally in good condition. At Paull the defences are subject to spray from waves during severe storms- the Environment Agency are looking into this. Defences will need to be improved. To enable this, the Environment Agency are seeking public funds with contributions from major beneficiaries and from developers to pay the full cost of new works needed to protect their development.
Lower Don	River Don CFMP	There is no flood warning service available for the Don at this location. The area has a pumped drainage system due to the low lying nature of this area. The Environment Agency are therefore considering the long term sustainability of the area, particularly in the light of climate change. They are looking to work with land owners to reduce impacts of flooding. The Environment Agency are reviewing maintenance operations to ensure that they are proportionate to the risk and are sustainable. They are looking to prevent degradation and loss of the lowland raised mire habitat caused by development, agriculture and water management changes. The Environment Agency will also identify opportunities for the removal of flood banks, to allow floodplain to be connected to the watercourse.
Lower River Hull	River Hull CFMP	There have been occasional groundwater flooding incidents in the Cottingham area. River, tidal, sewer and surface water flooding all pose a risk to this area. The Environment Agency will improve the standard of flood protection for this area. Water levels in the estuary are currently rising at a rate of approximately 2mm per year and this rate is expected to increase in the future. The Environment Agency will look to using natural flood plain and attenuation sites to reduce impacts in Kingston upon Hull.
Lower Tidal Aire	River Aire CFMP	The Environment Agency plan to allow natural agricultural floodplain (establish wetlands) to flood to reduce economic damage to property and infrastructure. Severe flooding occurred in Autumn 2000 when defences breached at Gowdall. Impact of climate change is significant. The Environment Agency plan to carry out detailed mapping of climate change and make policies regarding the future management of the consequence of flooding whilst promoting sustainable land management.

Market Weighton	River Hull CFMP	There are problems with groundwater flooding in Market Weighton. The area is heavily reliant on pumping draining water from the arable area into the Market Weighton Canal. There are problems on Mill Beck from aging culverted sections of the main channel overflowing when the culverts can no longer hold the capacity of the water. There is a complex interreaction between the canal river and culvert, and the Environment Agency are looking into improving understanding and management of this. Additionally the Environment Agency are carrying out a feasibility study for the creation of flood storage areas to reduce flood risk, and are employing a sustainable land management officer.
Middle River Hull	River Hull CFMP	Groundwater flooding in eastern Beverley is due to groundwater rising above low points in the land. Historically some groundwater has entered the Beverley sewerage system helping to prevent flooding, though the mechanism is not fully understood. There are flash flooding issues where the water ponds due to the low gradient and impermeable geology. The Environment Agency will continue to maintain defences along the watercourse and provide continued flood protection in this area. They will also be carrying out a feasibility study for the creation of flood storage areas.
North Ferriby	Humber Strategy	The remaining life of the existing defences is 10 to 20 years. The defences are managed by the Environment Agency. The existing defences are in reasonable condition providing a good standard of protection. The Environment Agency are currently maintaining the defence along the estuary but may have to withdraw in the future. Before withdrawal they will consider all the options for protecting the area.
Pocklington Beck	River Derwent CFMP	Pocklington is at risk of flooding. Where possible, flood alleviation schemes have been, or will be considered. Pocklington is undefended. The Environment Agency are seeking opportunities to attenuate floods and to reduce flood risk to the populated areas. They will also discourage inappropriate development in the floodplain and investigate remedies for blocked culverts. Pocklington is a viable option for flood storage that is being investigated by the Environment Agency.
Skeffling	Humber Strategy	The remaining life of the existing defences is generally 10 to 20 years. The defences are managed by Environment Agency. A large part of the area has been identified as suitable for creating the new inter-tidal habitat to replace the losses caused by flood defence improvements and sea level rise. The Environment Agency have already bought some of the land and plan to buy more to develop the site between 2010 and 2020. The Environment Agency would find it difficult to justify spending public money on the existing defences and so may have to consider withdrawing from them.
Stamford Bridge	River Derwent CFMP	The Environment Agency will maintain defences in this area and discourage inappropriate development in the floodplain. The Environment Agency may seek to reclassify additional lengths of watercourses such as Battle Flats Dyke so that they can work on them if necessary.

Downstream of Stamford Bridge (near Kexby)	River Derwent CFMP	The Environment Agency will discourage inappropriate development in the floodplain and continue to investigate the potential for creating lowland hay meadow and flood storage here.
Stone Creek to Paull Holme Strays	Humber Strategy	The remaining life of the existing defences is generally 10 to 20 years. The defences are managed by the Environment Agency at Paull Holme Strays and other defences are managed by the Crown Estate. Defences are generally in good condition, but major improvements are likely to be needed in approximately 40 years. The Environment Agency anticipate that maintenance will have to be withdrawn, and that secondary defences may be created to protect villages. The Environment Agency have identified another site near Keyingham suitable for creating a new inter-tidal habitat, similar to that developed at Paull Holme Strays in 2004. This new habitat is unlikely to be developed until after 2030.
Sunk Island	Humber Strategy	The remaining life of the existing defences is generally 10 to 20 years. They are managed mostly by the Crown Estate but also by Associated British Ports and the Environment Agency. Some work is needed to protect the defences against erosion and this will probably need to be repeated every few years. Major improvements are likely to be needed in 20 to 30 years. The Environment Agency anticipate that defence maintenance will have to be withdrawn from the existing defences, and that secondary defences may have to be created to protect villages. Associated British Ports has created a new inter-tidal habitat at a site near Welwick to compensate for their development at Immingham. The Environment Agency has identified land behind this site for creating the inter-tidal habitat required to replace the losses caused by flood defence improvements and sea level rise. They plan to develop this after 2020.
Upper Hull	River Hull CFMP	Ground and surface water flooding are the biggest flood risk sources. Ground water flooding can last for several months at a time. The Environment Agency will discourage inappropriate development. There are extensive areas of wet woodland. The Environment Agency is looking to manage land in a sustainable manner and plans to create flood storage areas. Furthermore the Agency will ensure that Skipsea Bail Mere is not negatively affected by flood risk management works, and that where possible, the site is improved.
Upper Humber	River Ouse CFMP	Managed realignment on the River Ouse downstream of Selby may help to reduce levels of tidal flood waters in this area. A significant length of rail and road are at risk, which could potentially lead to communities being cut off. The Environment Agency will continue to maintain defences downstream of Boothferry Bridge. They may also change flood storage downstream of Selby and will also seek to change agricultural land management changes such as pond creation, buffer strips or a reduction in drainage.

Weighton Lock to Boothferry Bridge	Humber Strategy CFMP	The remaining life of the existing defences is generally 10 to 20 years. The defences are managed by the Environment Agency, Associated British Ports and others. Defences are generally in a reasonable condition and provide an appropriate standard of protection. The banks of the River Ouse are being eroded in a number of places and there is concern about the stability of the defences at some points. Two stretches between Blacktoft and Yokefleet, and at Sand Hall, require improvement in the next 15 years. Sand Hall is a possible flood storage area. The area is at risk from the Rivers Derwent, Humber and Ouse.
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Additional information from the Humber Estuary strategy	
Brough	Improve defences generally for the next 5 years, and particularly at the BAe factory, but not those at Welton Water lakes and other uneconomical defences.
Easington	Coastal erosion is taking place, which the Humber Flood Risk Management Strategy is addressing the coastal lagoons in front of the defences that are being threatened, whilst looking at long term flooding issues.
Goole	Town at risk of flooding from the rivers Don, Humber, Aire and Ouse. The Flood Risk Management Strategies aim to safeguard the town by improving defences along the River Ouse.
Inner estuary excluding Goole	Improve the defences where necessary but will consider raising defences near villages and in the longer term allowing other areas to flood infrequently.
Keyingham	Managed Realignment Scheme proposed, likely to be completed after 2030.
Kilnsea	Realigned the coastal flood defences. There is known to be coastal erosion here that threatens to wash away the coastal defences. No National Flood and Coastal Defence budget was available, but the residents raised funds, and the grants that they obtained, together with a contribution from the East Ridings of Yorkshire Council allowed the work to proceed. The defence if managed by the residents should protect for 30 years.
Paull to Welton Clough	It may be difficult to seek funding for future work in these areas, therefore in due course these defences may fail.
Paull Holme Strays	Managed Realignment Scheme in place, completed in 2003. Review risk of waves overtopping sea wall and flooding adjacent properties - carrying out improvements where necessary in next 5 years.
Saltmarshe	Improve defences - repairs already carried out
Sand Hall	Proposed flood storage area, to be protected from any development, but can still be used for agriculture.
Skeffling	Managed Realignment Scheme in progress, due to be completed between 2010 and 2020.
Spurn to Paull	Defences are expected to last 20-40 years, but in some places this could be 10 years or less. As much of the area is sparsely populated it would be difficult to get funding for future work, therefore the defences may fail in a few years.
Swinefleet	Improve defences and prevent erosion from undermining defences over the next 5 years.
Welwick	Managed Realignment Scheme proposed, likely to be completed after 2020